



Australian Government

Australian Radiation Protection and Nuclear Safety Agency

**National Directory For Radiation Protection (Edition 1) -
Review of Implementation Effectiveness**

FINAL REPORT

June 2008

COUCH & ASSOCIATES PTY LTD



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This Report

This report has been prepared by the Consultant, Couch & Associates Pty Ltd (C&APL), engaged by the Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to provide consultancy services to assess the implementation effectiveness of the National Directory for Radiation Protection Edition 1 (NDRP) by the State and Territory Jurisdictions and to make a report to the ARPANSA Radiation Health and Safety Advisory Council (RHSAC) for its April 2008 meeting.

The Report consists of:

- the Executive Summary, and
- the Report itself describing background to the assessment, the process followed, analysis undertaken, and key findings for further consideration by RHSAC.

The Report is transmitted to the Project Officer, Mr Alan Melbourne, Manager Standards and Codes Development, ARPANSA, for the RHSAC. It has been prepared in consultation with the Chair of RHSAC, Ms Sylvia Kidziak AM and with results discussed with the Director, Regulation and Policy, Ms Rhonda Evans.

Initially the Report was labelled "Draft" at the Chair's request pending presentation to and consideration by RHSAC at its April 2008 meeting. Subsequently, analyses in the report Appendixes were circulated to Jurisdictions to provide opportunity to supplement the information and correct misinterpretations or errors. While amendments received from Jurisdictions were incorporated as appropriate, nothing in the process has caused the key findings of the report, as to the high level of variability among the Jurisdictions' regulatory systems, to be altered.

COUCH & ASSOCIATES PTY LTD



13 June 2008

Mr Alan Melbourne
Manager Standards and Codes Development
The Australian Radiation Protection and
Nuclear Safety Agency (ARPANSA)
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Dear Alan

**FINAL REPORT – ASSESSMENT OF THE
IMPLEMENTATION EFFECTIVENESS OF THE NATIONAL
DIRECTORY FOR RADIATION PROTECTION EDITION 1
(NDRP)**

Please find enclosed the Report by Couch & Associates Pty Ltd (C&APL) on the implementation effectiveness of the NDRP as commissioned by ARPANSA for submission to the Radiation Health and Safety Advisory Council (RHSAC).

Our initial report was labelled “Draft” as requested pending its presentation to and consideration by RHSAC at its April 2008 meeting. Subsequently, analyses in the report Appendixes have been circulated to Jurisdictions to provide further opportunity to supplement the information and correct misinterpretations or errors. While amendments received from Jurisdictions were incorporated as appropriate, nothing in the process caused the key findings of the report to be altered materially.

Specifically, our findings, as reported and presented to RHSAC, are in summary:

- While there is, with some gaps, effective alignment between Jurisdictions’ regulatory frameworks and the NDRP provisions.
- The high level of variability in implementation among the Jurisdictions detracts significantly from achievement of the national uniformity that was intended for the NDRP.

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At your request and in view of the scope limits of the review, the report has not canvassed recommendations that might flow from our findings.

As before, C&APL thanks all stakeholder personnel who assisted our assessment, including:

Mr Brett Purdue	ACT
Ms Rhonda Evans	Cth
Mr Alan Melbourne	
Mr Ian Graham	
Mr Len Potapof	NSW
Mr Henry Forester	
Mr Russell Robinson	NT
Mr Simon Critchley	Qld
Mr Graeme Palmer	SA
Dr Barbara Shields	Tas
Mr Noel Cleaves	Vic
Mr Paul Marks	
Ms Hazel Upton	WA
Mr Leif Dahlskog	

Thanks go particularly to Ms Sylvia Kidziak AM, Chair of the RHSAC and yourself, who provided challenging consultation on the assignment and its results.

We are pleased also to acknowledge our Senior Associate, Richard Clarke for his expertise and extensive contribution.

In thanking those who contributed, C&APL recognises that it alone is responsible for the views expressed.

Yours sincerely



Couch & Associates Pty Ltd

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Executive Summary

The National Directory for Radiation Protection (NDRP) has been agreed by the Australian Health Ministers' Conference (AHMC) to be developed and used as a resource by State and Territory, and Commonwealth Jurisdictions' Regulators for pursuing national uniformity in their radiation protection regulatory frameworks. As part of the NDRP process, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), has commissioned a review of the implementation effectiveness of Edition 1 of the Directory.

The review was based on a Questionnaire developed for ARPANSA's Radiation Health and Safety Advisory Council (RHSAC), which addressed the main provisions of the NDRP and invited Jurisdictions' response to each. The purpose of this report is to convey results to RHSAC, including the current status of, and identified barriers to, NDRP implementation.

The Consultant's principal finding in this review is that there is, with some critical qualifications, effective alignment between Jurisdictions' regulatory frameworks and the NDRP (Edition 1) provisions.

The findings suggest to the Consultant that while the NDRP (in its Edition 1 form) may have significantly **led** Jurisdictions' regulatory improvements, it has to a degree also **accommodated** retention of considerable variability in their regulatory approaches. In this regard, the NDRP, its implementation by Jurisdictions, and responses from Jurisdictions in this review, highlight:

- a high level of, but still incomplete, alignment between Jurisdictions' regulatory frameworks for radiation protection and the NDRP,
- a considerable lack of uniformity in Jurisdictions' regulatory approaches, and
- concerns of key stakeholders about the NDRP process itself.

Incomplete alignment (and variability) is observed, for example in the following:

- Articulation of key radiation protection principles, including:
 - justification, limitation and optimisation of technical requirements,
 - management responsibility for radiation protection and compliance, and
 - verified safety and security, risk management and intervention obligations,
- Provision of comprehensive grounds for refusing, suspending, varying, cancelling authorisations;
- Explicit conferral of comprehensive powers and functions on Regulators, e.g. for ensuring inspections, requiring assessments and investigating incidents;
- (Pending further NDRP development):
 - provision for 3rd party accreditation of persons, performance-based regulation and risk management, and
 - regulation of non-ionizing apparatus.

Variability of approach is notable in all areas of the Jurisdictions' regulatory frameworks, including (in addition to those where alignment is incomplete):

- conditions of authorisations, the way they are presented, the term of authorisations, and application procedures,
- detailing of technical requirements,
- emergency or contingency powers, such as Regulators’ direction powers,
- terminology, definitions and the framing of obligations, and
- the structural features and style of legislation.

Key stakeholder concerns focused in discussion on the following:

- The importance stakeholders place on achieving national uniformity, and (a) barriers that Jurisdictions perceived in the NDRP strategic directions and management, (b) the NDRP content and processes, and alternative regulatory approaches;
- The need for guidance in modernising regulation in areas such as adoption of performance-based regulation;
- Mutual recognition and accreditation protocols, and consistency generally for interstate dealings; and
- Resources available for regulatory development (particularly for smaller Jurisdictions) with some interest shown in considering proposals for:
 - establishing shared services,
 - improving “legislative compatibility” of the NDRP, and
 - streamlining development by, for example, specification of technical requirements separately from regulatory processes in both the NDRP and Jurisdictions’ legislation.

It is the Consultant’s view that the incomplete alignment and extensive variability of Jurisdictions’ implementation detract from achievement of the national uniformity that was intended for the NDRP. To address these issues, and the identified concerns, the Consultant proposed in client liaison the formation of a regulatory improvement program that includes soundly and transparently managed NDRP processes with target timelines, task allocation, and efficient deployment of the different competencies required. It is understood that the Radiation Health Committee (RHC) does have programs in hand for progressing NDRP development, which are outside the scope of this review.

Further, the Consultant considers that, if the NDRP process is to progress and be timely and successful in terms of the national uniformity objectives, it will be appropriate to maintain a strengthened program, guiding in an agreed, managed and coordinated manner, to:

- eliminate remaining alignment gaps, and
- reduce the variability of Jurisdictions’ approaches, as well as
- continue ongoing development of NDRP content (presumably by RHC under its current arrangements).

If Ministers assess that a strengthened program within the NDRP framework lacks promise, it would be appropriate to re-examine, as envisaged in their earlier agreement, alternative, originally rejected regulatory approaches (e.g. using a template or lead legislation model).

The Report – NDRP Implementation Effectiveness

1. Introduction

All Australian Jurisdictions have Radiation Protection legislation, covering a wide range of medical and industrial equipment, materials and practices. National uniformity in radiation protection regulation has been on the policy agenda of Australian governments for a decade¹. As the means of achieving uniformity, the National Directory for Radiation Protection (NDRP²) concept was developed by Jurisdictions and adopted by the AHMC in 1999.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), commissioned in December 2007 a review of the implementation effectiveness of the NDRP Edition 1. This report to the Radiation Health and Safety Advisory Council (RHSAC) of ARPANSA, addresses the current status of, and identified barriers to, implementation, within the limits of the commission.

The report presents:

- brief background on Radiation Protection Regulation in Australia and the formation of the NDRP process (Refer Section 2 and Appendix A),
- a description of the assignment process,
- analysis undertaken and a summary of issues identified (Refer Section 4 Appendix B, Appendix C and Appendix D), and
- key findings (refer Section 5).

The review has focused on (a) consideration of Australian Jurisdictions' officer responses to an ARPANSA Questionnaire, and supplementary queries posed by the Consultant, and (b) a summarisation of matters identified during the assignment. The Consultant has considered "Implementation effectiveness" against the objective of Jurisdictions to provide national uniformity in regulatory frameworks for radiation protection.

¹ The McNulty Report – "Guidance for the Development of a Uniform National Framework for Radiation Protection", by Dr J McNulty, October 1997, provided broad recommendations on a new 'model' radiation protection regulatory framework for Australia, and was endorsed in July 1998 by the Australian Health Ministers' Conference – refer [RIS 4]

² [NDRP] The National Directory for Radiation Protection, Edition 1, ARPANSA Radiation Protection Series Publication No. 6, August 2004 – the term NDRP is also used in this report to refer to the NDRP concept or process by which the national uniformity approach was agreed to be initiated and developed.

2. Background

2.1 Radiation Protection in Australia

The dimensions of radiation-based services in industrial, health and support industries, and the regulation of radiation protection in Australia, are indicated by the following:

- The National Competition Policy Review of Radiation Protection Legislation [NCPR ³] estimated that:
 - almost 9.1 million diagnostic and therapeutic services (the major use for radiation equipment and substances) were performed in 1999-2000, totalling almost \$728 million, and
 - “about 30,000 to 35,000 people make direct use of radiation in their employment and up to 100,000 Australians are influenced occupationally by radiation protection legislation”.
- The Regulatory Impact Statement [RIS ⁴] for the NDRP calculated in 2001 that there were a total of 66,177 licences and registrations issued by Jurisdictions.
- As an indicator of regulatory activity, the “Australian Incidents Register, Summary of Radiation Incidents” recorded 85 incidents in 2004; 55 were in health-related areas (nuclear medicine, radiotherapy and diagnostic radiology). By comparison in NSW⁵:
 - Accidents reported annually (averaged over the last 3 years) represent 0.14% of the total base of active reported licences / accreditations / registrations,
 - Of this total base of active licences / accreditations / registrations, around 13% were newly issued in one year (2006-07).

2.2 The NDRP process

With development of the first edition of the NDRP, a Consultation Regulatory Impact Statement [RIS Ref 4] was prepared in early 2004 with the recommendation that Edition 1 be submitted for adoption and for endorsement. AHMC endorsed the NDRP in June 2004, noting that further cost-benefit analysis was being undertaken sufficient to meet the statutory requirements of each Jurisdiction.

³ [NCPR] “Final Report of the National Competition Policy Review of Radiation Protection Legislation” (May 2001). The NCPR noted strong criticism of the lack of national uniformity in the way in which radiation protection legislation was written, and applied in Australia.

⁴ [RIS] “Regulatory Impact Statement - Consultation Draft - National Directory for Radiation Protection Edition 1.0”. The consultation draft was finalised in 2005 following further cost-benefit analysis.

⁵ Radiation Advisory Council (NSW) Annual Report, 2006–07 - NSW had 22,329 active licences (for sale, possession or use), accreditations, and registrations at 30 June 2007, of which 2,821 were newly issued in the preceding year. Over the three preceding years there were 93 reported accidents.

The objective of national uniformity was intended to resolve two problem areas:

- Adverse impacts on effectiveness and efficiency,
 - particularly in licensing, registration or exemption provisions for materials and devices, occupational groups posing difficulties for users who have to comply with different requirements when operating or relocating across Jurisdictions,
 - resulting in higher costs to end users, and ultimately to the community; and
- Some regulatory frameworks being out of step with up-to-date international guidelines.

In agreeing on the NDRP process (refer Appendix A) Ministers selected a “non-legislative” option for the short to medium term (RIS [Ref 4] did not explore regulatory alternatives), with adoption of uniform national regulatory controls (for example, through mirror legislation) to be considered following completion of the initial draft of the National Directory.

The NDRP was agreed by all Jurisdictions to be used as a national guidance document to make changes to existing legislative frameworks as soon as possible (while retaining the current prescriptive regulatory approach and licensing / registration of operators, radiation equipment and radioactive substances) to achieve a higher degree of national uniformity. The NDRP was envisaged to incorporate nationally:

- principles for management of risk, performance and quality, and
- protocols for outsourcing and accreditation processes, and mutual recognition in granting licences and registrations,
- taking account of existing standards and adopting internationally consistent standards and codes of practice.

The agreement provided for a review of the NDRP effectiveness and efficiency to be conducted within three years of its commencement.

3. The Consultancy

This Section describes the assignment, covering:

- the Consultant engagement, and
- the consulting process.

The succeeding sections of this report present the Consultant’s summary analysis (Section 4) and findings (Section 5).

3.1 Consultant Engagement

The Terms of Reference for reviewing the implementation effectiveness of the NDRP are set out in Appendix E. In conducting the review the Consultant is required to make a report to RHSAC on:

- current status of and identified barriers to implementation, and

- local proposals and timelines.

ARPANSA commissioned Couch & Associates Pty Ltd (C&APL) to undertake the review task, employing the services of two Senior Associates:

- Graeme Couch, and
- Richard Clarke.

3.2 Consulting Process

The Assignment followed broadly the following steps:

- Client consultation;
- The Questionnaire;
- Supplementary Enquiries;
- Direct stakeholder interactions; and
- Analysis of results.

Client consultation addressed:

- Questionnaire transmission,
- the analysis approach,
- supplementary questions for key stakeholders (in lieu of face-to-face meetings), and
- results and key findings.

Appendix F reproduces the Questionnaire, dispatched following review with the Client and RHSAC Chair, and to which to key stakeholders were invited to respond. The questionnaire focussed on the clauses of the NDRP and invited contact persons to describe how their Jurisdictions' legislative frameworks gave effect to the NDRP provisions. The Consultant also invited Jurisdictions to identify in relation to their implementation programs, issues of concern and projected progress.

While not eliminated from consideration should they be necessary and requested by key stakeholders, face-to-face meetings have not proceeded but were replaced with more efficient written supplementary queries and telephone discussion. The supplementary queries, reproduced in Appendix G, were submitted to all key stakeholders and intended to draw out:

- details of how the regulatory frameworks operate in practice,
- information concerning the contextual policy and planning behind the Jurisdictions' programs, and
- responses to the Consultant's initial analysis.

Further notes on the consulting process are given in Appendix H.

4. Analysis

The analysis for this review is outlined in this Section 4, and addresses:

- the Jurisdictions’ overall legislative frameworks,
- mechanisms by which Jurisdictions have given effect in their regulatory frameworks, to the provisions of the NDRP,
- details of a typical regulatory operation, and
- other issues arising from discussion with key stakeholders’ contact persons.

4.1 Jurisdictions’ Regulatory Frameworks

This Section 4.1 briefly describes the Jurisdictions’ overall legislative frameworks for radiation protection, based on a highly abbreviated and simplified listing of key provisions presented in Appendix B of Jurisdictions’ regulatory frameworks.

While details vary considerably, there are overall functional structures that include the following essential regulatory elements held in common by the Jurisdictions:

- A particular principal Act to regulate radiation safety, mostly stand-alone from other acts such as Occupational Health and Safety, Health and Environment Protection Acts;
- A regulatory office or agency (Regulator), having responsibility under the relevant Act, which may be a separate entity or part of another agency such as a Health or Environment Protection agency;
- A technical body, which provides independent expert advice to the responsible Minister or to the Regulator, and which may in some cases exercise functions of the Regulator, such as granting (or refusing) formal approval of applications;
- A structure of regulation through processes for conditionally authorising, licensing, registering (using a range of wording peculiar to each Jurisdiction) people; radiation sources, materials, and devices; practices and activities; and locations, facilities and premises;
- Provision for reporting and investigating events and ameliorating adverse impacts;
- Imposition of conditions, standards and codes that may be (a) specified verbatim or by reference in the legislation, or (b) notified by the Regulator (or technical committee, or by the responsible Minister on their advice); and
- An enforcement regime.

However, legislation varies markedly in style among the Jurisdictions, for example in:

- terminology used,
- accountability structures,
- authorisation requirements, and procedures,
- incorporation (or referencing) of standards and codes,
- obligations “at large” (general duties of care outside the legislated authorisation arrangements),
- recognition of third-party service providers for assessment, testing, compliance certification and related services, and

- its organisation and the location (within the dominant Act, Regulations, authorisation conditions, notices etc) of functionally similar provisions.

In relation to technical requirements, there is largely consistency in the regulatory frameworks on radiation exposure limits.

- While the limits closely follow the NDRP Schedule 1, they are sometimes phrased differently and can differ in detail among some Jurisdictions.
- With other standards and codes there is more variation. There are national and international codes promulgated by IAEA, ICRP, NHMRC and Standards Australia.

Not all Jurisdictions have legislative provisions that directly reference such standards, although they may be imposed through authorisation conditions or other means. At times a Jurisdiction will impose technical requirements that appear to be applicable only to that Jurisdiction. The Consultant has not examined these aspects further.

4.2 Mechanisms for effecting NDRP provisions

This Section 4.2 examines the mechanisms by which Jurisdictions have given effect to, or aligned their regulatory frameworks to the provisions of the NDRP. The analysis has proceeded in two stages of progressive reduction of detail in order to distil the key features:

- Characterisation against each question in the Questionnaire of the alignment between Jurisdictions' regulatory frameworks and NDRP provisions, and
- Extraction of key features of this alignment in this Section.

Appendix C, "Mechanisms for Effecting Alignment with NDRP", was prepared to depict the alignment in a graphical manner for each of the 23 questions in the Questionnaire. This depiction was designed to highlight (a) the patterns of convergence between the regulatory frameworks and the NDRP, and (b) the variability (or uniformity) in the mechanisms employed. In the depiction, alignment for any given item is characterised in terms of the following:

- **Level of alignment mechanism** - the level of the instrument at which the NDRP provision is principally effected (i.e. statute, regulation, authorisation conditions, administrative action or guide); and
- **Application of the mechanism** – the extent (from least to most direct) to which the regulatory framework at that level achieves the NDRP result.

Recognising that "alignment" as used here is an imprecise, somewhat subjective concept, in the Consultant's analysis alignment with NDRP provisions has been assessed as "effective" where alternatively:

- there are explicit corresponding provisions in a Jurisdiction's statute or regulation,
- there are corresponding conditions of authorisation or by regular administrative action,
- even where there are no explicit provisions corresponding to and giving effect to an NDRP provision, there may be other mechanisms in the Regulatory framework by which the NDRP provision is accommodated.

Examples in this last category are:

- Where the objectives in a Jurisdiction’s statute do not mention the environment, but its protection is clearly intended from a reading of the Act;
- Where authorisation is not required (as specified in NDRP) by a Jurisdiction for dentists, as they are explicitly exempted (on conditions);
- Where registration of premises is not considered in a Jurisdiction to be necessary, as the information is covered adequately by the authorisation and registration of the related practices and sources; and
- Where less stringent requirements are specified in NDRP for remote area situations, but those situations do not typically arise apply in a Jurisdiction.

The analysis in Appendix C formed the base for extraction of key features of the alignment as set out in Table 1 to Table 4 as follows:

- Table 1. Summarisation of Mechanisms for Aligning Regulatory Frameworks with NDRP Provisions, with certain particulars noted in:
- Table 2. Conferral of Powers and Functions on the Regulator;
- Table 3. Regulation of practices dealing with sources and materials; and
- Table 4. Grounds for refusing, suspending, varying, cancelling authorisations.

Table 1. Summarisation of Mechanisms for Aligning Regulatory Frameworks with NDRP Provisions

Question	NDRP provisions	Convergence Patterns and Variability Features Noted by the Consultant, based on Table 18
1	Regulatory entity to be independent, accountable to Parliament through the responsible Minister, with administration responsibility for radiation control legislation	All Jurisdictions have provided in their Acts for a person or body to be the Regulator. The Regulator may be the responsible Minister, Department, Head of Department, or expert board.
2	Essential Principles to be included in the legislation	<ul style="list-style-type: none"> • All Jurisdictions have effected in their legislation overall objectives consistent with that specified in NDRP, in five cases using the NDRP wording directly, but sometimes without explicit reference to the environment (2 cases) or non-ionising radiation (1 case). • All Jurisdictions' legislation reflects the principles of justification, limitation and optimisation along the lines of the NDRP provision, using wording similar to NDRP in four cases in their Acts and in one case in the Regulations. In one case the principles are not explicit • Management responsibility obligations for safety, quality risk management, training and expertise are generally imposed or accommodated without using the NDRP wording in five cases by the Regulations, Acts or authorisation conditions. Imposition of such obligations can be accommodated by administrative action by the Regulator in three cases. In one case reference to management responsibility obligations is not explicit. • Technical requirements that ensure control and security, through (a) defence in depth measures to prevent accidents and their consequences and (b) good engineering practice, can be accommodated generally through authorisation conditions, operation of the Regulations and administrative action by the Regulator. In one case reference to principles for setting technical requirements is not explicit. • Verified safety and security obligations can be accommodated generally through authorisation conditions, operation of the Regulations and administrative action by the Regulator. In one case reference to verified safety and security principles is not explicit. • Risk management, including broad science-based socio-economic evaluation / considerations can be accommodated generally through authorisation conditions, operation of the Regulations and administrative action by the Regulator, in one case effected in the Act. In one case reference to risk management principles is not specified. • Intervention actions to avert accidental / abnormal exposures can be required generally through authorisation conditions, operation of the Regulations and administrative action by the Regulator (in three case enabled through explicit statutory provisions).
3	Regulator powers and functions to be conferred	Refer Table 2. Conferral of Powers and Functions on the Regulator
4	Technical advice body to be established	Established in Acts of all Jurisdictions, except one where it can be accommodated in new legislation that has not yet commenced
5	Scope of practices to which the legislation is to apply	Refer Table 3. Regulation of practices dealing with sources and materials

Question	NDRP provisions	Convergence Patterns and Variability Features Noted by the Consultant, based on Table 18
6	Authorisation categories for which provision is to be made to regulate dealings with radiation sources – e.g. by authorisation for possession, use or other dealings	All Jurisdictions’ Acts require authorisation of regulated dealing
7	Authorisation refusal grounds for which provision is to be made	Refer Table 4. Grounds for refusing, suspending, varying, cancelling authorisations
8	Authorisation suspension, variation or cancellation grounds for which provision is to be made	
9	Annual reporting required	NDRP specifies annual reporting content covering <ul style="list-style-type: none"> • activities and operations • authorisations issued summary • incidents investigation summary • prosecutions summary
10	Naturally occurring exposures to be excluded	Effected through provisions in five Jurisdiction’s Acts, can be accommodated in three Jurisdictions, and is being explored in one. NDRP specifies the following exposures to be excluded: <ul style="list-style-type: none"> • K-40 in the body; • cosmic radiation at the surface of the earth; and • unmodified concentrations of radionuclides in most raw materials, unless otherwise specifically identified
11	Exemption provisions to address specified equipment, processes and criteria	Effected in five cases, can be accommodated in one and not specified in two (particularly as such provisions are seen to be unnecessary / impractical of regulation) Equipment, processes and criteria are specified in NDRP for <ul style="list-style-type: none"> • General exemption criteria • Acceptable activity /activity concentration criteria • Exemptions granted by Authority • “Regulatory controls to apply” declaration by Authority • Proportionate stringency of regulatory measures to apply • Exemptions for approved radiation generators and electronic tubes Explicit activity/concentration criteria are specified in Regulations for six Jurisdictions and can be accommodated in three. Otherwise these exemption principles can be accommodated with a mix of legislative provisions and administrative action.

Question	NDRP provisions	Convergence Patterns and Variability Features Noted by the Consultant, based on Table 18								
12	Authorisation to possess required for specific purposes	All Jurisdictions require authorisations to possess radiation sources as specified in their legislation								
13	Practice requirements specified for specified practices	NDRP specifies <ul style="list-style-type: none"> • S 7.1 Requirements for Bore Hole Logging or Well Logging • S 7.2 Requirements for Industrial Radiography Six Jurisdictions' legislation impose the specified requirements, three can accommodate them administratively or through authorisation conditions								
14	Occupation requirements to be mutually recognised	NDRP specifies requirements for <table border="1"> <tr> <td>chiropractors</td> <td>diagnostic radiographers</td> </tr> <tr> <td>dentists</td> <td>radiation therapists</td> </tr> <tr> <td>dental hygienists</td> <td>nuclear medicine technologists</td> </tr> <tr> <td>dental therapists</td> <td>veterinary surgeons</td> </tr> </table> Five Jurisdictions can accommodate the requirements administratively or through authorisation conditions. Four place the requirements in their legislation. Some occupations are exempted subject to qualifications or professional association	chiropractors	diagnostic radiographers	dentists	radiation therapists	dental hygienists	nuclear medicine technologists	dental therapists	veterinary surgeons
chiropractors	diagnostic radiographers									
dentists	radiation therapists									
dental hygienists	nuclear medicine technologists									
dental therapists	veterinary surgeons									
15	Remote health-related diagnostic services to be accommodated in specified situations	NDRP specifies the situations as <ul style="list-style-type: none"> • areas recognised as in need; • efforts made to attract professionals • accredited training • appropriate conditions Fully or partially effected in two Jurisdictions, can be accommodated in five. In two it is not required or not applicable (e.g. on the basis that there are no remote areas in the Jurisdiction)								
16	Registration requirements to be provided for (a) sealed and unsealed and sources and premises, and (b) portable or field use sources and storages.	Effected in all Jurisdictions, except one for which premises are not registered explicitly								
17	Registration criteria Industrial Radiography Sealed Sources and Premises	Variouly effected in legislation or accommodated in authorisation conditions or administratively								
18	ARPANSA codes and standards to be be directly adopted by Authorities	RPS 1 and RPS 2 are variously adopted in legislation or imposed through authorisation conditions in seven Jurisdictions, and can be accommodated in two RPS 3 is generally not specified (except in one case) but can be accommodated in four cases								
19	Framework to be established for incident reporting to ARPANSA	Reporting to ARPANSA can be accommodated generally (legislated in 5 cases, although there appears to be some variation in defining the events to be reported)								
20	Obligations and planning to intervene in Radiological Emergencies and Chronic Exposure Situations	Effected in six Jurisdictions, and accommodated through authorisation conditions in three								

Question	NDRP provisions	Convergence Patterns and Variability Features Noted by the Consultant, based on Table 18
20	Authority to advise hospitals and clinics on recommended patient discharge procedures .	Effected through legislation, authorisation conditions or administrative action in four cases, can be accommodated administratively or through authorisation conditions in four, and is the subject of guidance in one case.
21	Scheduled occupational and public dose limits	All Jurisdictions give effect to the scheduled occupational and public dose limits, two by direct reference to NDRP.
22	Exemption for specified radiation generating apparatus and electron tubes	Seven Jurisdictions legislation effects the following required exemptions, two by direct reference to NDRP. Two effect exemption through administrative action. <ul style="list-style-type: none"> • television receivers • visual display units • cold cathode gas discharge tubes • electron microscopes
23	Ten-yearly legislative review provisions	Five Jurisdictions require review in their legislation (one in the Regulations), while four will accommodate the provisions administratively

Table 2. Conferral of Powers and Functions on the Regulator

Jurisdictions' Acts generally confer the following powers and functions on their Regulators:	
Function	Features noted by the Consultant:
Advising the Minister	Administrative provision in one case
Standards setting	In one case as an authorisation condition making power
Assessing authorisation applications	
Granting authorisations	
Granting exemptions	By Regulations in three cases
Enforcing compliance	
Registering sources	In two cases as general administrative actions
Giving emergency directions	In one case as a general administrative function
Requiring notification of incidents	In one case as an authorisation condition
Annual reporting.	In two cases as an administrative function
Conferral of the remaining powers and functions specified in NDRP can be accommodated as follows	
Function	Features noted by the Consultant:
Ensuring inspections	General function, able to be accommodated in two cases
Requiring assessments	Effected in four cases, able to be accommodated in four, and not specified in one case
Accrediting persons	Effected in five cases, accommodated in two, and not yet accommodated in two
Controlling non-ionizing apparatus	Able to be accommodated in six cases, effected in two and not yet provided for in one.
Investigating incidents	Generally accommodated, with specific references in two Acts,
Promoting or conducting studies and research	Generally not prevented, but an explicit function in three cases

Table 3. Regulation of practices dealing with sources and materials

NDRP identifies the following practices that are variously covered by the Jurisdictions, if not explicitly in legislation, by conditions of practice authorisations.	
Practice	Features noted by the Consultant:
sources;manufacturing / possession	
use of materials	Covered by the Jurisdictions
sale or transfer of responsibility	
transport	
nuclear installations, and radiation facilities	
natural source exposures	Can be accommodated variously, but not specified in one case
exploration, mining &c	Accommodated variously, but not always distinguished. One Jurisdiction's legislation excludes coverage of Uranium ores and oxide
waste management & disposal	Variously accommodated or effected, in one case by administrative action
non-ionizing apparatus	Can be accommodated, although not yet provided for in two cases
other practices.	Variously accommodated (where applicable)

Table 4. Grounds for refusing, suspending, varying, cancelling authorisations

Authorisation decision	Grounds	
Authorisation refusal	NDRP specifies the grounds for refusal:	
	Grounds	Features noted by the Consultant:
	applicant not a fit and proper person;	Provided by all Jurisdictions
	necessary in the interests of public health and safety proposed radiation use inappropriate or unjustified.	Provided by six Jurisdictions, and can be accommodated in three
Authorisation suspension, variation, cancellation	Grounds in NDRP	Features noted by the Consultant
	authorisation obtained improperly;	All Jurisdictions provide for or can accommodate under their Acts suspending, varying or cancelling authorisations
	contravention of conditions;	
	conviction of offence against legislation,	
	people health and safety or environment risk	Effected in four cases, accommodated in three, not specified in two
	security access risk	Effected in three cases, accommodated in four, not specified in two
	cessation of qualifications	Effected in five cases, accommodated in four
	consistently compromised safety	Effected in three cases, accommodated in two, not specified in four
	cessation of working in the capacity	Effected in two cases, accommodated in five, not specified in one

4.3 Jurisdictions' Regulatory Operations

The Questionnaire and Jurisdictions' responses focused on the NDRP and Jurisdiction's legislative provisions. This did not yield a clear picture of the regulatory regime operations in practice. Accordingly, the Jurisdictions were invited to supply details of a typical regulatory operation.

The typical operation specified was the approval process for a medium size suburban medical diagnostic x-ray practice. Jurisdictions were asked to return copies of completed application forms, with supporting documents, the internal assessment and the issued licences. Confidential information could be deleted. Where the specific example was not considered to be typical, some Jurisdictions provided different examples.

Appendix D, "Understanding Jurisdictions' Regulatory Operations" summarises the key features of the processes. Broadly, Jurisdictions require authorisations to possess and use, and registrations (sources and premises).

- Jurisdictions had manual application forms, often available from the net, mostly with guidance information available.
- There were no facilities for electronic lodgement. The forms are not designed for ready computer input. Every state and territory form examined was hand completed and differently formatted.
- Most Jurisdictions have processing checklists, which aid quality and consistency checking.

- The approval document, a registration or a licence, can be from a single sheet to an eleven-page document.
- Approval time can be adequately short, i.e. well under a month.
- The wording for identical matters varies widely among the Jurisdictions. A new learning exercise is required for each Jurisdiction encountered.
- There is no portability indicated in the approvals.

4.4 Other issues

Beyond the matters addressed earlier in Section 4, in responding to the Consultant's general queries and discussion, Jurisdictions' contact person comments mostly concerned NDRP process issues. This Section 4.4 outlines key matters discussed.

Jurisdictions' contact persons expressed commitment to achieving national uniformity in radiation protection.

- Concern was expressed repeatedly along the lines that Edition 1, while representing a sound "starting point" had shortfalls. These included:
 - insufficient content,
 - NDRP not easily interpreted for legislative drafting and ready incorporation into legislation, and
 - NDRP process "stalled", slow and cumbersome.
- This combined with a perceived lack of clarity as to a shared vision for NDRP and uncertainty about who its market is (noting misinterpretations by industry clients).
- It appears that Jurisdictions were in part "waiting" for the NDRP process to determine their strategic directions, thereby creating uncertainty or lack of direction in their own programs (Jurisdictions did not submit local proposals and timelines, in response to the Questionnaire).

Such features were seen to be significant barriers to coordinated Jurisdictional progress, and matters on which Jurisdictions were unable to suggest timelines for resolution.

While, industry clients and users, and the public, are generally consulted on proposed regulatory changes, where this was described, the approach appeared to be "incremental". Little indication was given of consultation at a strategic or policy level, or of analysis of client/user characteristics, segmentation, interests, capabilities, preferences and satisfactions.

Jurisdictions' officers noted also that the NDRP was originally envisaged as a dynamic resource, and cited the staging of editions as a barrier to progressing their programs.

Where Jurisdictions may be changing, it appears that they may be doing so noticeably outside the coordinated, formal NDRP processes – e.g. in regulating solariums.

Reference was made to model legislation as an alternative regulatory approach, noting that:

- the NDRP process had been selected as a fall-back following failure to agree to such a regulatory alternative, and
- as circumstances have changed it may be timely for this or other regulatory approaches to be re-considered.

A barrier mentioned by smaller Jurisdictions was a lack of resources for supporting development. No proposals were offered.

Other comments concerned adequacy of NDRP content. For example:

- Mutual recognition was cited as a particular concern for Regulators. In one case comment was made about applicants who had failed a competency examination having their qualifications recognised interstate against different criteria.
- Cross-border dealings and multi-jurisdictional practices were cited as increasing issues for clients / users.
- Reference was made to a lack of process for coordinating the transition to new codes (or grandfathering old codes).

Some interest was expressed in the concept of comprehensive development nationally of all technical standards and codes in stand-alone documents that are outside the NDRP (and Jurisdictions' legislation). Features would include:

- removal progressively from the NDRP (and from Jurisdictions' legislation), of provisions reciting technical requirements (and inclusion of technical requirements only by reference to accepted national or international standards or codes),
- standards development efforts to focus on necessary national deviations from accepted international standards,
- national standards prepared in accordance with accepted standards development processes that ensure integrity and opportunity for input by relevant interests, and
- ARPANSA or another agreed agency to be the national standards development body for the radiation protection field, responsible for the integrity and management of standards development processes.

5. Key Findings

The key findings from this review are summarized in this Section and focus on:

- the effective alignment between Jurisdictions' regulatory frameworks and NDRP provisions,
- the variability in implementation of the NDRP provisions, and
- other issues identified.

Broadly the Consultant has found:

1. The Jurisdictions' regulatory frameworks for radiation protection are, with exceptions, well aligned in giving essential effect to the NDRP provisions.
2. The exceptions to alignment and the variability of Jurisdictions' implementation detract from achievement of the national uniformity that was intended for the NDRP.

3. Key stakeholders officers have expressed concerns regarding the NDRP content and processes

The Consultant considers that, if the NDRP process is to progress and be successful in terms of its national uniformity objectives, it will be appropriate to review it in the light of these findings, addressing in an agreed, managed and coordinated manner:

- eliminating the alignment gaps, and
- reducing the variability of implementation, as well as
- the ongoing development and management (presumably by RHC continuing its current arrangements) of the NDRP content and processes.

5.1 Alignment and variability issues

In response to or in conjunction with the NDRP program, all Jurisdictions either:

- replaced their earlier Radiation Protection Acts (three enacted new Acts around the time that the NDRP (Ed.1) was under development and four have enacted new Acts since , with one awaiting commencement), or
- while retaining their pre-NDRP Acts, have re-made or significantly amended the Regulations under their Radiation Protection Acts (two Jurisdictions).

Overall, there is a clear pattern of:

- **effective alignment** of Jurisdictions' regulatory frameworks to the provisions of the NDRP, and
- **high variability** in the manner that NDRP provisions are effected in Jurisdictions' regulatory frameworks.

Table 5 highlights overall features in this pattern of alignment, while noting broadly exceptions and variability in implementation. In this regard:

Jurisdictions vary considerably in the extent of articulating key principles for:

- Justification, limitation and optimisation
- Management responsibility
- Reference to good engineering practice
- Verified safety and security, risk management and intervention obligations

Explicit grounds for refusing, suspending, varying, cancelling authorisations vary, with the certain grounds not universally provided, e.g. where there is:

- Consistently compromised safety,
- Cessation of working in the authorised capacity
- Access security risk
- People health and safety or environment risk

Conferral on Regulators of some powers and functions is not always explicit, e.g: powers for:

- Ensuring inspections
- Requiring assessments
- Investigating incidents
- Promoting or conducting studies and research

Regulatory frameworks accommodate in varying ways dealings with:

- natural source exposures
- waste management & disposal

- nuclear installations, and radiation facilities
- Pending further NDRP development:
- Not all regulatory frameworks provide for third-party service providers for provision of assessment, testing, compliance certification and related services accreditation of
 - Exploration and mining related practices are not always distinguished (or Uranium ores and oxide are excluded in one Jurisdiction's legislation)
 - Regulation of non-ionizing apparatus can be accommodated, although not yet implemented in two cases

One Jurisdiction has not yet commenced its new legislation, nor indicated in its current draft papers a definite intention to establish an expert Advisory Council (or similar)

Table 5. Highlights and exceptions noted in the alignment between Jurisdictions' regulatory frameworks and NDRP provisions

Alignment generally:	In the areas of:	With exceptions:
All Jurisdictions generally give effect to or accommodate NDRP requirements (although mechanisms vary considerably) for	Establishing their regulatory entities	
	Establishing technical advisory bodies	Still under consideration in one Jurisdiction where new legislation that will accommodate this function is awaiting commencement
	Conferring critical powers and functions	Refer Table 2. Conferral of Powers and Functions on the Regulator
	Regulating practices of dealing with sources and materials, including sale or transfer of responsibility and transport	Refer Table 3. Regulation of practices dealing with sources and materials
	Authorising possession use and other dealings for specified purposes, particular practices, and identified (mutually recognised) occupations.	Authorisation criteria (including grounds for refusal &c.) vary among the Jurisdictions as do occupation requirements Refer Table 4. Grounds for refusing, suspending, varying, cancelling authorisations
	Registering sources and premises (and portable or field use sources and storages)	one Jurisdiction, it is noted, accommodates premises through registration of sources
	Limiting occupational and public dose exposures	
All Jurisdictions indicate	Consistent overall objectives	
Jurisdictions show considerable variation in the extent to which they articulate principles for	Justification, limitation and optimisation	With some aspects not always explicit
	Management responsibility	
Jurisdictions generally accommodate	Verified safety and security, risk management and intervention obligations	
	Annual reporting	One Jurisdiction still considering Content requirements and tabling in Parliament are largely not specified
	Incident reporting to ARPANSA	With these aspects not always explicit
	Requirements concerning obligations and planning for intervention in radiological emergencies and chronic exposure situations	
Jurisdictions have variously drawn on national standards and codes of practice.	Advising hospitals and clinics on patient discharge procedures	
	ARPANSA codes RPS 1 and RPS 2	variously adopted by seven Jurisdictions (and can be accommodated by two) in their legislation or imposed through authorisation conditions
	ARPANSA code RPS 3	while generally not specified, can be accommodated in four cases.

Within Jurisdictions' broadly consistent regulatory approaches, the high levels of variation detract in the Consultant's view from the objective of national uniformity that the NDRP process was intended to achieve.

- While the NDRP does not generally require Jurisdictions to make direct reference in their legislation to the Directory, some do, and if done more widely, it would aid national uniformity. Stakeholders have commented that the NDRP (Edition 1) does not have sufficient "legislative compatibility" to be used in that way.
- Accountability structures vary. For example, the Regulator role may be assigned to the responsible Minister, a Government office, or a technical advisory body or Council established to provide expert advice to government on radiation protection matters. Obligations (and corresponding offences) are framed differently, whether in the form of obligations at large (general duties of care) or attached to requirements for authorisations or registrations.
- There are different terminologies and definitions employed, e.g. in relation to (a) practices, sources, materials, apparatus, equipment, facilities, premises, (b) authorised persons and regulatory processes, (c) incidents, accidents and events and reporting / investigation responsibilities.
- There is variation in most aspects of Jurisdictions' legislation. For example:
 - Conditions of authorisations, the way they are presented to authorised persons, the term of authorisation, and application procedures vary
 - Detailing of technical requirements vary
 - Emergency or contingency powers, such as Regulators' direction powers vary

5.2 Other Findings

The findings in this section 5.2 relate principally to issues arising in discussion with Jurisdiction' contact persons, which were outside the scope of the Questionnaire. In these discussions, Jurisdictions:

- highlighted as barriers, NDRP processes that are outside their power individually to improve by local action, and
- did not, or could not therefore, indicate clear proposals or timelines for further progress.

The discussions were more wide-ranging and less structured than the analysis and findings concerning alignment and variability (refer Section 5.1). The discussions canvassed, in summary:

- the importance of and Jurisdictions' commitment to national uniformity and the role of the NDRP,
- the NDRP process' strategic directions, effectiveness and efficiency, management, and alternative regulatory approaches,
- Jurisdictions' resourcing for development (particularly for smaller Jurisdictions) and the possibility of establishing shared services,
- mutual recognition protocols and "cross-border" dealings,
- specification of technical requirements separately from regulatory processes in both the NDRP and Jurisdictions' legislation, and
- "legislative compatibility" of the NDRP and the proposal for greater legal input into its regulatory process content.

The Consultant sees the NDRP as largely “accommodative” of the variable Jurisdictional implementations. Further, in its Edition 1 version, it has not been seen by Jurisdictions as a sufficient resource for Jurisdictions wanting to update their legislation for example in areas of:

- quality management responsibilities,
- performance based regulation and risk management, and
- 3rd party accreditation and outsourcing.

The Consultant recognises that findings based on unstructured discussion should be validated before they can be properly accepted. One contact expressed contrary general views (which also merit validation) along lines that:

- separation of technical requirements development and regulatory process development would not save time (or effort),
- strengthening NDRP process management would merely impose another layer of bureaucracy, and
- greater legal input to NDRP development was not seen as particularly useful.

While the Consultant agrees that it is appropriate to manage such risks, they are not necessary outcomes of a soundly and transparently managed program with target timelines and task allocation, in which different competences and resources (e.g. legal, technical, IT) are efficiently deployed.

The Consultant understands generally now that a number of the matters covered in these other findings are being progressed by the RHC in its post-Edition 1 programs. It was emphasised to the Consultant that such programs are outside the scope of this review to examine further.

Without the benefit of further investigation, therefore, the identification of these issues indicates that there is merit in (re-) examining prospects within the current regulatory approach for the following:

- Strengthening governance of the NDRP process, including:
 - Review and clarification of its purposes and market;
 - Active engagement of industry interests in the NDRP strategy;
 - Clearer decision making, priorities and accountability; and
 - Transparent planning, milestones and timelines;
- Establishing technical standards and codes development on a sound best-practice basis, decoupled from the detail of the NDRP (and Jurisdictions’ legislation);
- Improving legislative compatibility of the NDRP by utilising appropriate legal skills in its development; and
- Establishing shared services for example to modernise and support regulatory operations.

Abbreviations

ACT	The Australian Capital Territory Jurisdiction
AHMC	Australian Health Ministers' Conference
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
C&APL	The Consultant, Couch & Associates Pty Ltd
Cth	The Commonwealth of Australia Jurisdiction
(Edition 1)	Edition 1 of the NDRP
NCPR	National Competition Policy Review of Radiation Protection Legislation (Ref. 3)
NDRP	National Directory for Radiation Protection (referring to the concept, the development process, or Edition 1 (Ref. 2))
NSW	New South Wales Jurisdiction
NT	Northern Territory Jurisdiction
Qld	Queensland Jurisdiction
RHC	Radiation Health Committee
RHSAC	Radiation Health and Safety Advisory Council
Ref.	Reference – accompanying numbers refer to details given in the report footnotes
RIS	Regulatory impact Statement (Ref. 4)
SA	South Australia Jurisdiction
Tas	Tasmania Jurisdiction
Vic	Victoria Jurisdiction
WA	Western Australia Jurisdiction

Appendix A. Development of the NDRP

This Appendix summarises key points relevant to this review leading to AHMC agreement on the NDRP process.

The NDRP process agreement addressed:

- adoption of a “non-legislative” approach for the short to medium term (the RIS did not explore other regulatory options), with adoption of uniform national regulatory controls (for example, through mirror legislation) to be considered following completion of the initial draft of the National Directory, and in light of the recommendations of the planned national competition policy review of radiation protection, and
- development of the NDRP for national guidance:
 - as a dynamic document (Edition 1 is not fully comprehensive) to detail agreed principles, policies and practices for radiation protection and the safety of radioactive sources,
 - with development and management by RHC using an approved process for issue resolution, and with changes to be approved by AHMC,
 - to be used by all Jurisdictions to make changes as soon as possible to existing legislative frameworks to achieve a higher degree of national uniformity.

Jurisdictions were to:

- include nationally consistent legislation to protect people from the harmful effects of non-ionising radiation,
- retain the regulatory approach to achieve radiation protection objectives,
- identify and minimise duplication and discrepancies between radiation protection legislation and other related legislation, standards or codes of practice,
- legislate to review their radiation protection legislation at intervals of no more than 10 years,
- conduct a review of the NDRP effectiveness and efficiency within three years of its commencement,
- agree on systems for classifying radiation incidents, accidents or emergencies and for collecting, collating, registering and publishing information, and
- retain the current systems of licensing and registration of operators, radiation equipment and radioactive substances.

It was envisaged that the NDRP would

- incorporate nationally:
 - risk management principles,
 - performance-based approaches,
 - quality and process standards,
 - protocols on outsourcing and accreditation processes and guidelines, and
 - protocols for mutual recognition in granting licences and registrations while retaining the current prescriptive approach, and
- take account of existing standards and adopt internationally consistent standards and codes of practice.

Appendix B. Jurisdictions’ Regulatory Strategies

This Appendix summarises key parameters of Jurisdictions’ regulatory frameworks, covering the following in a series of Tables:

- For the principal radiation safety control Acts:
 - key terms used in the Acts,
 - key statutory obligations “at large” (as in general duties of care that are imposed outside the authorisation / registration &c. frameworks),
 - authorisations required under the Acts,
 - standards and Codes called up in the Acts,
 - statutory powers relating to emergencies and contingencies, and
 - regulation making powers.
- Key contents of general Regulations made under the principal Acts.
- Summary of dose limits.
- Persons who may be authorised &c. – whether natural or corporate.

The headings under which summary information is grouped in this Appendix are listed in Table 6. The summary information is presented under the headings listed in Table 6 and set out in Table 7 to Table 16

Table 6. Jurisdictions Regulatory Frameworks - Headings used for presenting summary information

<p>Table 7. The Acts – Scope & Key Responsibilities</p> <ul style="list-style-type: none"> • Act • Explicit relationship to NDRP • Scope Note • Accountability • Regulatory agency • Technical Advisory Bodies 	<p>Table 12. Emergencies & contingency, statutory powers</p>
<p>Table 8. Key Statutory Terminology</p> <ul style="list-style-type: none"> • Radiation categories (ionising / non-ionising) • Sources and materials, devices • Facilities / places • Responsible Persons • Incidents 	<p>Table 13. Regulation making power</p>
<p>Table 9. Key Statutory Obligations at large</p> <ul style="list-style-type: none"> • Prohibitions • Duties • Other substantive offences 	<p>Table 14. Regulations key contents</p> <ul style="list-style-type: none"> • Conditions, restrictions, on licenses &c • Accreditation scheme • Practices • Exposure limits • Exemptions • Prohibitions • Incidents • Standards &c
<p>Table 10. Statutory Authorisation &c Arrangements</p> <ul style="list-style-type: none"> • Authorisation of dealings • Registration of places, sources • Accreditation • Term • Key conditions 	<p>Table 15. Summary of Dose Limits</p> <ul style="list-style-type: none"> • Effective Dose <ul style="list-style-type: none"> ○ Effective Dose, Average ○ Effective Dose ○ Single year • Annual Equivalent Dose <ul style="list-style-type: none"> ○ Annual equivalent dose: ○ Lens of eye ○ Skin ○ Hands and feet
<p>Table 11. Standards &c in Statute</p>	<p>Table 16. Authorisations /Licences / Registrations – Responsible Persons</p> <ul style="list-style-type: none"> ○ Corporations ○ Natural Persons

Appendix H gives further notes on the methods used in preparing the tables presented here, noting certain limitations and cautioning against drawing invalid conclusions concerning individual Jurisdiction's regulatory frameworks. In particular, the analysis is not intended to support any conclusions as to comparison between Jurisdictions' regulatory frameworks or as to their regulatory adequacy.

Following initial preparation of the Tables, Jurisdictions were invited on two occasions to supplement the information to correct misinterpretations or errors. Amendments received from Jurisdictions were incorporated as appropriate. The changes were typically elaborations of detail, or notes explaining related matters covered elsewhere to the principal radiation protection statute and regulations. The analytical method is not presented as final or optimal. Rather, it serves to demonstrate the key findings of this report as to the high level of variability among the Jurisdictions' regulatory systems. This variability dominates in the language used, framing of obligations, standards, offences and conditions, and features of authorisation and registration schemes.

The information presented for the Northern Territory relates to the Radiation Protection Act, which is expected to commence this year.

Table 7. The Acts – Scope & Key Responsibilities

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Acts	Radiation Protection Act 2006	Australian Radiation Protection and Nuclear Safety Act 1998	Radiation Control Act 1990	Radiation Protection Act 2004 (not yet commenced) to replace Radiation (Safety Control) Act 1999 or 1980	Radiation Safety Act 1999	Radiation Protection and Control Act 1982	Radiation Act 2005	Radiation Protection Act 2005	Radiation Safety Act 1975
Explicit relationship to NDRP	Act makes direct reference to NDRP as the national standard.		Act provides for adoption by gazetted notice of documents forming part of the NDRP			For mining and milling of radioactive ores, ionising radiation exposure limits not to be more than the most stringent, or less than the least stringent of the limits under Commonwealth laws, the NHMRC, ICRP or IAEA	Defines NDRP Secretary to have regard to NDRP	(Defines NDRP in Regs)	

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Scope Note	National standards for regulating non-ionising radiation have not been finalised, and have not been included. The Act provides for future addition of non-ionising radiation sources to the scheme.	Regulates <ul style="list-style-type: none"> (but cannot authorise) operation of certain nuclear installations management of radiation sources, - undertaken by Commonwealth entities (and contractors). Powers exercised in accordance with international Agreements Act not to prejudice Australia's defence or national security	Does not apply to radioactive ore being mined or treated.	No application to material whose radioactivity does not exceed prescribed maximums Does not regulate uranium ore / oxide mining and handling where regulated elsewhere		Radiation protection principles do not include environment	Radiation facilities exclude a nuclear reactor, mill or other facility prohibited from construction under the Nuclear Activities (Prohibitions) Act 1983;		Radioactive substances Irradiating apparatus Prescribed electronic products
Accountability	The Minister	The Minister	The Minister		The Minister	The Minister	The Minister	The Minister	The Minister
Regulatory agency	The Radiation Council (shared with the Health Department [ACT Health])	CEO of ARPANSA	Environment Protection Authority	Chief Health Officer	Chief Executive (role assigned by Gazettal to Director-General of Queensland Department of Health)	The Department	The Secretary	Director of Public Health	Radiological Council
Technical Advisory Bodies	The Radiation Council	Radiation Health and Safety Advisory Council Radiation Health Committee Nuclear Safety Committee	Radiation Advisory Council	No advisory body (at this time)	Radiation Advisory Council	Radiation Protection Committee	Radiation Advisory Committee	Radiation Advisory Council advise Director and Minister	Radiological Council

Table 8. Key Statutory Terminology

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Radiation categories (ionising / non-ionising)	Defined	Defined	Defined	Defined	Defined	Defined	Defined	Defined	Not defined (defined in the Regulations)
Sources and materials, devices	radiation source radiation apparatus radioactive material regulated radiation source - The regulation specifies the level of ionising radiation emissions at which a radioactive material or apparatus will be regulated, based on the levels set out in NDRP. Prohibited radiation sources - defined by regulation for which there is no legitimate use, such as weapons grade plutonium.	Controlled apparatus Controlled material Controlled material	Radioactive substance Sealed radioactive sources & sealed source devices Radiation apparatus	Radiation source Radioactive material Radiation Apparatus	Radiation sources Radioactive substances Radiation apparatus Radioactive materials Sealed radioactive substances Sealed source apparatus	Radioactive substances Radiation apparatus <ul style="list-style-type: none"> • Ionising • Non-ionising Sealed radioactive source Unsealed radioactive substance	Radiation sources defined to be either - radioactive material or a - Radiation apparatus (Ionising or Non-ionising)	Radiation sources <ul style="list-style-type: none"> o Radioactive material, incl. sealed sources o Radiation apparatus 	Irradiating apparatus Radioactive substance Electronic products
Facilities / places	radiation facility	Controlled facility Prescribed radiation facility Nuclear installation	Premises on which a radioactive substance that is not contained in a sealed source device is kept	Radiation place	Premises at which radiation sources are used and radioactive substances are stored,	Premises where unsealed radioactive substances are handled or kept	Act requires a management licence to be held by any person conducting a radiation practice and in the case of a radiation facility (a facility construction licence). These licences authorise practices to occur at one or more sites.	Places where radiation sources are usually or primarily used or stored	Premises <ul style="list-style-type: none"> • for manufacturing using or storing radioactive substances, • for using or operating irradiating apparatus or electronic products • likely to be affected by waste from, or use of, any radioactive substance, irradiating apparatus or electronic

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
									products <ul style="list-style-type: none"> owner of any irradiating apparatus or electronic product operates or uses, stores, possesses, sells, or otherwise deals with those premises or that apparatus or product
Responsible Persons (persons having responsibility under licences &c)	Licensee Registered owner of a regulated radiation source	Controlled persons Person covered by a licence	Owners - of sealed source devices and prescribed apparatus Occupier of premises on which radioactive substances not contained in a sealed source device are kept or used Accredited radiation experts (others specified in Regs)	Licensees Owners of radiation sources Occupiers of places where radiation sources are used or stored Holders of certificates of accreditation authorising work on radiation sources	Persons who <ul style="list-style-type: none"> carry out radiation practices possess radiation sources for radiation practices Possession licensees Individuals in relation to <ul style="list-style-type: none"> use of radiation sources and carrying out radiation practices 	Owners of <ul style="list-style-type: none"> radioactive sources radiation apparatus Natural persons using or handling radioactive substances, or operating radiation apparatus,	Term is not used in the Act but the obligations to hold a licence are either on the person using the radiation source or the person conducting the radiation practice (e.g. possessing the radiation source).	Holders of licence (to use, manufacture, sell, acquire, possess, store, transport, install, service, repair, dispose of or otherwise deal with a radiation source) Occupiers of places Person or Body Corporate, Partnership	Holders of licences <ul style="list-style-type: none"> for occupational & other purposes authorised to manufacture, store, transport, sell, possess, install, service, maintain, repair, or otherwise deal with radioactive substances, irradiating apparatus or electronic products Person under supervision of licence holder Owners of irradiating apparatus or electronic products Owners of premises

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Incidents	Radiation incident - an incident or event that results, or may result, in a risk of serious harm to the health or safety of people, or substantial damage to property or the environment, from the emission of radiation from a radiation source.	Licence holder to prevent, control & minimize accidents	Special inquiry powers Decontamination and acquisition of premises Directions powers for dealing with dangerous situations (other provisions in Regs)	Dangerous event Authorised officers powers, directions	Radiation incident Dangerous event Remediation procedures	Dangerous situation Notification of accidents	Radiation emergencies Radiation event Direct decontamination Dispose of radiation source Give directions	Dangerous event Radiation incident Remediate procedure	Accidents Occurrence of dangerous incidents

Table 9. Key Statutory Obligations at large

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Prohibitions (other than unlicensed / unauthorised &c. dealing)	Dealing with prohibited (by regulation) radiation sources	Construction, operation etc. of nuclear installations or prescribed radiation facilities		Possession, use or supply of prescribed banned radiation sources	Possession, use or supply of prescribed banned radiation sources	Operations for enrichment or conversion of uranium pending proper controls		Dealing with banned sources	Governor may regulate to prohibit or restrict situations <ul style="list-style-type: none"> • of likely, exceptional grave danger, • requiring evaluation or special procedures or precautions
Duties (outside duties under licences &c)	To ... ensure a regulated radiation source causes no harm to people and environment. To ensure no-one is exposed to radiation exceeding dose limits (prescribed to align the NDRP). To ensure diagnostic and therapeutic procedure patients' radiation is not excessive.		Employer responsibility for actions of employees (other duties in Regs) Directors responsibility for contraventions by a corporation	To take all reasonable and practicable measures to ensure dealings do not result in harm to health or safety of persons or environment from a radiation source.				To ... ensure dealings do not result in harm to health or safety of persons or environment from radiation sources To ensure workplace exposures to radon-222 do not exceed prescribed dose limits	Person who purchases from outside the State radioactive substances, irradiating apparatus or electronic products intended for use in the State, to notify the Council and apply for registration or exemption
Other substantive offences (outside breach of licence &c)	To abandon a radiation source. To fail to take all reasonable steps to comply with a requirement made by the Chief Executive under an emergency order.		To sell or give away any of the following except to a person who is licensed to possess use or sell: <ul style="list-style-type: none"> • radioactive substances, • ionising radiation apparatus, 		Supply of a radiation source to a person not a possession licensee approved for the source Unlicensed disposal of radioactive material		To abandon radiation source To knowingly, recklessly or negligently cause exposure greater than prescribed To cause serious harm to the environment To tamper with authorised officers' radiation source	To cause radiation exposure higher than prescribed dose limits.	Persons who sell radioactive substances, irradiating apparatus or electronic products that require registration failing to require evidence of purchasers' licence (or exemption), and

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
			<ul style="list-style-type: none"> prescribed non-ionising radiation apparatus (general offences by employees, employers, corporations)				seals False representation of licence holding		failing to notify Council Other offences relating to processes under the Act.

Table 10. Statutory Authorisation &c Arrangements

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Authorisation of dealings	<p>Licences for dealing with regulated radiation sources including</p> <ul style="list-style-type: none"> • manufacturing, • possessing, • supplying to another, • using, • disposing of, and • for radioactive material, storing, packing and transporting. 	<p>Source licences for controlled persons dealing with controlled apparatus or material covering possession or control, use or operation, disposal, also in course of manufacture, possession for use, and handling / manipulating (including indirectly or remotely)</p>	<p>Licences to possess (including give away), use, sell:</p> <ul style="list-style-type: none"> • radioactive substances, • ionising radiation apparatus, • prescribed non-ionising radiation apparatus 	<p>Licences to possess, use or otherwise deal with radiation sources authorising holders to manufacture, sell, acquire, possess, use, store, transport, dispose of or otherwise deal with a radiation source;</p>	<p>Possession licences Use licences Transport licences Approval to dispose of radioactive material</p>	<p>Licence to mine or mill radioactive ores Licence to use / handle radioactive substance Licence to operate radiation apparatus</p>	<ul style="list-style-type: none"> • Facility construction licences • Management licences • Use licences • Management license <p>for conducting radiation practices (which exclude using radiation sources) covering, unless otherwise prescribed:</p> <ul style="list-style-type: none"> • in relation to radiation sources - possessing, selling, repairing, maintaining, testing (without using), disposing of, and activity that may result in exposure • transporting, mining, processing of radioactive material • decommissioning a radiation facility • research involving irradiation of persons; 	<p>Licence to deal with (including using, manufacturing, selling, acquiring, possessing, storing, transporting, installing, servicing, repairing, disposing of) a radiation source</p>	<p>Licences (for specific occupations and other purposes) to operate, use manufacture, store, transport, sell, possess, install, service, maintain, repair or otherwise deals with non-exempt radioactive substances, irradiating apparatus or electronic products Disposal permits Temporary permits Registration of premises and non-exempt radioactive source, irradiating apparatus or electronic product.</p>

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Registration of places, sources &c	Registration of regulated radiation sources.	Facility licences for a controlled person preparing sites for, constructing, possessing or controlling, operating, decommissioning, disposing of or abandoning for a controlled facility;	Registration by owner of <ul style="list-style-type: none"> • sealed source devices, • prescribed radiation apparatus Registration by occupier of premises where radioactive substances (not in sealed source devices) are kept	Registration of sources Registration of radiation source places	Prescribed radiation practice Registration of seen as implicit in approvals to acquire, relocate &c.	Registration of premises with unsealed radioactive substances Registration of radioactive sources Registration of radiation apparatus	Registration of Radiation facility Management licence encompasses concept of registration of places	Registration by occupier of place where radiation sources are used &c. or stored Sources registered	Registration of premises Registration of non-exempt radioactive substances, irradiating apparatus or electronic products
Accreditation scheme			Consulting radiation experts to be accredited by the Authority and comply with any conditions	Accreditation to work on radiation sources Accreditation to test or certify for compliance	Accreditation to issue certificate of compliance		Tester's approvals (to issue certificates of compliance)	Accreditation to test for compliance Accreditation to issue certificate of compliance	Qualified Experts approved by Council to issue compliance certification (dealt with under the Regulations)
Term	3 years max	Until cancelled	Authority to specify (in practice 1 to 5 years)	3 years max for licences and certificates of accreditation	3 years for licences . 1 to 5 years for accreditation	3 year max (regs)	3 year max (regs)	Up to 2 years licence registration continues 3 years max accredited tester (regs)t	3 year max (regs)

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Key conditions	Prescribed by regulations or imposed by the Radiation Council	Set by Regulations or CEO	Imposed by the Authority Statutory duties <ul style="list-style-type: none"> • prescribed dose limits • diagnostic or therapeutic procedures (Radiation Guideline 6) • notification of dangerous events 	Imposed by Chief Health Officer Statutory duties <ul style="list-style-type: none"> • prescribed dose limits • diagnostic or therapeutic procedures • notification of dangerous events 	Statutory conditions <ul style="list-style-type: none"> • Prescribed radiation dose limits • compliance with standards • Certified of Compliance • Acquisition, supply and relocation of radiation sources • Disposal of radioactive material and apparatus • Approved & implemented radiation safety and protection plans • Radiation safety officers • Radiation monitoring for possession and use • Diagnostic or therapeutic procedures • Protection of health and safety 	Minister may attach conditions Registered owner of radiation apparatus not to permit unlicensed (if required) operation	Secretary may impose conditions, including standards &c Statutory conditions <ul style="list-style-type: none"> • prescribed radiation doses • notifications • abandonment • serious environment harm • safety standards • certificates of compliance • not allowing unlicensed (or suspended) person to use a radiation source 	Director may impose conditions <ul style="list-style-type: none"> • code of practice compliance • radiation monitoring • testing of the radiation source, or inspection of the radiation place; • radiation protection measures under approved radiation management plans (for a licence to possess) 	Council may impose conditions, restrictions, limitations

Table 11. Standards &c in Statute

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
	Nationally agreed codes of practice and standards set by the ARPANSA as approved codes to be considered in determining whether a safety duty has been complied with.	Regulation power	Regulation power Adoption by gazettal notice of documents forming part of the NDRP	Chief Health Officer may approve Codes of Practice	Minister may establish standards Standard must expire within 10 years (as stated in standard) Qld developed standards	Regulations may specify standards Standards specified in Act only for mining	In regs	Director may approve a code, standard, rule Non compliance with approved code etc not a breach	Have regard to <ul style="list-style-type: none"> • ICRP • UNECD • NHMRC • RHC • Others' accepted by Council, or adopted by Regs.

Table 12. Emergencies & contingency, statutory powers

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
	Council can direct authorised persons in relation to <ul style="list-style-type: none"> • dealing with abandoned radiation sources • taking possession of prohibited radiation source Minister can issue an emergency order <ul style="list-style-type: none"> • to prevent or minimise risk of serious harm to health and safety of people, property or environment, arising from radiation incident, • Chief Executive can specify requirements. 	CEO can take the steps specified in a notice of direction which a controlled person fails to take Inspectors' powers in relation to dealing with hazardous situations and offences	Powers of the Authority to deal with dangerous situations - actual or threatened exposure to an excessive level of radiation or contamination (Powers of authorized officers, in other legislation)	Authorised officers powers	Inspectors Emergency powers to direct, take control or seize	Dangerous situation Minister or authorised officer may give directions	Secretary gives powers to authorised officers Power to give directions	Notification of dangerous event required No specific power but Director to do all things necessary and convenient	Executive Director if life or health endangered may take action or cause action to take place. Note: not Council in this provision Authorised officer may seize and detain if danger to life or health

Table 13. Regulation making power

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
	<p>Regulations may</p> <ul style="list-style-type: none"> • permit exemptions on conditions from the Act. • impose conditions to licensing and registration regimes • impose conditions, restrictions, on radiation licenses and registration of regulated radiation sources to protect the public or the public interest. 	<p>Standards, practices, procedures, measures</p> <p>Controlled persons in relation to activities relating to controlled facilities, and in relation to dealings with controlled apparatus or controlled material;</p> <p>Record keeping by controlled persons</p> <p>Committees</p>	<ul style="list-style-type: none"> • activities concerned with radioactive substances or radiation apparatus, and in this regard: • standards, practices, procedures and measures to be taken in relation to activities referred to in subsection (2), • regulating, restricting or prohibiting actions or things • granting licences, permits, registration, authorities or approvals and their terms and conditions, giving of directions, • protecting health and safety, and training, examining and certifying persons • medical examination of exposed 	<p>Disposal</p> <p>Protection</p> <p>Monitoring</p> <p>Record Keeping</p> <p>Adoption of a document</p> <p>Establishing an advisory body</p> <p>Penalty notices</p>	<p>Dose limits</p> <p>Accreditations certificates</p> <p>Radiation safety officer certificates and appointments</p> <p>Certificates of Compliance</p> <p>Disposal</p> <p>Irradiation of persons</p> <p>Concentration of radionuclides</p> <p>Banned radiation sources and radioactive substances</p> <p>Exemptions</p> <p>Standards and codes</p> <p>Fees</p> <p>Other (largely procedural) "matters under a regulation" - e.g. training, radiation safety planning, licences terms, registers, information disclosure, &c.</p>	<p>Standards</p> <p>Practices & procedures</p> <p>Prohibit</p> <p>Approval</p> <p>Conditions</p> <p>Directions</p> <p>Health safety training & certification of persons</p> <p>Medical examinations</p> <p>Records</p> <p>Monitoring</p> <p>Penalties</p> <p>Fees</p> <p>Incorporate standards</p>	<p>Matters concerning NDRP</p> <p>Authority holders to keep records</p> <p>Radiation dose limits</p> <p>Transport and storage</p> <p>Securing sealing disposal destruction</p> <p>Personnel monitoring</p> <p>Action excess dose or contamination</p> <p>Radiation safety officers</p> <p>Incidents</p> <p>Expiry of certs of compliance</p> <p>Adopt codes exemptions</p>	<p>Disposal</p> <p>Protection</p> <p>Monitoring</p> <p>Safety & security</p> <p>Dealing with a source</p> <p>Certificate of compliance & renewal</p> <p>Harmful effects of natural radiation</p> <p>Records</p> <p>Fees</p> <p>Appeals re regulations</p> <p>Penalty notices</p> <p>Adopt a document</p>	<p>Impose fees</p> <p>Discretionary authority on class of person</p> <p>Adopt standards, rules, codes</p> <p>Unavailability of materials or other matters chairman may approve other materials or matters</p> <p>Exemptions</p> <p>Exempt electronic products</p> <p>Change fees structure</p> <p>Change licence structure</p> <p>Conditions , restrictions, limitations</p> <p>Provision of plans, specifications</p> <p>Definitions of terms</p> <p>Use of particular radioactive substances etc and quals of users</p> <p>Investigations</p> <p>Protection of environment</p> <p>Concentrations</p> <p>Exposure levels</p> <p>Medical examinations</p> <p>Nuclear industry</p> <p>Notification of accidents and</p>

	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
			<ul style="list-style-type: none"> • persons keeping records, furnishing information, and notifying accidents, other matters or events • monitoring levels of radiation and exposures and the health of persons, • protecting persons and the environment • exempting compliance with provisions of the Act and the regulations, and authorise the Minister to grant exemptions. 						<p>occurrences</p> <p>Establish standards, specifications</p>

Table 14. Regulations key contents

	ACT	Cth	NSW	NT (Draft)	Qld	SA	Vic	Tas	WA
Exposure limits	As per NDRP	<p>Schedule 1 & other provisions for prescribed apparatus that produces non-ionizing radiation</p> <p>Prescribed radiation facilities operating above prescribed levels</p> <ul style="list-style-type: none"> particle accelerators irradiators facilities (not nuclear installations) used for production &c of sealed or unsealed sources with activity levels calculated using Schedule 2 nuclear waste storage and disposal facilities and radioisotope production facilities 	Limits for exposure to ionising radiation equivalent to NDRP Schedule 1	<p>Reference to NDRP and national standard for limiting occupational exposure</p> <p>Exempt mixtures of radioactive materials</p> <p>Radiation dose limits as per NDRP</p> <p>Radiation protection plans</p> <p>Radiation sources as per NDRP</p>	Reg Part 8 dose limits set out. NDRP not directly referenced (although considered to be identical in intention) d	Dose limits set out	Schedule 2 NDRP not directly referenced	Dose limits set out	Schedule 1
Conditions, restrictions, on licenses &c		<p>Controlled apparatus, facilities, persons, places</p> <p>Holder of a licence to</p> <ul style="list-style-type: none"> prevent, and 	<p>Licensing, and registration</p> <ul style="list-style-type: none"> licensing to use radioactive substances and 	Suitability to hold licence as per NDRP	<p>Activity concentrations for definition of radioactive substances</p> <p>Radiation limits for definition of</p>	Dose Radiation Safety Officer Monitoring Records	Conditions impose requirements such as compliance with Codes, incident reporting, use of personal dose monitors etc	Criteria for determining applications persons: Adequate Training	Examples - Licence not an endorsement of efficacy Industrial radiographer to carry

	ACT	Cth	NSW	NT (Draft)	Qld	SA	Vic	Tas	WA
		investigate and rectify breaches of conditions <ul style="list-style-type: none"> prevent, control and minimize accidents comply with <i>National Standard for Limiting Occupational Exposure to Ionizing Radiation</i> comply with Recommendations and Codes of Practice comply with, review and update plans and arrangements for managing safety obtain approval for and report changes, report movements of controlled apparatus, materials and controlled facilities obtain approval for construct safety item and loading nuclear fuel \ 	radiation apparatus; <ul style="list-style-type: none"> Registration of radiation apparatus and premises Radiation safety provisions covering: <ul style="list-style-type: none"> Workplace safety Monitoring Disposal, discharge and transport of radioactive substances and radiation apparatus Radiation accidents – reporting, investigation and accidents Radiation safety officers and committees Contamination of premises Loss or theft of radioactive substance or radiation apparatus 		radiation apparatus Activity concentrations for definition of sealed radioactive substances Use licence to comply with NHMRC Recommendations for minimising radiological hazards to patients Transport to comply with Transport code of practice defined Sch 6 Disposal of material into air or water Disposal of material into sewer Disposal otherwise Disposal of apparatus or containers Radiation protection plans Radiation safety officers Radiation monitoring Dose limits Specific Exemptions	Radiation incidents Medical examinations Licenses Registration Substances Disposal		Experience and Qualifications Licensed by appropriate Board in Tasmania Convicted persons Authorisation revoked Requirement for issuing certificates of compliance: Sealed source conditions place: Firmly constructed durable material Resist fire and unauthorised entry Locked Warning sign Shielding Not near natural or man made hazards AS2982.1 Lab design	licence Under 16 prohibited Keep records Report and investigate excess dose Monitoring instruments required Shielding, protective equipment and safety devices required Premises require a radiation safety officer Registrant responsible for safety Warning signs at premises Radiation surveys as necessary (Act provides scope for Council to impose a wide range of conditions)
Accreditation scheme			<ul style="list-style-type: none"> activities which may 		(reference in Table 10)		In Act	Various 1 to 4 year terms for	Radiation monitoring

	ACT	Cth	NSW	NT (Draft)	Qld	SA	Vic	Tas	WA
			only be carried out by accredited consulting radiation experts;					certificates	organizations, organisations that conduct calibrations on survey meters, and Qualified Experts, need to be approved
Practices			<ul style="list-style-type: none"> • use of radiation apparatus and radioactive substances; • disposal and transport of radiation apparatus and radioactive substances, • discharge of radioactive substances; 				In Act		
Exemptions	<p>Radiation apparatus that is exempt under NDRP</p> <p>Minister to determine exemptions taking account criteria in the NDRP</p>	<p>CEO declaration of conduct by a controlled person in relation to a controlled facility - construction, possession or control, operation, de-commissioning, disposal, abandonment or site preparation</p> <p>Prescribed dealings</p> <ul style="list-style-type: none"> • With less than prescribed activity / activity concentration 	<p>All exemptions are given in the Regs - Exemptions from licensing for scheduled radioactive substances and apparatus, and for prescribed occupations</p> <p>Exemptions from registration requirements for scheduled sealed source devices, and premises</p> <p>Exemptions by Minister in</p>		Specific Exemptions (note also statutory guidance on granting exemptions)	Minister may exempt person or class of person	A specific transitional exemption for some cert of Compliance	<p>Exemption power in Act</p> <p>Exemption must not give more than negligible threat</p> <p>Exemption can have conditions</p>	<p>Exempt quantities Schedule V</p> <p>Radioactive substances in certain time-keeping and other devices</p> <p>Microwave ovens</p> <p>Some lasers (subject to no danger to life and health)</p> <p>Some radioactive substances in self-luminous devices</p>

	ACT	Cth	NSW	NT (Draft)	Qld	SA	Vic	Tas	WA
		<ul style="list-style-type: none"> • Certain depleted uranium dealing • Smoke detectors complying with AS • Common miscellaneous items • Apparatus / material in licensed controlled facilities 	emergencies						Individuals or classes of persons may also be exempted.
Prohibitions	<p>Certain dento-maxillofacial radiography x-ray equipment</p> <p>Direct fluoroscopy x-ray equipment</p> <p>Shoe-fitting x-ray units</p>	•			Prohibition Notice in Act Banned Sources prescribed under Regulation		Not in regulations but Act prohibits unless licensed	<p>Certain dento-maxillofacial radiography x-ray equipment</p> <p>Direct fluoroscopy x-ray equipment</p> <p>Shoe-fitting x-ray units</p>	(Prohibitions may be made under the Act for the possession, sale, or use of certain radioactive substance, irradiating apparatus or electronic product.)
Incidents	As per NDRP		Duty of employer to report, investigate, maintain records (referred to in Regs and Act)		Reporting of dangerous events in Act (note requirements of Radiation Safety and Protection Plans)		Not in regulations but Act refers to emergencies	In Act	Report and investigate
Standards &c		National Standard for Limiting Occupational Exposure to Ionizing Radiation. Recommendations for limiting exposure to	National standard and Recommendations limiting exposure to ionising radiation (RPS-1); Code of practice for the safe transport of		Specify radiation dose limits Refer to standards and codes: Recommendations for limiting exposure to ionizing		Not in Regulations but Act Secretary may specify standards		<p>AS2211 Laser Safety</p> <p>AS3301 microwave Ovens</p> <p>AS3786 Smoke Alarms</p> <p>AS1603</p>

	ACT	Cth	NSW	NT (Draft)	Qld	SA	Vic	Tas	WA
		<p>ionizing radiation;</p> <p>Code of Practice for the Safe Transport of Radioactive Material</p> <p>Code of Practice for the Disposal of Radioactive Waste by the User;</p> <p>Code of Practice for the Near-Surface Disposal of Radioactive Waste in Australia;</p> <p>Code of Practice for the Safe Transport of Radioactive Material.</p> <p>Code of Practice on the Management of Radioactive Wastes from the Mining and Milling of Radioactive Ores;</p> <p>Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores;</p>	<p>radioactive material (RPS-2);</p> <p>Code and safety guide for radiation protection in dentistry (in the Amendment Regulation 2007);</p> <p>Code of practice for exposure of humans to ionising radiation for research purposes.</p> <p>The national standard for exposure to radiofrequency radiation (RPS-3) not been adopted in NSW.</p> <p>(Others in licence conditions)</p>		<p>radiation.</p> <p>Codes of practice for the safe transport of radioactive material,</p> <p>Laser standard,</p> <p>Various methods & procedures codes</p>				<p>Smoke detectors</p> <p>IEEE CF95.1 and AS2722 RF Rad</p> <p>ANSI PH2. 43 Abdominal phantom only</p> <p>ANSI PHG.1 Dental films</p> <p>ARPANSA Code of Practice for the Safe Transport of Radioactive Material</p> <p>IAEA Regulations for the Safe Transport of Radioactive Materials</p> <p>Specified NHMRC codes &c.</p>

Table 15. Summary of Dose Limits

		NDRP	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Effective Dose - Average											
	Occupational	20mSv per year over a period of 5 consecutive calendar years	As per NDRP	As per NDRP	As per NDRP Alternatives: On application 20mSv per year over a period of 10 consecutive calendar years Or 50mSv per year over a period of 5 consecutive calendar years		As per NDRP	As per NDRP Alternatives: On application 20mSv per year over a period of 10 consecutive calendar years Or 50mSv per year over a period of 5 consecutive calendar years	As per NDRP	As per NDRP	As per NDRP Alternatives: Less than 12 months 50mSv times weeks divided by 52 Less than 1 month 1/12 of 50mSv
Effective Dose - Single year											
	Occupational	50mSv	As per NDRP	As per NDRP	As per NDRP		Practice: as per NDRP Non practice: 1mSv (Intended outcomes identical to RPS1)	As per NDRP	As per NDRP	As per NDRP	As per NDRP
	Public	1mSv in a year		As per NDRP	As per NDRP		As per NDRP	As per NDRP	As per NDRP		As per NDRP Alternatives – <ul style="list-style-type: none"> • 5mSv in 12 months • Continuously occupied 20μSv in any hour or 250μSv in any 7 days
Annual equivalent dose:											
• Lens of eye	Occupational	150mSv	As per NDRP	As per NDRP	As per NDRP		As per NDRP	As per NDRP	As per NDRP	As per NDRP	
	Public	15mSv	As per NDRP	As per NDRP	As per NDRP		As per NDRP	As per NDRP	As per NDRP	As per NDRP	
• Skin	Occupational	500mSv	As per NDRP	As per NDRP	As per NDRP		As per NDRP	50mSv	As per NDRP	As per NDRP	
	Public	50mSv	As per NDRP	As per NDRP	As per NDRP		As per NDRP	As per NDRP	As per NDRP	As per NDRP	

• Hands & feet	Occupational	500mSv	As per NDRP	As per NDRP	As per NDRP		As per NDRP	As per NDRP	As per NDRP	As per NDRP	
	Public	-			-						

Table 16. Authorisations /Licences / Registrations – Responsible Persons

	ACT	Com	NSW	NT	Qld	SA	Vic	Tas	WA
Persons									
• Possess sources	Y	Y	Y	Y	Y	Y	Y	Y	Y
• Practice					Y	Y	Y	Y	Y
• Premises	Y	Y	(in possess)		Y (by reg)	Y	Y	Y	Y
• Private certifier			Y		Y			Y	
Corporations									
• Possess sources	Y	Y	Y	N	Y	N	N	Y	Y (recent legal advice)
• Practice					Y	N	Y	Y	
• Premises	Y	Y	Y	Y	Y (by reg)	Y	Y	Y	Y

Legend

Y	the legislation requires that approval be granted for the activity to take place
N	the activity is not permitted under the legislation
Blank	no provision in the legislation

Appendix C. Mechanisms for Effecting Alignment with NDRP

C.1 Purpose of the Appendix

This Appendix presents graphically the Consultant’s summary analysis of how the Jurisdictions achieve alignment between their regulatory frameworks and the NDRP.

- Refer Table 17 for the explanatory legend, which gives a “shorthand” description of the graphical codes.
- Refer Table 18 for the assessed mechanisms by which Jurisdictions give effect in their Regulatory Frameworks to the NDRP provisions.
- Following Table 18, further explanation is given concerning the method used in making these assessments.

Appendix H gives further notes on the methods used in preparing Table 18, noting certain limitations and cautioning against drawing invalid conclusions concerning individual Jurisdiction’s regulatory frameworks. In particular, the analysis is not intended to support any conclusions as to comparison between Jurisdictions’ regulatory frameworks or as to their regulatory adequacy.

Table 17: Legend - graphical codes depicting mechanisms for effecting NDRP alignment

Application of mechanism ▼	Dominant level at which mechanism operates ▼				
	Statute	Regulation	Licence	Administration	Guidance
	Mandatory				Non-mandatory
Direct – e.g. Direct reference	*Statute *5	*Regs *5	*Licence *5		
Explicit – e.g. Explicit wording	*Statute *4	*Regs *4	*Licence *4		
Apparently effective Similar Effect	*Statute *3	*Regs *3	*Licence *3	*Admin *3	*Guide *3
Implicit – e.g. Can be accommodated	*Statute *2	*Regs *2	*Licence *2	*Admin *2	*Guide *2
Least direct - e.g. Little or no provision	*1	*1	*1	*1	*1

The term “licence” has been used in this Appendix to include the range of mandatory, conditional permissions or authorisations granted under the various regulatory regimes, including registrations, accreditations, and licences. The text in the assessment cells is included to aid readers who may be challenged by recognition of colours and shading patterns.

The information presented for the Northern Territory relates to the Radiation Protection Act, which is expected to commence this year.

C.2 Mechanisms Table

Table 18: Assessed Mechanisms for effecting alignment between Jurisdictions’ Regulatory Frameworks and NDRP provisions

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
1. Describe the person or body that is formally the regulatory authority in your Jurisdiction (i.e. the Minister, Head of Department, a Radiological Council etc)	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *4
2. Is your Act/s governing radiation protection consistent with the NDRP in the respect to the following? Please provide advice on the manner in which the following points are covered (refer clauses 2.1 & 2.2)									
• Objective	*Statute *4	*Statute *3	*Statute *4	*Statute *4	*Statute *3	*Statute *4	*Statute *2 Excluded: • Environ- ment (but see Act’s title) • non- ionising radiation	*Statute *3 Environment not specified	*Statute *4
• Justification &C	*Regs *4	*Statute *4	*Statute *4	*Statute *4	*Statute *2 Excludes medical exposures	*Statute *4	*Statute *2 Justification & limitation not explicit	*Statute *3 Optimisation not explicit	*Statute *3

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
• Management responsibility	*Regs *2	*Statute *3	*Licence *2	*Admin *2	*Admin *2	*1 - Not specific	*Admin *2	*Regs *3	*Regs *3
• Technical requirements	*Regs *2	*Admin *2	*Licence *2	*Admin *2	*Admin *2	*1 - Not specific	*Admin *2	*Regs *3	*Regs *2
• Verified safety and security	*Regs *2	*Statute *2	*Licence *2	*Admin *2	*Admin *2	*1 - Not specific	*Admin *2	*Regs *3	*Regs *2
		Security not explicit. Regs address records				Not explicit		Licence conditions to cover security	
• Risk management	*Regs *2	*Statute *3	*Licence *2	*Admin *2	*Admin *2	*1 - Not specific	*Admin *2	*Licence *2	*Regs *2
• Intervention actions	*Regs *2	*Statute *3	*Licence *2	*Regs *3	*Statute *3	*1 - Not specific	*Admin *2	*Statute *3	*Regs *2
3. Identify which of the powers and functions conferred by your legislation are consistent with NDRP in respect to clauses 2.3 (a) – (p) as follows and describe how this is achieved, and which are not?									
(a) advise Minister	*Statute *4	*Regs *3	*Statute *3	*Admin *2	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *4
(b) set standards	*Regs *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Licence *3	*Statute *3	*Statute *3	*Statute *3
(c) assess applications	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *5	*Statute *3	*Statute *3	*Statute *3
(d) grant & authorisations	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3
(e) grant exemptions;	*Regs *3	*Regs *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Regs *3

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
(f) periodic inspections &c	*Statute *3	*Regs *3	*Statute *3	*Statute *3	*Admin *3	*Admin *2	*Admin *2	*Regs *3	*Admin *3
(g) enforce compliance	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3
(h) require assessments	*Statute *2	*Statute *3	*Licence *3	*Statute *3	*Admin *2	*1 - Not specific	*Statute *3	*Licence *2	*Regs *2
(i) accredit persons	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Regs *3	*1 – Being considered	*1 – No provision	*Admin *2	*Statute *2
(j) non-ionizing apparatus categories	*Regs *2	*Regs *2	*Regs *3	*Regs *5	*1 - No provision	*Statute *2	*Regs *2	*Regs *2	*Regs *2
(k) sources register	*Statute *3	*Statute *2	*Statute *3	*Statute *3	*Admin *3	*Statute *3	*Statute *3	*Statute *3	*Admin *2
(l) emergency directions	*Statute *2	*Statute *3	*Statute *3	*Statute *2	*Statute *3	*Statute *3	*Admin *2	*Statute *2	*Statute *3
(m) incidents; notification	*Statute *3	*Licence *3	*Statute *3	*Statute *3	*Regs *3	*Statute *3	*Regs *3	*Regs *3	*Regs *3
(n) incidents investigation	*Statute *3	*Statute *2	*Statute *2	*Statute *3	*Admin *2	*Admin *2	*Admin *2	*Statute *2	*Admin *2
(o) studies and research	*Statute *2	*Statute *2	*Statute *4	*Admin *2	*Admin *2	*Admin *2	*Admin *2	*Statute *3	*Statute *3
(p) annual reporting.	*Statute *3	*Statute *2	*Statute *3	*Admin *2	*Statute *3	*Admin *2	*Statute *3	*Statute *3	*Statute *4

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
4. Is an Advisory Body with the role of providing policy and technical advice to the Authority and the Minister provided for in the legislation (clause 2.4)?	*Statute *3	*Statute *3	*Statute *3	*Regs *2	*Statute *3	*Statute *3	*Statute *3	*Statute *4	*Statute *3
5. Describe how each of the practices specified in clause 2.6 (a) – (j) and listed below are covered in your Jurisdiction’s legislation, and identify any that are not covered.									
sources;manufacturing / possession	*Statute *4	*Licence *3	*Statute *3	*Regs *3	*Statute *3	*Licence *3	*Statute *3	*Statute *3	*Statute *3 Manufacturing not explicit
use of materials	*Statute *3	*Licence *3	*Statute *3	*Regs *3	*Statute *3	*Licence *3	*Statute *3	*Statute *3	*Statute *3
nuclear installations, and radiation facilities	*Licence *2	*Licence *3	*Statute *3	*Regs *2	*Statute *3	*Regs *2	*Statute *3	*1 - Not specific	*Statute *3
natural source exposures	*Statute *3	*Regs *2	*Statute *3	*Regs *2	*Regs *2	*Regs *2	*1 - Not specified	*Regs *3	*Licence *2 Not explicit
exploration, mining &c	*Statute *3	*Statute *2 Not distinguished from other sources	*Statute *3	*Statute *3 Uranium ores and oxide excluded	*Regs *2	*Statute *2 Not distinguished	*Licence *3	*Regs *3	*Licence *2 Not explicit
waste management & disposal	*Statute *3	*Statute *3	*Statute *3	*Regs *3	*Admin *2	*Statute *3	*Regs *3	*Statute *3	*Licence *2

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
non-ionizing apparatus	*Regs *2	*Regs *2	*Regs *2	*Regs *2	*1 – None regulated	*1 - Not specified	*Regs *2	*Regs *2	*Regs *3
sale or transfer;	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Licence *3	*Statute *3	*Regs *3	*Statute *3	*Regs *3
transport	*Regs *4	*Licence *3	*Statute *3	*Regs *3	*Regs *5	*Statute *3	*Regs *3	*Regs *3	*Regs *3
other practices.	*Statute *3	*Licence *2	*Statute *3	*Regs *2	*Regs *2	*Regs *2	*Regs *2	*Statute *2	Not applicable?
6. Does the legislation provide for the categories of authorisation specified in clause 2.7 (a) – (c) and listed below? Describe any variations.	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3
<ul style="list-style-type: none"> • Authorisation to possess • Authorisation to use • Authorisation for other dealings 									
7. Describe the grounds for refusal of an authorisation in your Jurisdiction and whether they are consistent with clause 2.8, as follows?									
<ul style="list-style-type: none"> • the applicant is not a fit and proper person; 	*Statute *4	*Statute *3	*Statute *4	*Statute *3	*Statute *3	*Statute *5	*Statute *4	*Statute *4	*Regs *2

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
<ul style="list-style-type: none"> it is necessary to do so in the interests of public health and safety; or 	*Statute *3	*Statute *3	*Statute *3	*Regs *2	*Admin *2	*Statute *5	*Statute *2	*Statute *4	*Regs *3
<ul style="list-style-type: none"> the proposed use of radiation is inappropriate or unjustified. 	*Statute *3	*Statute *3	*Statute *3	*Regs *2	*Admin *2	*Statute *5	*Statute *2	*Statute *4	*Regs *3
8. Describe the grounds for suspension, variation or cancellation of an authorisation in your Jurisdiction and whether they are consistent with clause 2.9 as follows?									
authorisation obtained improperly;	*Statute *3	*Statute *3	*Statute *4	*Statute *3	*Statute *4	*Statute *3	*Statute *4	*Statute *2	*Statute *4
contravention of conditions;	*Statute *3	*Statute *3	*Statute *4	*Statute *3	*Statute *4	*Statute *3	*Statute *4	*Statute *2	*Statute *4
conviction of offence against legislation,	*Statute *3	*Statute *3	*Statute *4	*Statute *3	*Statute *4	*Statute *3	*Statute *3	*Statute *3	*Statute *3
people health and safety or environment risk	*Statute *3	*Statute *3	*Statute *4	*Statute *3	*1 - Not specific	*Admin *2	*1 - Not specific	*Statute *2	*Statute *2
security access risk	*Statute *3	*Statute *3	*Statute *4	*Admin *2	*1 - Not specific	*Admin *2	*1 - Not specific	*Statute *2	*Regs *2 Implicit?
ceasing qualification	*Statute *2	*Statute *3	*Statute *4	*Admin *2	*Statute *4	*Admin *2	*Statute *4	*Statute *2	*Licence *2 Implicit?
consistently compromised safety	*Statute *3	*Statute *3	*Licence *1	*Admin *2	*1 - Not specific	*Admin *2	*1 - Not specific	*1 - Not specific	*Statute *3
ceasing work in capacity	*Statute *2	*Statute *3	*Licence *2	*Admin *2	*Statute *4	*Admin *2	*1 - Not specific	*Licence *2	*Licence *2

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
9. Is there provision for an Annual Report of the Authority, including the following key elements – refer clause 2.10? <ul style="list-style-type: none"> • activities and operations • authorisations issued summary • incidents investigation summary • prosecutions summary. 	*Statute *3	Being explored	*Statute *4	*Admin *2	*Statute *3	*Admin *2	*Statute *3	*Admin *2	*Statute *3
10. Does your Jurisdiction’s legislation provide for any excluded exposures and are they consistent with clause 3.1?	*Regs *4	*Regs *4 (a) and (b) not addressed	*Statute *3	*Admin *2	*Regs *2 Implicit	*Statute *2	*Regs *3	*Statute *3	*1 - Not specific
11. Describe the exemption provisions in your Jurisdiction and whether they are consistent with clauses 3.2.1 – 3.2.6 (including Schedules 4 & 5)? <ul style="list-style-type: none"> • General exemption criteria • Acceptable activity /activity concentration criteria • Exemptions granted by Authority 	*Statute *3	*Regs *2	*Regs *2	*Admin *2	*Regs *2	*Regs *5	*Statute *3	*Regs *2	*Regs *3
	*Regs *4	*Regs *2	*Regs *4	*Regs *5	*Regs *2	*Regs *5	*Regs *2	*Regs *3	*Regs *3
	*Regs *3	*Regs *3	*Regs *2	*Admin *2	*Regs *2	*Regs *5	*Admin *2	*Statute *2	*Regs *3

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
<ul style="list-style-type: none"> “Regulatory controls to apply” declaration by Authority 	*Statute *3	*Regs *2	*Regs *2	*Admin *2 By removing exemptions?	*Regs *2	*Regs *5	*Admin *2 For dangerous situations	*Statute *2	*Regs *3
<ul style="list-style-type: none"> Proportionate stringency of regulatory measures to apply 	*Statute *3	*Regs *2	*Regs *2	*Admin *2	*Regs *2	*Regs *5	*Admin *2 For dangerous situations	*Licence *2	*Regs *3
<ul style="list-style-type: none"> Exemptions for approved radiation generators and electronic tubes 	*Regs *5	*Regs *2		*Admin *2	*Regs *2	*Regs *5	*Regs *2	*Regs *3	*Regs *3
12. Is an authorisation to possess required - refer clause 4.1? Please provide details of what sources/apparatus this authorisation is required for.	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3
13. Are the requirements for authorising practices consistent with those in Schedule 7 (clause 4.2) for the categories listed? <ul style="list-style-type: none"> S 7.1 - Bore Hole or Well Logging S 7.2 - Industrial Radiography 	*Licence *3	*Licence *2	*Statute *2	*Admin *2	*Admin *3 Excludes direct supervision Technical differences	*Statute *5	*Regs *3	*Licence *3 Industrial Radiography addressed in Regs	*Licence *3 Supervision obligation not specified
14. Are authorisations granted for people who meet the requirements for relevant groups specified in Schedule 6 (clause 4.3) to use specified sources for the purposes listed?	*Admin *2	*Admin *2	*Licence *2	*Regs *5	*Admin *2 Registered dental professionals exempt. Others' requirements differ	*Statute *5	*Regs *3	*Regs *3 Statutory provision for dentist, chiropractors.	*Admin *2 Cth entities to demonstrate compliance Many groups not applicable

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
15. Are there provisions for authorising a natural person to be granted permission to undertake a restricted range of health-related diagnostic X-ray services without meeting the relevant competency requirements contained in Schedule 6 in rural and remote areas, and are they consistent with section 4.5, as follows?	*Admin *2	*Admin *2	*Licence *2	*Admin *2	*Admin *3 No reference to attracting professionals	*Not required *1	*Licence *2	*Regs *3	*Not required *1
16. Is there a requirement to register apparatus, sources and premises consistent with the categories specified in clause 4.6, and listed below? <ul style="list-style-type: none"> Sealed sources and premises Unsealed source premises portable or field use sources and storages. 	*Statute *3	*Statute *3	*Licence *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *3	*Statute *2 Premises not registered explicitly
17. Are the criteria for registration consistent with Schedule 9 (clause 4.6.2) for: <ul style="list-style-type: none"> Industrial Radiography Sealed Sources and Premises 	*Regs *3	*Licence *2	*Licence *2	*Admin *2	*Licence *2	*Statute *5	*Regs *3	*Regs *3	*Licence *2

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
18. Which ARPANSA Codes specified in Schedule 11 and listed below have been adopted, and by what mechanism (in Regs or as conditions of licence/registration or other means) - refer clause 5.1?									
(a) RPS 1	*Licence *3	*Statute *3	*Licence *3	*Admin *2	*Regs *4	*Regs *2	*Regs *3	*Regs *2	*Regs *4
(b) RPS 2	*Regs *4	*Regs *4	*Licence *3	*Admin *2	*Regs *5	*Regs *2	*Regs *3	*Regs *4	*Regs *4
(c) RPS 3	*Guidelines *2	See other legislation	TBC	*Admin *2	*1 – Not adopted	*Regs *2	*Regs *3	*1 - Not specific	*Licence *2
								To be adopted	
19. Describe the incident reporting framework in your Jurisdiction and whether it is consistent with Schedule 13 (clause 5.3)?	*Statute *2	*Admin *2	*Licence *2 Statute for loss or theft	*Statute *3 Limited to dangerous events No provision for reporting to ARPANSA	*Regs *3 Limited to "Radiation Accidents" Non-ionizing radiation excluded	*Admin *2	*Regs *3	*Regs *3	*Regs *3
20. Are your Jurisdiction's policy and approach in relation to the following consistent with the guidance specified in Sections 6 and 7 respectively?									
• Intervention in Radiological Emergencies, and	*Licence *3	*Licence *3	*Licence *2	*Regs *3	*Regs *3 Deals with dangerous situations	*Licence *2	*Regs *3	*Regs *3	*Licence *2
• Patient Discharge	*Licence *3	*Regs *4	*Licence *3	*Admin *2	*Guide *3	*Licence *2	*Licence *2	*Admin *3	*Licence *2

Questionnaire Items	Tas	Qld	Vic	NT	NSW	ACT	SA	WA	Cth
21. Are the occupational and public dose limits in your Jurisdiction consistent with Schedule 1?	*Regs *3	*Regs *4	*Regs *4	*Regs *5	*Regs *4	*Regs *5	*Regs *3	*Regs *3	*Regs *3
22. Are the items specified in Schedule 5 exempted?	*Regs *5	*Regs *3	*Admin *3	*Admin *2	*Regs *4	*Regs *5	*Regs *3	*Regs *3	*Regs *3
23. Is there provision for review of legislation at intervals not exceeding 10 years?	*Statute *3	*Regs *3	*Admin *2	*Statute *3	*Statute *3	*Statute *3	*Admin *2	*Admin *2	*Admin *2

Note on the assessment method

Elaborating on the Legend in Table 17, the mechanism for alignment between a Jurisdiction's regulatory framework and the relevant NDRP provision is characterised in terms of:

- The **level of alignment mechanism** which identifies the dominant level (from statutory provision, through to informal guidance and advice) at which provisions of the NDRP are given effect, and
- The **application of the mechanism** which seeks to assess the directness with which NDRP provisions are (or may be) given effect,

This is described in Table 19.

Table 19: Interpretation of codes used to characterise the mechanisms for effecting NDRP provisions

Mechanism	Code		Description	Interpretation examples
Level of alignment mechanism (represented by colour)				The NDRP provision is given effect (or accommodated or addressed most closely) in:
	*Statute		Statutory provision	<ul style="list-style-type: none"> • Specific Radiation Protection Statutory
	*Regulation		Regulation	<ul style="list-style-type: none"> • Regulations made under the Statutes
	*Licence		Formal conditions of licence or other authorisation.	<ul style="list-style-type: none"> • Explicit licence conditions or similar
	*Administration		Administrative action and operation of mandatory, approved plans	<ul style="list-style-type: none"> • Direction by the Authority, or plans (or similar) of the authorised person that are mandatory when specifically issued or approved by the Authority
	*Guidelines		Guidance and Advice (non-mandatory)	<ul style="list-style-type: none"> • Guidance or other general (non-mandatory) advice offered by the Authority to applicants or authorised persons
Application of the assessed mechanism (represented by shading density)	*5	Direct	Provisions that make direct reference to provisions of the NDRP	
	*4	- TO -	Provisions that use identical or closely similar wording to that used in the NDRP	
	*3		Provisions that appear to produce the same or similar effect to the provisions in the NDRP	
	*2		Provisions that in operation do or can accommodate the effect of the NDRP provisions	
	*1	Least direct	No provisions clearly indicating alignment or scope for alignment with NDRP provisions	

Appendix D. Understanding Jurisdictions' Regulatory Operations

This Appendix illustrates regulatory operations identified as being involved in gaining approvals for conducting a typical radiation practice. The example selected for illustration was a medium size metropolitan x-ray diagnostic practice.

The approvals processes address:

- Dealings, and
- Premises.

Approvals for dealings authorisation are typically called “Use Licences”, and premises are approved typically through “Registration”, although terminology varies among Jurisdictions.

The operations are summarised in the following Tables for the two types of approval:

- Table 20. Summary of Dealings Authorisations
- Table 21. Summary of Premises Registration

For each type, the Tables identify:

- The applicant persons and approval holders (natural person or corporation)
- Relevant sources and places
- Certificates required
- Codes of practice specified
- Conditions of approval

The information used to prepare the Tables was submitted by Jurisdictions in response to the invitation from the Consultant for information to illustrate a particular example of their regulatory operations. As the information provided was not always comprehensive and in sufficient time, the tables were populated only as information was received and processed.

Following preparation of the Tables, Jurisdictions were invited to supplement the information to correct misinterpretations or errors. Amendments received from Jurisdictions were incorporated as appropriate.

As these tables are only based on operations for single examples, they do not and are not intended to describe comprehensively the underlying regulatory systems, which are summarised elsewhere (refer Appendix B). Rather, the tables serve to illustrate the key findings of this report as to the high level of variability among the Jurisdictions' regulatory systems.

No information is presented for the Northern Territory, as the Radiation Protection Act is expected to commence this year.

Table 20. Summary of Dealings Authorisations

	NDRP	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Brief Title of Application	Authorisations to possess, use or other dealings		Source Licence	Licence to use, licence to sell/possess		Use Licence	Licence to Operate Ionising Radiation Apparatus	Use licence	Licence to Deal	Licence under the Radiation Safety Act
Application Persons	Person, natural or corporation		Department or Commonwealth Body Secretary or CEO or delegate Radiation protection officer	Individual (natural person)		Name of Applicant	Natural Person	Natural persons only	Applicant - Legal entity (corporation or natural person) Directors and persons concerned with management	Natural person (recent advice suggests corporations may be licensed)
Application Sources	Ionising radiation apparatus		Controlled apparatus	All radioactive substances, ionising radiation apparatus, sealed source devices		Radiation sources identified	Ionising radiation apparatus	Radiation sources (includes ionising radiation apparatus, radioactive material & prescribed non-ionising sources)	The radiation Apparatus	Irradiating apparatus or emitting electronic product
Application Places			Normal use or storage location	Normal use or storage location		Places where source may be used or stored identified	Work address	all places where source may be possessed	Details of place to be Registered	Registered premises and field sites were appropriate
Licence Persons			Not specified on licence	Natural persons (licence to use). The licence to sell/possess		Name	Natural person	Companies or natural persons for management	Person or Corporation Authorised	Natural person (recent advice)

	NDRP	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
				may be held by a natural person or a body corporate.				licences Natural persons only for use licences	personnel	suggests corporations may be licensed)
Licence Sources			Controlled apparatus particulars scheduled	Specified on the licence		Details of sources licensee may possess		Sources identified? (Unclear in papers provided}	Particulars of apparatus scheduled	Specified irradiating apparatus or emitting electronic product
Licence Places			Not specified in licence	Not specified on the licence		(Advised separately to the licence)	Recorded employment details	Locations identified? (Unclear in papers provided}	Registered place	Registered premises and field sites where appropriate
Licence Codes of Practice (reinforcing or in addition to legislation)			Radiation Health Series Australian Standard safety in Labs (for a particular licence)	Radiation Health Series, Radiation Protection Series, Radiation Guideline 6.		(Conditions may be added by the Chief Executive if justified)		Conditions applied requiring compliance with Codes of Practice	Specific codes - X-ray dealings	Codes specified by Regulation or Conditions
Licence Conditions (reinforcing or in addition to legislation)			Source Inventory Quarterly Compliance Reporting Train all dealing persons Repaires to be qualified & trained Work practices to be approved by lience holders safety	Personal monitoring for specified occupations, Apparatus standards for compliance (Guideline 6), Certificate of compliance, Dealings to be between authorised persons, Authorised person must be		(Conditions may be added by the Chief Executive if justified)	Only for purpose of diagnostic radiography Condition when interpreted by radiographer Condition when not interpreted by radiographer Condition if life or	RPS 1 Personal monitoring program Apparatus standards for compliance Prohibition of acquiring from unauthorised person (unless outside Tas) Approved management plan Records of	As determined by Council	

	NDRP	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
			committee or RSO	fit and proper, Diagnostic imaging apparatus must comply with Radiation Guideline 6.			wellbeing threatened if not done Change of address		servicing etc to be retained and transferred to future owners. Current certificate of compliance Minimum manufacturers service levels Use in accordance with management plan Users to be able to access all documents Scheduled persons must be a fit and proper person Patient records Diagnostic medical imaging apparatus use must comply with NHMRC Codes Minimising Hazards to Patients 7 Nursing Practice Staff exposed Direct fluoroscopy prohibited.	

Table 21. Summary of Premises Registration

Brief Title of Application	NDRP Registered Premises	ACT Certificate of Registration Irradiating Apparatus	Cth (Example not provide / applicable)	NSW Certificate of Registration	NT	Qld Implicit in Possession Licence application	SA Registration of Ionising Radiation Apparatus	Vic Management Licence to Possess Radiation Source	Tas Certificate of Registration	WA Registration of premises, irradiating apparatus, , electronic products and radioactive sources
Application Persons	Not specified	Name of applicant (person or institution)		A company An individual (natural persons) Consulting radiation expert Occupier of premises		Corporation Individual	Individual Business	Person or Company Person or Company providing shielding calculations	Occupier Accredited certifier	Owner or other person in charge of premises Persons using apparatus Radiation safety officer
Application Places		Location (including room name/nnumber floor building name street address	Controlled facility	Precise location. Operates in parallel with registration applying to individual items of radiation apparatus		Information provided in licence application	Address of apparatus Location within address	Physical address	Cdetails of place to be registered	Location of premises Field sites allowed by conditions
Third party Certificate of Compliance	Accreditation provided	yes	No	Yes		Required before first use, and at prescribed intervals	No	Yes	Yes	Yes
Registration Persons		Name of Owner		Natural person or corporation		Corporation Individual	Person Organisation		Applicant	Registrant Radiation safety officer
Registration Places		Location of apparatus	Controlled facility	Location of premises		(Implicit in administration of licence application)	Location		Registered place	Location of premises
Codes of		ARPANSA	(Example	Radiation					AS/NZS	Codes specified by

	NDRP	ACT	Cth	NSW	NT	Qld	SA	Vic	Tas	WA
Practice (reinforcing or in addition to legislation)		NHMRC Standards Australia ICRP IAEA*	not provide / applicable)	Guideline 6					3200.1.3 & 3200.2.201	Regulation or Conditions
Conditions (reinforcing or in addition to legislation)	Reference to a code		(Example not provide / applicable)	Standards Australia standard for radiation safety in laboratories, Reporting of any changes, Recording of sources and apparatus, Disposal of apparatus or substances, Shielding guideline.		Review radiation plan within six months (although not usual)	must not be modified to non comply Sign & labels to be displayed Structural alterations to room to be notified Annual service After service apparatus to comply Change of address for notices or location of fixed apparatus		Apparatus must be located as per floor plan 20 μ Sv in 4 week period outside registered place Structural details must be maintained Work load generally in mAmin at specific kV specified Warning sign Floor plan	As determined by Council, e.g: <ul style="list-style-type: none"> ○ Direction and supervision of use ○ Current cert of compliance ○ Fluoroscopic x-ray conditions ○ Trainee persons conditions ○ Written authorisations required ○ Radiation monitoring device to be worn

Appendix E. Terms of Reference

This Appendix sets out the Consultant's Terms of Reference:

ARPANSA requires provision of consultancy services:

- To assess the effectiveness of the current implementation of the National Directory for Radiation Protection Edition 1 (NDRP) by the State and Territory Jurisdictions and make a report to the ARPANSA Radiation Health and Safety Advisory Council for its April 2008 meeting.
- In particular to prepare a report on:
 1. The current implementation status of the NDRP by the Jurisdictions
 2. Any current barriers to the implementation of the NDRP as identified by the Jurisdictions
 3. Local proposals to address the barriers to implementation that are being considered or have been implemented by the Jurisdictions
 4. Current timelines for implementation throughout the Jurisdictions

The methodology to be followed by the Consultant is:

1. Transmit an ARPANSA questionnaire on the National Directory for Radiation Protection Ed 1 to key stakeholders
2. Receive the results of the questions and analyse the results
3. Discuss results with the Director, Regulation and Policy ARPANSA
4. Based on the results of the questionnaire, conduct of face to face interviews with key stakeholders, noting that the Chair of the Radiation Health and Safety Advisory Council may choose to participate in some of the consultations
5. Report results of questionnaire and interview to the Chair of the Radiation Health and Safety Advisory Council for consultation prior to the preparation of the final report
6. Prepare final report for submission through the Project Manager to the Radiation Health and Safety Advisory Council meeting of April 2008

The key stakeholders for the project are the jurisdictional agencies:

- Radiation Safety Section, Department of Human Services, Victoria
- Health Physics Branch, Department of Health and Human Services, Tasmania
- Radiation Health Unit, Dept of Health, Queensland
- Radiation Health Section, Health Department of WA
- Hazardous Materials and Radiation Section, Dept of Environment and Climate Change, NSW
- Radiation Safety Section, Australian Capital Territory Health, ACT
- Radiation Protection Section, Department of Health and Community Services (DHCS) Northern Territory
- Radiation Protection Division, Environment Protection Authority, South Australia
- Regulatory and Policy Branch, ARPANSA

Appendix F. The Questionnaire

This appendix reproduces below the Questionnaire that was dispatched to State and Territory key stakeholders on 19 December 2007, and to ARPANSA on 11 January 2008, following review with the Client and RHSAC Chair. Key stakeholders were invited to respond to the 24 questions and parts of questions contained therein.

INFORMATION TO BE SOUGHT FROM ALL JURISDICTIONS REGARDING IMPLEMENTATION OF NATIONAL DIRECTORY FOR RADIATION PROTECTION, EDITION 1 (NDRP) - PROGRESS TOWARDS NATIONAL UNIFORMITY

INTRODUCTION

In considering a review of NDRP Council seeks a response to the following questions relating to requirements within the Directory. The questions cover the current status of uptake of the provisions, current barriers to uptake, any proposals to address those barriers, and timelines for implementation of measures to achieve national uniformity of radiation protection.

In preparing a report on the current status of the NDRP, Council proposes that the following points be addressed in discussion with the senior radiation control officer in each Jurisdiction:

QUESTIONNAIRE

Please note that if your Jurisdiction uses a different approach to achieve a similar outcome to that in NDRP, this approach should be described in response to the relevant question.

1. Describe the person or body that is formally the regulatory authority in your Jurisdiction (i.e. the Minister, Head of Department, a Radiological Council etc)
2. Is your Act/s governing radiation protection consistent with the NDRP in the respect to the following? Please provide advice on the manner in which the following points are covered (refer clauses 2.1 & 2.2)
 - Objective
 - Principles of justification, optimisation and limitation
 - Responsibility of the operating management
 - Establishing technical requirements
 - Processes for verification of safety and security
 - Risk management approach
 - Intervention actions
3. Identify which of the powers and functions conferred by your legislation are consistent with NDRP in respect to clauses 2.3 (a) – (p) as follows and describe how this is achieved, and which are not?

- (q) advise the Minister on radiation protection and nuclear safety matters;
 - (r) set standards for radiation protection and the safety and security of radiation sources;
 - (s) assess applications for authorisations against criteria specified in the Act or regulations;
 - (t) grant, refuse, vary, revoke or suspend authorisations, and impose conditions on these;
 - (u) grant exemptions from regulatory requirements and determine conditions for exemptions;
 - (v) ensure a system of periodic inspections, documentation and reporting to verify compliance with regulatory requirements;
 - (w) enforce compliance with regulatory requirements;
 - (x) require safety assessments and environmental assessments where appropriate;
 - (y) accredit persons or classes of persons to assess compliance with the requirements of the legislation, and set the conditions to which they should be subject;
 - (z) control the categories of non-ionizing radiation apparatus specifically identified in Schedule 2 of this Directory;
 - (aa) maintain a register of radiation sources, including requirements for amendment of the register;
 - (bb) plan for, and give directions in the case of, a nuclear or radiological emergency;
 - (cc) require notification of radiation incidents to the Authority;
 - (dd) investigate radiation incidents, and provide reports to ARPANSA for inclusion in the Australian Radiation Incidents Register;
 - (ee) promote or conduct studies, investigations and research associated with radiation protection and nuclear safety, including public health and safety and environmental considerations; and
 - (ff) prepare an annual report for tabling before the Parliament.
4. Is an Advisory Body with the role of providing policy and technical advice to the Authority and the Minister provided for in the legislation (clause 2.4)?
5. Describe how each of the practices specified in clause 2.6 (a) – (j) and listed below are covered in your Jurisdiction’s legislation, and identify any that are not covered.
- (a) the manufacturing or possession of radiation sources;
 - (b) the use of radiation or radioactive materials for any practice which involves or could involve exposure to radiation or radioactive materials, including medical (both diagnostic and therapeutic), dental, chiropractic, industrial, veterinary and agricultural purposes, in consumer products, education, training, research, or the servicing or maintenance of radiation apparatus or sealed source apparatus;
 - (c) in relation to nuclear installations, and radiation facilities specifically identified in Schedule 3 of this Directory, the preparation of a site, possession or control, construction, operation, decommissioning or disposal of such an installation or facility;
 - (d) practices involving exposure to natural sources specified by the Authority as requiring control;
 - (e) practices dealing with radioactive material arising from exploration, mining, mineral processing or petroleum industries;
 - (f) practices involving radioactive waste management and the disposal of radioactive material;
 - (g) practices involving categories of non-ionizing radiation apparatus specifically identified in Schedule 2 of this Directory;

- (h) sale or transfer of responsibility of ionizing radiation sources and categories of non-ionizing radiation apparatus specified in this Directory;
 - (i) transport of radioactive material; and
 - (j) any other radiation-related practice specified by the Authority.
6. Does the legislation provide for the categories of authorisation specified in clause 2.7 (a) – (c) and listed below? Describe any variations.
- (a) Authorisation to possess
 - (b) Authorisation to use
 - (c) Authorisation for other dealings
7. Describe the grounds for refusal of an authorisation in your Jurisdiction and whether they are consistent with clause 2.8, as follows?
- (k) the applicant is not a fit and proper person;
 - (l) it is necessary to do so in the interests of public health and safety; or
 - (m) the proposed use of radiation is inappropriate or unjustified.
8. Describe the grounds for suspension, variation or cancellation of an authorisation in your Jurisdiction and whether they are consistent with clause 2.9 as follows?
- (n) the authorisation was obtained improperly;
 - (o) the holder of an authorisation has contravened a condition of the authorisation;
 - (p) the holder of an authorisation has been convicted of an offence against the legislation, under which the authorisation was granted, or other relevant legislation;
 - (q) unless the authorisation is suspended, varied or cancelled there would be a risk to the health and safety of people or to the environment;
 - (r) unless the authorisation is suspended, varied or cancelled there would be security risk from access to the radioactive source;
 - (s) the holder has ceased to hold a qualification or meet other criteria, which formed the basis on which the authorisation was granted;
 - (t) the holder of an authorisation has consistently made decisions that compromised radiation safety; or
 - (u) the holder of an accreditation has ceased working in a capacity for which accreditation is required.
9. Is there provision for an Annual Report of the Authority, including the following key elements – refer clause 2.10?
- (v) all activities and operations of the Authority for the year;
 - (w) a summary of authorisations issued;
 - (x) a summary of all radiation incidents investigated; and
 - (y) a summary of prosecutions undertaken by the Authority.
10. Does your Jurisdiction’s legislation provide for any excluded exposures and are they consistent with clause 3.1?
11. Describe the exemption provisions in your Jurisdiction and whether they are consistent with clauses 3.2.1 – 3.2.6 (including Schedules 4 & 5)?

12. Is an authorisation to possess required - refer clause 4.1? Please provide details of what sources/apparatus this authorisation is required for.
13. Are the requirements for authorising practices consistent with those in Schedule 7 (clause 4.2) for the categories listed?
- S 7.1 - Requirements for Bore Hole Logging or Well Logging
 - S 7.2 - Requirements for Industrial Radiography
14. Are authorisations granted for people who meet the requirements for relevant groups specified in Schedule 6 (clause 4.3) to use specified sources for the purposes listed?
- S 6.1 - Use of X-ray equipment by chiropractors for plain film diagnostic radiography of the spine and pelvis
 - S 6.2 - Use of intra-oral X-ray equipment by dentists for radiography of teeth and facial bones
 - S 6.3 - Use of intra-oral X-ray equipment by dental hygienists for dental radiography
 - S 6.4 - Use of intra-oral X-ray equipment by dental therapists for dental radiography
 - S 6.5 - Use of X-ray equipment by diagnostic radiographers for diagnostic radiography
 - S 6.6 - Use of radiation equipment by radiation therapists for radiation therapy
 - S 6.7 - Use of radioactive materials by nuclear medicine technologists for nuclear medicine purposes
 - S 6.8 - Use of radiation sources by veterinary surgeons for veterinary purposes
15. Are there provisions for authorising a natural person to be granted permission to undertake a restricted range of health-related diagnostic X-ray services without meeting the relevant competency requirements contained in Schedule 6 in rural and remote areas, and are they consistent with section 4.5, as follows?
- (z) the services are to be provided in an area recognised as an 'area of need' for particular services;
 - (aa) reasonable efforts have been made to attract an appropriately trained and accredited professional to the position;
 - (bb) the person has undertaken training accredited by the Authority for the purpose; and
 - (cc) appropriate conditions and restrictions are placed on the authorisation in regard to the services permitted to be provided.
16. Is there a requirement to register apparatus, sources and premises consistent with the categories specified in clause 4.6, and listed below?
- (dd) sealed sources of radioactive materials, sealed source apparatus, radiation apparatus, non-ionizing radiation apparatus specified in this Directory, and the premises on which these radiation sources and apparatus are secured, stored, used or manufactured;
 - (ee) premises at which unsealed radioactive sources are stored or used; and
 - (ff) in the case of radiation sources that are intended for portable or field use, the sources and the principal place of storage.
17. Are the criteria for registration consistent with Schedule 9 (clause 4.6.2) for the categories listed?

S 9.1 Registration criteria for Industrial Radiography Sealed Sources and Premises

18. Which ARPANSA Codes specified in Schedule 11 and listed below have been adopted, and by what mechanism (in regulation or as conditions of licence/registration or other means) - refer clause 5.1?
- (gg) RPS 1
 - (hh) RPS 2
 - (ii) RPS 3
19. Describe the incident reporting framework in your Jurisdiction and whether it is consistent with Schedule 13 (clause 5.3)?
20. Are your Jurisdiction's policy and approach to
- Intervention in Radiological Emergencies, and
 - Patient Discharge
- consistent with the guidance specified in Sections 6 and 7 respectively?
21. Are the occupational and public dose limits in your Jurisdiction consistent with Schedule 1?
22. Are the items specified in Schedule 5 exempted?
23. Is there provision for review of legislation at intervals not exceeding 10 years?
24. Would you like to make any further comments?

COUNCIL THANKS YOU FOR YOUR COOPERATION IN UNDERTAKING THE REVIEW OF THE NATIONAL DIRECTORY FOR RADIATION PROTECTION, EDITION 1. A REPORT WILL BE PREPARED BY THE RADIATION HEALTH AND SAFETY ADVISORY COUNCIL FOR FORWARDING TO THE CEO OF ARPANSA, AND COPIES FORWARDED TO ALL JURISDICTIONS IN DUE COURSE.

Appendix G. Supplementary Questions

This Appendix reproduces the four Supplementary Queries submitted to all key stakeholders in two batches covering:

- 1 **Supplementary Questions – Batch 1** were framed as an invitation to Jurisdictions to forward copies as available of:
 - 1.1 the sequence of typical documents that illustrate the (successfully concluded) **approvals processes** for common practice (a medium size metropolitan medical diagnostic X-ray practice was suggested)
 - 1.2 documents illustrating views, conclusions, comments and recommendations concerning the Jurisdictions’ **policy and planning** for radiation protection.
- 2 **Supplementary Question – Batch 2** was framed as an invitation to Jurisdictions to comment on the Consultant’s initial analysis of their regulatory frameworks, particularly:
 - 2.1 A brief summary under common headings of key **"structural" and related features** of Jurisdictions’ radiation protection legislative frameworks, and
 - 2.2 The Consultant’s broad analysis of the **mechanisms for alignment** – ways in which Jurisdictions have effected alignment between their regulatory frameworks and the NDRP provisions.

1. *Regulatory Operations - the approvals process*

“Please provide a copy of the following “trail” of typical documents that will give insight into how elements of the regulatory framework operate in practice.

“The typical documents are those relating to a specified practice or use that is relatively common to all states and territories. For this exercise, the proposed specified practice is **“a medium size metropolitan medical diagnostic X-ray practice”**

“The typical documents span the (successfully concluded) process from (a) initial applications to (b) issued authorisations / licences / registrations, and include:

- Completed application form letters or submissions and any supporting documentation, assessments, certificates, plans, appointments,
- The issued authorisations / licences / registrations, plans and appointments as approved, conditions, attachments, and register entries,
- Relevant guidelines, procedures, fact sheets, explanations made available from the Regulatory Authority to assist the applicant.

“The documents should be made anonymous, as considered necessary, with information deleted that may identify applicant, reviewing/testing/assessing persons or their situations.”

2. *Jurisdictions’ Policy and Planning for radiation protection*

“Please provide, in relation to the Jurisdiction’s regulatory framework, a copy as available of key documented views, conclusions and recommendations, and/or related comment concerning:

1. Relevant recent legislative review, and results of such review. (Refer to clause 1.5 of the NDRP, which notes the expectation that Jurisdictions will

- adopt the principles, set out in Part A of the NDRP, as reviews of legislation come forward.)
2. As part of such review, or separately as applicable, relevant proposals, plans, surveys or results addressing specifically:
 - Development of a “performance-based” approach,
 - Accommodation of “justification and optimisation” principles
 - Incorporation of “risk management principles”,
 - Provision for and experience with “3rd party accreditation” for inspection, investigation, assessment and other functions,
 - Operation of “mutual recognition principles”,
 - Study of the Jurisdiction's client/user characteristics (in their principal segments [e.g. by practices, sources/apparatus types, materials, occupations / industries]), and their preferences and satisfactions
 - Convergence towards a nationally uniform scope of regulation and structure of “practices” for dealing with radiation sources, materials, places etc in different situations [e.g. possession, manufacturing, use, disposal, preparation, dismantling, transport] and industries, their monitoring and assessment, and relevant persons (natural or otherwise).
 3. Convergence towards (or variation from) nationally uniform technical requirements, adoption of (or variation from) national and international standards, and variations if any at the current time from the NDRP Annex 3 (Current status of [adoption of] Radiation Health Series documents or other standards specified in NDRP)
 4. The effectiveness, efficiency or content of the NDRP and its processes, which may represent barriers for the Jurisdiction achieving the NDRP aims, and proposals if any for improvement.”

3. Comment on Initial Analysis

The following question was framed in respect of two accompanying papers:

“... please provide response and any recommendations on the analyses in the two accompanying papers ... focusing particularly on:

- Identification and any recommended correction of misinterpretations the papers may create in relation to your Jurisdiction's regulatory framework,
- Comment on and any recommended amendment to the qualifications we have included in the papers to discourage readers from drawing simplistic and misleading conclusions from them,
- Critique of the approach we are proposing in the analyses and any recommended addition to key aspects that have not been addressed in the papers.”

The two papers accompanying this query presented:

- brief summaries of key “structural” and other features of each Jurisdiction's radiation protection legislative framework [Refer Appendix B]
- the Consultant’s broad assessment of the mechanisms for alignment of Jurisdictions’ regulatory frameworks with the NDRP provisions [Refer Appendix C]

Appendix H. Note on Assignment Process

This Appendix presents additional notes on the course of the assignment. They outline aspects of:

- the interactions with stakeholders' contact persons, and
- the Consultant's analysis of Jurisdictions's regulatory frameworks.

The notes are intended to inform the reader of certain limitations inherent in the analyses undertaken, and so caution against drawing invalid conclusions about Jurisdictions' regulatory frameworks from the results presented.

Stakeholder interactions

Throughout the assignment, contact was maintained by telephone and email with key stakeholders' contact persons. In addition to dealing with the Questionnaire, handling supplementary queries and responses, and expediting conduct of the project, contact was instrumental for:

- minimising misunderstanding of the Consultant's intentions in the analysis or Jurisdictions' situations and views,
- maintaining transparency of the Consultant's approach, and
- encouraging feedback and comment from Jurisdictions.

While the contact persons emphasised their Jurisdictions' commitment to the NDRP process, the discussions underscored resource pressures they experienced on a day-to-day basis in responding to additional requests. This was especially apparent in the Consultant's dealings with the smaller Jurisdictions, where personnel need to perform the same functions as in the larger Jurisdictions, presumably with similar skills but reduced staff numbers.

Analysis of Jurisdictions' regulatory frameworks

The detailed analysis in this report focuses on the following three aspects, which all relate to the overall issue of national uniformity:

- Outlining in Table 6 to Table 16 in Appendix B overall features of Jurisdictions regulatory frameworks;
- Characterising in Table 17 to Table 19 in Appendix C the mechanisms for effecting alignment between regulatory frameworks and NDRP provisions; and
- Describing in Table 20 and Table 21 in Appendix D, features of typical regulatory operations.

In all cases the Consultant has sought to strike a balance between (a) the imprecision of simplified, high-level and coarse, summaries and (b) the precision of comprehensive listings in which the necessary level of detail would defeat the aim of the summarisation.

Having regard to the national uniformity objective of the NDRP process, the Consultant would see the simplified summaries as being more reflective of the likely perspectives of

users who are (among other functions in their businesses or organisations) responsible for day-to-day radiation protection compliance, rather than the perspectives of expert Regulators or legal practitioners who may be applying or arguing fine distinctions of interpretation. The summaries as presented therefore reflect neither:

- a detailed study, nor
- a precise legal or technical interpretation, of the regulatory instruments.

To this end, the analysis in each Appendix was prepared by the Consultant separately, jurisdiction-by-jurisdiction, and on the basis of:

- a “first-reading” of each Jurisdiction’s principal radiation protection Act and Regulation, and
- the Jurisdiction’s response to the Questionnaire (and response to supplementary queries in the case of Appendix D).

Pending receipt and initial consideration of this report by RHSAC, the listings were marked “In Confidence”. The comments received by the Consultant suggest that the analysis undertaken in this assignment is novel, and particularly that the approach taken for characterising alignment between the NDRP and Jurisdictions’ regulatory frameworks has not been attempted previously in the Australian multi-jurisdictional radiation protection context.

- It is recognised that there is necessarily some subjectivity in the analyses and that the method used has not entirely eliminated the possibility of inconsistency, error or omission on individual matters.
- While the summaries disclose the pattern of convergence and the high level of variation among Jurisdictions, they are in no sense intended to indicate a judgement or comparative assessment by the Consultant as to their regulatory adequacy.
- The Consultant considers that a validation step would be appropriate before the analysis could properly be used to determine detailed improvement actions within the current NDRP cooperative approach. The validation could provide opportunity for Jurisdictions (together with the RHC) to identify and offer views on strategies for further improvement.

While the “In Confidence” label has been removed, these qualifications remain.