

enHealth Workforce Project

Working Paper 3

Skills and Knowledge Frameworks Background Paper

Prepared by Kim Windsor, Windsor & Associates, February 2009

This paper has been prepared as background information for participants in the Skills, Knowledge and Experience (SKE) Focus Groups. These focus groups are being convened as part of the enHealth Workforce Project. The first stage of the project developed a description of EHO roles and responsibilities which is in the final stages of validation. The SKE focus groups will work with this role description to develop a Skills, Knowledge and Experience Matrix for EHOs.

Purpose of a skills and knowledge framework

The purpose of the enHealth Workforce Project is to develop an agreed nomenclature, across the states and territories to define roles and responsibilities matched to skills and knowledge required by EHOs in Australia. In addition to increasing national consistency across state and territories, this initiative supports consistent interpretation of legislation relating to environmental health. Legislation varies in the criteria for appointment to practice environmental health.¹ Acts refer to 'appropriate' or 'approved' competencies, qualifications and/or experience. In Victoria for example the Health and Wellbeing Act allows for recognition of qualifications and/or experience that is 'substantially equivalent' to declared qualifications and/or experience. Some jurisdictions specify approved qualifications, others do not. Enforcement agencies need to understand how to consistently interpret these criteria.

Significant progress has been made both in Australia and internationally, to describing skills and knowledge to be achieved by EHOs. This work informs the development of this matrix but as yet, there is no nationally agreed standard against which to assess capability to carry out the EHO role. This matrix will provide the basis for designing tools and processes to assess EHO capability, whether developed through an education or training course offered locally or overseas and/or developed through experience.

About this paper

This paper provides background to designing the skills and knowledge matrix and outlines decisions approved by the project Steering Committee. It begins with an overview of different approaches to developing skills and knowledge frameworks relevant to public health and environmental health. It then explores three examples in more detail and considers how these models can inform the design of a skills and knowledge matrix.

The final section outlines an initial draft matrix structure. This is based on the EHO roles/responsibilities description and a review of existing frameworks. This is a very preliminary draft for consideration by Steering Committee and focus group members.

¹ Refer to Working Paper 1 for an overview of legislative provisions relating to appointment of authorised officers.

Skills and knowledge frameworks

A number of existing frameworks describe environmental health capabilities. Most refer to 'competency'. This term is used in different ways. In some UK material, 'competency' describes actions as distinct from 'knowledge' which is described separately. In Australia and Canada the term 'competency' encompasses both skills and underpinning knowledge. In Australia 'competency' sometimes signals a vocational rather than a higher education training pathway. However in most discussions it refers to skills and knowledge, regardless of how these are attained.

Organisational competency frameworks

Some competency frameworks describe public health competencies at the organisational level. For example in Australia the National Health and Medical Research Council developed guidelines on Cultural competency in health.² In the US, public health standards have developed competencies to describe wider public health and the environmental health organisational capabilities. The frameworks more directly relevant to this project are those that describe the skill and knowledge requirements of individuals rather than the capability of an organisation.

Public health competency frameworks

A number of frameworks that describe individual competence relevant to environmental health are wide-ranging in their approach. England, the USA and Canada have developed competency frameworks to cover the whole public health sector including environmental health. The Public Health Skills and Career Framework (UK) is the most detailed example. The framework is designed to cover the gamut of occupations related to public health from those involved in direct delivery of services to those who manage, educate or commission services or training. It identifies nine areas of competence and then describes each one over nine successive levels of application. Given the breadth of scope, the descriptions are at a fairly generic level. The framework overlays existing registration, licensing and qualification arrangements rather than replaces them. It provides a tool to map and link otherwise separate occupational areas and in this way, promotes recognition and career opportunities across as well as within public health disciplines. In reality the extent to which people can move between different roles will continue to be determined by the detailed professional entry requirements embedded in registration, licensing and other requirements of professions covered by the framework. This model is not designed to provide detail against which an individual's skills and knowledge can be assessed.

² National Health and Medical Research Council (2005) Cultural competency in health: A guide for policy, partnerships and participation, Australian Government

Environmental health-specific competency frameworks

The most detailed approaches that specifically describe environmental health skills and knowledge come from the course accreditation guidelines developed by Environmental Health Australia (EHA) and the Chartered Institute of Environmental Health (CIEH) in the UK.³ Unlike the more generic public health frameworks, these are specifically designed for the purposes of accrediting university courses and provide detailed descriptions of the learning outcomes graduates need to achieve. The Canadian example developed by the Canadian Institute of Public Health Inspectors (CIPHI)⁴ describes the outcomes to be demonstrated via practicum which are additional to the requirement to complete an accredited university course.

Approaches to describing environmental health skills and knowledge

Each model takes a different approach to categorising relevant skills and knowledge. The EHA guidelines start by describing how eight generic attributes of degree graduates translate into specific abilities of environmental health course graduates. Environmental health content is then outlined under seven subject areas or 'literacies'. The guide also provides examples of how graduate abilities can be mapped to environmental health literacies in an appendix that describes how skills and knowledge may be demonstrated.

The CIEH model draws on Bloom's taxonomy of learning to develop a four tiered professional progression criteria. It identifies 10 generic domains and describes each of these over four successive levels. Specific environmental health content is structured in a general introduction to 'physical, social and human worlds'. Applied content is then organised around environmental health 'stressors' and 'interventions'. Operational skills and core competencies describe outcomes or applications of knowledge and are similar to the applications of generic attributes described by the EHA. Students must also include an in-depth study of a significant intervention as part of their learning program.

The CIPHI model describes outcomes to be demonstrated in the workplace rather than course content. It therefore describes applied learning outcomes. Requirements are described under 16 main headings and further developed under 488 detailed instructional objectives.

Table 1 summarises each of these approaches.

³ Web addresses for accreditation policies: EHA - <http://accreditation.eh.org.au/general.php>
CIEH - http://www.cieh.org/professional_development/EH_degree_curriculum.html

⁴ CIPHI - <http://www.ciphi.ca/pdf/bocpracticumguide.pdf>

Table 1: Summary of skills/knowledge categories

EHA	CIEH	CIPHI
<p>Environmental health course accreditation policy, EHA, November 2006</p>	<p>CIEH Curriculum for courses leading to registration of EH Practitioners, April 2003</p>	<p>Board of Certification, Practicum Guideline For Training Agency and Trainees, July 2007</p>
<p>Generic attributes:</p> <ul style="list-style-type: none"> • Apply relevant knowledge, principles and concepts to workplace needs • Communicate effectively • Access, evaluate and synthesise information • Commitment to lifelong learning • Demonstrate international and cultural awareness and understanding • Apply professional skills • Use technologies appropriately • Think critically, creatively and reflectively <ul style="list-style-type: none"> - Public health principles - Sustainable development and environmental health principles - Foundation sciences - Foundational environmental health practice - Environmental health risk assessment and management - Environmental health law - Environmental health management and administration functions 	<ul style="list-style-type: none"> - The physical, social and human worlds - Stressors and their implications for health - The interventions - Minimum intervention areas <ul style="list-style-type: none"> • food safety • health and safety • housing • environmental protection • public health - The theoretical basis for operational skills: learning, organisational management, communication, inspections and professional ethics - Operational skills: assess, consult, advise, enforce, train/educate, advocate , evaluate, research - Core competencies – describes application of operational skills to intervention areas 	<ul style="list-style-type: none"> - Air quality - Waste management - Water management - Inspection: food, recreation facilities, housing, nuisance and general sanitation, social care facilities, personal services, animal facilities - Land management - Environmental health assessment - Occupational health - Communicable disease control - Emergency preparedness - Pest control - Environmental health advisory – education, community development, advocacy - Lifestyle programs - Investigation, research and reporting - Communications

The role of experience

Experience is one pathway to attaining the required skills and knowledge to practice as an EHO. In the UK system, courses that cover the required skills and knowledge can be accredited. On completion of such a course the graduate attains an academic qualification but they are not eligible for recognition as 'competent' to practice as an environmental health practitioner until they complete a structured work-based learning component. Although there is no specified minimum period, the guide notes that this is likely to take between 9 and 12 months and for a technical officer working in a specific area, it could take around 2 years in order to have opportunities to demonstrate the breadth of experience required. Applicants are provided with a workbook that outlines minimum requirements and must present a portfolio of evidence to demonstrate that they have achieved 'sufficient experience.' Once completed, a graduate is eligible to apply for registration with the Environmental Health Registration Board as an Environmental Health Practitioner (EHP). Registration is conditional on completing a professional examination.

In Canada, practitioners seeking a Certificate in Public Health Inspection must sit an exam and undertake a minimum 12 weeks practicum to be demonstrated and assessed in a health unit or agency. The CIPHI provides a highly detailed, structured guide to support assessment of competence. In order to meet EHA accreditation requirements in Australia undergraduate courses must include a minimum of 6 weeks (or equivalent) practical experience. Although no minimum is specified for post graduate courses, there is an expectation that graduates will either have existing practical experience or will gain it as part of their study.⁵

The requirement to demonstrate the ability to integrate different aspects of learning or experience relates to the design of assessment processes rather than to the content of the matrix. The matrix can be used to support assessment but will not provide advice on assessment design.

Designing the skills and knowledge matrix

These different approaches identify the different types of skills and knowledge to be considered in designing a matrix. The environmental health skills and knowledge matrix has a slightly different focus from these existing frameworks. It needs to identify the skills and knowledge required to support the identified roles and responsibilities of EHOs in Australia. The level of detail described should provide sufficient information for use in designing job roles, developing education and training programs and assessing the existing competence of applicants who seek recognition to practice. However it does not necessarily follow that all EHOs require all skills and knowledge or

⁵ EHA Environmental Health Course Accreditation Policy, p15

that structured education and training is the most appropriate means of delivering all skills and knowledge.

Categorising skills and knowledge

The matrix needs to cover different types of skills/knowledge.

- Generic attributes or competencies that relate to broad learning principles for example, use technologies, access, evaluate and synthesize information etc.
- Underpinning skills and knowledge that can apply to all or a number of areas of activity.
- Underpinning skills and knowledge that relate to a specific area of activity.
- Environmental health is an applied discipline. While skills and knowledge are described under discrete headings, course guidelines emphasise the need to integrate multiple aspects of skills and knowledge to demonstrate holistic approaches.

11 Generic attributes

The Australian Qualification Framework (AQF) governs the requirements to be met by all formally accredited training programs. The AQF covers both vocational education and training (VET) and higher education (university) courses and describes the characteristics of learning outcomes to be achieved at each level. These are then interpreted by the education or training provider. The minimum entry level training for EHOs is now a bachelor degree. The AQF requirements for this level are:

- the acquisition of a systematic and coherent body of knowledge, the underlying principles and concepts, and the associated communication and problem-solving skills;
- development of the academic skills and attributes necessary to undertake research, comprehend and evaluate new information, concepts and evidence from a range of sources;
- development of the ability to review, consolidate, extend and apply the knowledge and techniques learnt, including in a professional context;
- a foundation for self-directed and lifelong learning; and
- interpersonal and teamwork skills appropriate to employment and/or further study.⁶

⁶ Australian Qualification Framework, Implementation Handbook, 4th Edition, 2007

The matrix should base a description of generic attributes on the AQF and where necessary, relate these to an environmental health context.

12 Underpinning skills and knowledge

The proposed headings for the skills and knowledge matrix are based on a review of the roles/responsibilities description and existing models. The following describe areas of knowledge that underpin the EHO role.

- Science
- Public and environmental health concepts
- Research methods
- Political, legislative, policy context
- Risk management
- Enforcement
- Communication, cultural awareness and interpersonal skills
- Administration and management

13 Area-specific skills and knowledge

The area headings used to describe EHO roles and responsibilities form the basis for this section.

- Safe and suitable food
- Prevention and control of communicable conditions
- Water management
- Environmental management
- Land use management
- Built environment
- Indigenous environmental health
- Sustainability and climate change
- Emergency management

Within each of these area-specific areas of skill and knowledge, the areas of communication, risk management and enforcement and administration were identified as important areas to consider.

The Steering Committee supports the development of the matrix structured in three broad parts where Part 1 describes generic attributes; Part 2 outlines underpinning skills and knowledge that supports the EHO role; Part 3 outlines skills and knowledge relating to specific areas of activity.

Part 1 will be the AQF descriptors at the relevant qualification level.

Identifying core/optional skills and knowledge

The matrix can either describe minimum requirements for EHOs or it can go beyond this to describe additional or 'nice to have' skill sets. This approach is taken by the Public Health Skills and Career Framework (UK) which identifies four core and five non-core, 'defined' competencies. There may be specific areas or advanced levels within a skills area that are of interest to some but not all EHOs. This is most likely to apply to new and emerging areas of practice such as water recycling.

The Steering Committee agreed that the matrix should describe skills and knowledge requirements common to most EHOs and at this stage, will not identify additional skills and knowledge that some EHO go on to develop or specialise in.

The matrix that follows, was based on the roles and responsibilities framework and draws from existing skills and knowledge descriptions that apply to environmental health. The matrix is presented in three parts.

Part 1 presents the generic learning outcomes required by the AQF for degree level graduates.

Part 2 describes underpinning knowledge that support environmental health work.

Part 3 describes area-specific skills and applied knowledge.

These tables are designed to be cumulative. Details covered in one table are not duplicated in the next unless there is additional emphasis or detail on its application in that specific context.

Where aspects of applied skills and knowledge differed depending on jurisdiction and/or employing body, additional requirements that applied to some but not all EHOs have been listed under the 'optional' heading.

In reviewing the draft skills and knowledge matrix, the following questions were considered:

Does the structure of the matrix cover EHO roles/responsibilities?

Is the level of detail appropriate/sufficient to underpin uses such as developing assessment tools to confirm skills and knowledge?

Is the level of skills/knowledge described appropriate for all/most EHOs who perform the designated function?

Draft

Part 1: Generic skills and knowledge

- The acquisition of a systematic and coherent body of knowledge, the underlying principles and concepts, and the associated communication and problem-solving skills
- Development of the academic skills and attributes necessary to undertake research, comprehend and evaluate new information, concepts and evidence from a range of sources
- Development of the ability to review, consolidate, extend and apply the knowledge and techniques learnt, including in a professional context
- A foundation for self-directed and lifelong learning
- Interpersonal and teamwork skills appropriate to employment and/or further study

Part 2: Underpinning knowledge

Science	<p>Foundation physics</p> <ul style="list-style-type: none">• basic principles of physics• principles of radiation eg to manage nuisance complaints relating to radiation• basic understanding of acoustics eg. noise measurement <p>Foundation biology</p> <ul style="list-style-type: none">• basic principles of biology• basic human anatomy and physiology related to identifying disease causation and exposure pathways <p>Microbiology:</p> <ul style="list-style-type: none">• microorganisms of significance for human health• conditions required for growth of potentially harmful microorganisms• growth rates• transmission mechanisms and likely carriers• infective dose• methods to control microbial growth <p>Foundation chemistry</p> <ul style="list-style-type: none">• basic principles of chemistry• sample collection and analysis <p>Foundation and applied principles of natural and built environmental science:</p> <ul style="list-style-type: none">• water cycle and water quality• soil• air quality• meteorology• principles of public health engineering <p>Foundation and applied environmental toxicology</p> <ul style="list-style-type: none">• exposure/dose level, assessment and health impact <p>Foundation ecology:</p> <ul style="list-style-type: none">• ecological principles related to environmental health <p>Foundation entomology:</p> <ul style="list-style-type: none">• insects that can potentially harm human health
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	<ul style="list-style-type: none"> • conditions required for growth/spread • strengths and limitations of control methods
Public & environmental health concepts	<ul style="list-style-type: none"> - Definition and interaction between individual health, public health, environmental health, environmental protection and sustainability - Definition and social models of health, wellbeing, quality of life, human rights, equity, personal choice, privacy and social responsibility - Principles of health promotion - Links between lifestyle and personal choices, the environment and public health outcomes - Legislative approaches and responsibilities designed to protect and promote health outcomes and limit sale of potentially harmful products eg tobacco - Public and environmental health assessment tools, eg. surveys, planning methods and frameworks - The points of impact to influence environmental health determinants and related methods of impact - Impact of natural and built environments on public and environmental health
Research methods	<ul style="list-style-type: none"> - Public and population health research methods, research ethics and tools - Foundation epidemiology appropriate to identify, measure, analyse and interpret public and environmental health data, trends and status - Capability to locate, critically appraise and synthesize information, apply research data and maintain technical knowledge - Sampling principles, procedures and methods - Concept of evidence based decision making and options for determining, collecting, validating, analysing and applying data to inform decisions - Foundation qualitative and quantitative methods of data collection and analysis and related research design, eg. to provide evidence to support a course of action - Evaluative methods and applications
Political, legislative, policy context	<ul style="list-style-type: none"> - Policy context and relationships between public health, environmental health and environmental protection - Overview of public and environmental health governance, administrative and legislative frameworks and related standards, codes and guidelines - Application of environmental health principles eg precautionary principle, evidence based decision making, primacy of prevention, accountability, proportionality, collaboration and cost/benefit - Legal and ethical responsibilities to protect the rights of individuals and organisations that may affect public and environmental

	<p>health eg. right to privacy, freedom of information, confidentiality, duty of care, anti-discrimination, anti-harassment, data disclosure and reporting</p> <ul style="list-style-type: none"> - Relationship between public and environmental health and development processes - Legislative approaches to defining public and environmental health objectives, principles and risks - Relevant legislation specific to activity/jurisdiction to identify and act in accordance with powers and intent - Jurisdictional scope of relevant tiers of government, agencies and personnel - Partner organisations, programs and specialists that support public and environmental health outcomes - Process and responsibility for developing, implementing and evaluating public and environmental health policy legislation, procedures, codes of practice, protocols and programs - Socioeconomic, political, environmental and cultural factors that influence policy development, interpretation and practice - Professional ethics and codes of conduct
Risk assessment and management	<ul style="list-style-type: none"> - Sources of evidence and guidelines to support risk management - Context, frameworks and procedures to conduct environmental health risk assessment - Risk management strategies and methods to evaluate options - Methods and factors to consider when assessing and evaluating options for mitigating risk
Compliance and enforcement	<ul style="list-style-type: none"> - Enforcement agency criteria for determining appropriate action - Compliance options, tools and procedures - Availability, strengths and limitations of different compliance and legal enforcement tools and mechanisms - Interviewing and investigation techniques to collect evidence eg. sampling - Legal procedures to document, prepare and present prosecution cases
Communication, cultural awareness and interpersonal skills	<ul style="list-style-type: none"> - Written and verbal communication techniques to support consultative, educative and enforcement responsibilities - Communication strategies for diverse audiences and contexts eg. diverse socio economic and cultural backgrounds, levels of first language and English literacy, individuals, groups, industry, business, media and community. - Presentation and communication techniques to provide advice and influence outcomes suited to different purposes and environments, eg business and public forums, management meetings, staff interaction, conferences and legal proceedings - Recording and reporting formats and document presentation requirements to meet legal and organisational requirements - Design of effective advisory and information campaigns - Facilitation of public meetings and consultation processes

	<ul style="list-style-type: none"> - Mediation, conflict management and interpersonal techniques to communicate effectively in diverse environments eg stressed, resistant and hostile situations - Change management principles and strategies to support behavioural change around environmental health issues - Media liaison techniques and presentation skills - Advocacy skills to act on behalf of individuals and stakeholder groups
<p>Administration and management</p>	<ul style="list-style-type: none"> - Information systems, data bases, technologies and software options to manage security, authorisation and distribution of environmental health data and records - Procedures and criteria for assessing, approving, determining conditions and administering the issuing of licences, notices, orders and fines - Effective design and implementation of studies, policies and programs to protect public and environmental health and minimise risks - Roles, responsibilities and procedures for collecting, recording, reporting and evaluating information - Tools and resources to support consistent interpretation and enforcement of environmental health legislation - Administrative appeals processes - Models for costing, preparing budgets and evaluating impact of environmental health initiatives - Principles and models of continuous improvement - Contract and project management - Procurement principles and processes - Governance and risk management models - Roles, protocols and collaborative arrangements between partner agencies, departments, and professionals to deliver public and environmental health outcomes - Legal authority and ethical standards applying to environmental health officers undertaking authorised roles - Principles of OHS legislation and procedures to identify hazards and manage risks related to own work; develop work practices suited to work contexts that present multiple risks eg. exposure to vapours, gases, radiation, asbestos, noise, heat, chemicals, particulates, aggravated and aggressive behaviour

Part 3: Applied skills and knowledge

Safe and suitable food: to meet requirements of the Food Standards Code as reflected in food legislation and relevant guidelines

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Negotiate entry - Provide food safety information and advice to business and the public - Provide advice on managing foodborne outbreaks 	<ul style="list-style-type: none"> - Apply knowledge of food standards code, food preservation and preparation processes and requirements, related handling, storage, equipment and facilities, basic construction principles to determine appropriate action to eliminate, reduce or control risks related to food - Apply principles of risk based sampling and inspection to assess food related public health risks - Assess and manage risk related to: <ul style="list-style-type: none"> • Programs • Systems • Specific risks - Apply HACCP principles to identify hazards, assess and quantify level of risk in a: <ul style="list-style-type: none"> • Low risk • Medium risk • High risk, food business context - Assess adequacy of control measures against prescribed standards and where there are no established standards or guidelines - Apply knowledge of likely causes of food contamination and spoilage to investigate contamination events - Apply knowledge of symptoms and incubation periods to Investigate likely causes of foodborne illness and implement outbreak management and reporting procedures - Implement product recall procedures 	<ul style="list-style-type: none"> - Develop/apply tools and programs to support consistent approaches to enforcement eg evidence based risk assessment procedures; rating or priority systems; policies; procedures - Contribute to standards development eg food standards - Assess and administer issuing of licences, legal notices, orders and fines - Identify and analyse foodborne illness records - Liaise with and report to partner agencies/departments to improve and protect public health related to management of foodborne disease

Optional

- Conduct audits
 - Low risk businesses (3.3.1)
 - Vulnerable populations (3.3.1)
 - Catering businesses
 - Heat treatment process
 - Manufacturing of ready-to-eat meat products
 - Bivalve mollusc growing and harvesting processes

Specific to some jurisdictions/functions:

- Provide structured training and assessment
- Identify public health concerns and related options for managing risk in meat, seafood, dairy or horticulture businesses

Prevention & control of notifiable and communicable conditions: Includes communicable disease control, microbial control in air, water handling systems, immunisation, personal services, brothels & parlours, cemeteries, crematoriums and mortuaries, vector control, pest control and animal management

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Provide information and advice to businesses and the public on public and environmental health issues, preventative strategies, risk management and outbreak management - Communicate information on nature and level of public and environmental health risk - Apply interpersonal skills to interview people about issues which may be personal and sensitive - Develop and implement health promotion campaigns - Provide information, advice and training to a range of stakeholder groups on the prevention and control of communicable diseases - Apply mediation skills to facilitate agreements and resolve conflict eg with neighbouring properties 	<ul style="list-style-type: none"> - Apply research skills eg. to assess public and environmental health status, identify health trends and establish priorities - Design studies to investigate public and environmental health risk levels and conduct investigations associated with notifiable and communicable conditions - Identify common types, symptoms and control measures for diseases that are: <ul style="list-style-type: none"> • Waterborne • Blood borne • Zoonotic • Vectors • Other infectious diseases - Apply understanding of typical facilities, equipment and processes or procedures to identify public and environmental health risks eg associated with cooling towers; personal service businesses; brothels; cemeteries, crematoriums and mortuaries; human parasites, pests; animals and birds - Apply general principles of disinfection, sterilisation, sanitation and infection control to assess or determine action required to eliminate, reduce or control public health risks related to communicable disease - Assess options and adequacy of mitigation measures - Design and implement studies, policies and programs to minimise risk eg immunisation programs - Identify, assess and manage personal OHS and safety of others 	<ul style="list-style-type: none"> - Contribute to/lead planning processes eg disease control, environmental health plans, environmental impact plans - Develop quality assurance plans to ensure delivery of quality service eg. to manage quality assurance related to vaccination programs - Maintain and evaluate public and environmental health records and databases - Administer issuing of licences, legal notices, orders and fines - Liaise with and report to partner agencies/departments involved in communicable disease control and management to improve and protect public and environmental health - Manage/participate in investigations and related processes associated with notifiable diseases eg. Contact tracing

Optional

Conduct facility audits (Specific to Qld EHOs)

Water management: Relates to drinking, recreational and reuse water.

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Negotiate entry - Provide information and advice to service suppliers on water quality standards and treatment options - Draft and communicate water quality advice and advisories to the public 	<ul style="list-style-type: none"> - Apply knowledge of waterborne diseases; water treatment methods suited to different water use and facility contexts eg. large and small scale water supply; water recycling and reuse methods; potable and recreational water - Conduct inspections to assess water quality against relevant standards and identify public and environmental health risks - Apply knowledge of water catchment management - Identify water quality standards appropriate to various jurisdictions and applications, related test methods and water treatment options - Conduct investigations to identify probable causes of unacceptable water quality in treated, natural and artificial water bodies - Assess options and adequacy of mitigation measures to meet regulatory requirements - Identify possible sources of pollution in a natural or artificial water body and determine appropriate remedial action 	<ul style="list-style-type: none"> - Contribute to standards development eg water quality standards; water quality monitoring requirements - Administer assessment and issuing of relevant licences, legal notices, orders and fines - Liaise with and report to partner agencies/departments to improve and protect public and environmental health related to waste water management

Optional

<ul style="list-style-type: none"> - Apply understanding of water standards and related processes to monitor harvesting of bivalve molluscs
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Environmental management: Includes solid waste, waste water management related to on-site single and multi-dwelling treatment systems, grey water and control of pollution and hazardous substances, both domestic and industrial

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Provide information and advice on safe and appropriate handling and disposal methods, site clean up and remediation - Communicate information on nature and levels of health risk - Apply mediation and facilitation skills to agreements resolve conflict eg between neighbours - Develop and implement information campaigns eg clean up campaigns, information on collection and use of grey water 	<ul style="list-style-type: none"> - Apply knowledge of waste treatment requirements and methods - Apply knowledge of health risks, land carrying capacity and water drainage systems to assess applications for sewerage treatment facilities; on-site effluent treatment and disposal; location sites for solid waste management facilities; waste reuse applications - Apply basic features and design of plumbing systems that feed on-site treatment systems - Identify common types of environmental pollution and methods used to assess quality of: <ul style="list-style-type: none"> • Water • Soil • Noise • Air - Determine and collect evidence to respond to complaints related to environmental management eg. solid and liquid waste management, effluent overflows, illegal dumping, pollution, odour, dust, infestation, chemicals, noise, asbestos, lead - Identify sources of toxic substances in the environment and methods to test impact on public and environmental health - Develop sampling and monitoring plans, collect samples and use appropriate monitoring and testing equipment to collect evidence - Apply knowledge of methods used to manage waste-related risk to meet prescribed standards and guidelines - Assess options and adequacy of mitigation measures 	<ul style="list-style-type: none"> - Contribute to standards development eg water reclamation and application - Develop and manage contracts eg waste collection and disposal contracts - Manage waste handling facilities - Develop policies and programs eg waste recycling programs - Administer assessment and issuing of relevant licences, legal notices, orders and fines - Liaise with and report to partner agencies/departments involved in monitoring and responding to environmental pollution to improve and protect public and environmental health related to environmental protection

	- Identify partner agencies and respective roles and functions	
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Optional

Specific to EHOs in some jurisdictions
- Enforce legislation related to control of drugs and poisons
- Identify and manage risks associated with radiation (other than those associated with waste)

Draft

Land use management: Relates to strategy, subdivision and lot planning and development.

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Collaborate and advocate for recognition of public and environmental health issues in planning forums - Develop public information and campaigns to promote healthy lifestyle decisions - Facilitate community contributions to planning decisions 	<ul style="list-style-type: none"> - Apply knowledge of relationships between built environment and public and environmental health - Identify and promote opportunities to support healthy lifestyle decisions through planning policy - Identify public and environmental health hazards and risks associated with land use eg land contamination, built environment, sewer loading, industrial/residential buffer zones, storm water and waste management, drainage, emissions, water services, vector control, noise levels - Identify public and environmental health hazards and risks associated with land development eg noise, drainage, sediment/erosion control, site traffic movement , dust management - Assess options and adequacy of mitigation measures eg site rehabilitation, management of contaminated sites 	<ul style="list-style-type: none"> - Contribute to strategy development eg planning schemes; municipal development strategy - Assess and advise on public health implications of planning strategy, subdivision and lot development applications and decisions - Develop and draft conditions to ensure that public and environmental health is improved and hazards are effectively controlled by planning decisions - Liaise with and report to partner agencies/departments involved in planning and monitoring land use to improve and protect public and environmental health related to land use planning and development

Optional

Specific to EHOs in some jurisdictions

- Consider development impact on release of acid into water bodies. Requires testing for acid sulphate soils. Applies in WA, NSW, Qld

Built environment: Relates to public buildings including rooming houses, motels, caravan parks, licensed premises, backpacker accommodation, supported accommodation, school camps and one-off/mass events and festivals

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Negotiate entry - Provide information and advice to business operators on public and environmental health standards - Communicate information on nature and levels of health risk - Apply mediation and facilitation skills to agreements resolve conflict eg between neighbours - Co-ordinate across multiple agencies to plan and monitor mass events - Provide information to event managers and the public on safe conduct 	<ul style="list-style-type: none"> - Apply understanding of basic construction principles eg. to advise on appropriate fitout requirements, liaise with construction professionals, read and understand plans - Apply knowledge of sanitation methods and standards, basic fire safety and building requirements to identify public and environmental health hazards - Conduct inspections to assess fitness for purpose and identify public and environmental health risks associated with building and accommodation - Assess options and adequacy of mitigation measures - Assess public and environmental health risks associated with one-off/mass events and determine effective risk management strategies - Identify public and environmental health hazards and risks associated with mass events and festivals eg. safety and certification of structures, noise, sanitation/sewerage, food safety, access, public safety; crowd control, waste management; first aid; shade - Identify, assess and manage personal OHS and safety of others 	<ul style="list-style-type: none"> - Assess and advise on planning applications to site structures and accommodation - Develop and draft conditions to ensure that public and environmental health hazards are effectively controlled - Liaise with and report to partner agencies/departments involved in providing individual and public and environmental health and related social support programs to improve and protect public and environmental health related to buildings, accommodation and facility standards

Optional

- Identify, monitor and enforce appropriate standards of care and business practices as required by the Supported Residential Facilities Act 1992 (SA)
- Identify, monitor and enforce appropriate standards in venues (SA & Tas)

Indigenous environmental health: Relates particularly to discrete communities that are often serviced by sub-standard environmental health infrastructure. This section outlines additional skills and knowledge requirements of EHOs working in this context.

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Apply knowledge of cultural factors and community structures to establish and maintain community relationships - Provide information and advice to communities and individuals on nature and levels of health risk - Conduct appropriate environmental health promotion - Community engagement and development strategies to establish and implement agreed public and environmental health priorities and programs - Determine appropriate environmental health interventions - Mentor and support public and environmental health capability building within the community - Advocate to improve access and availability of public and environmental health infrastructure to indigenous communities 	<ul style="list-style-type: none"> - Identify common types and symptoms of diseases associated with poor environmental health infrastructure - Conduct research and investigations to determine public and environmental health risk levels and implement effective control/management interventions - Apply community development strategies 	<ul style="list-style-type: none"> - Liaise with and report to partner agencies/departments involved in preventing disease and improving public and environmental health in indigenous communities to improve and protect public and environmental health - Present reports to key stakeholders

Sustainability and climate change

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Provide information and advice to communities and individuals on nature and levels of public and environmental health risk associated with changing climate - Community engagement and development strategies to develop and implement adaptation strategies - Facilitate community engagement and capacity building - Mentor and support community leaders to develop adaptive capability within the communities - Develop information strategies and campaigns to promote sustainable practices eg. sustainable practices 	<ul style="list-style-type: none"> - Apply knowledge of emerging issues and tools for responding to climate change - Investigate the likely public and environmental health impact and affects of climate change eg health issues associated with drought (water use/recycling); bushfires; floods; vector control; heat and flood-related illnesses; food and water security, sea level inundation - Participate in assessing risk exposure - Develop policies and programs to support mitigation and adaptation 	<ul style="list-style-type: none"> - Liaise with and report to partner agencies/departments to improve understanding and capacity to adapt to changes in climate that are difficult to accurately predict - Lead/participate in multi-disciplinary teams to achieve effective outcomes - Develop policy and procedures to support and promote sustainability

Emergency and incident management

Communication	Risk management	Administering and reporting
<ul style="list-style-type: none"> - Provide information and advice to communities and individuals on emergency planning, preparation, response and recovery (PPRR) processes - Facilitate community engagement in planning for, responding to and recovering from incidents and emergencies - Apply mediation and front line support skills to communicate with people who may be distressed or hostile - Develop information strategies and campaigns to promote community capacity 	<ul style="list-style-type: none"> - Apply understanding of principles, policies and procedures to support public and environmental health emergency PPRR processes - Assess enforcement agency exposure and risk related to incidents and emergencies and develop relevant plans - Identify public and environmental health hazards and risks associated with incidents and emergencies - Determine and prioritise action required to respond to emergencies and incidents - Identify and source equipment, personnel and related rapid response needs - Identify roles, responsibilities and authorisation of partner agencies - Work with others to apply public and environmental health knowledge and implement plans in high pressure/stressful situation - Identify and operate within emergency management structures and chain of command - Identify, collect and apply data to prepare, plan, respond and recover to incidents and emergencies - Apply understanding of the purpose and principles of debriefing - Apply knowledge of appropriate psychological techniques for coping in and after stressful and distressing situations 	<ul style="list-style-type: none"> - Liaise with and report to partner agencies/departments to develop, review and implement emergency and incident PPRR and disseminate information - Provide advice and leadership within enforcement agencies - Lead/participate in multi-disciplinary teams