

UNIT CODE	NAT10913002
UNIT TITLE	Conduct an electromagnetic field assessment
APPLICATION	<p>This unit applies to building biologists, electricians or individuals who, as part of their occupation or work role, undertake electromagnetic field (EMF) assessments of the built environment.</p> <p>It requires knowledge of basic electrical principles and the electromagnetic spectrum, understanding how electricity is produced and conducted through the power and telecommunications network, sources and adverse health effects associated with exposure to AC magnetic fields and radiofrequency electromagnetic fields (RF-EMFs) unique to the built environment, and knowledge of exposure standards. It requires the skills to test and quantify AC magnetic fields and radio frequencies and determine how materials influence them in the built environment, the capacity to test the efficacy of shielding materials and EMF attenuating devices, and strategies to solve complex problems unique to the site, whilst taking into consideration the client's needs.</p> <p>No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.</p>
COMPETENCY FIELD	050999 Environmental Studies, nec
ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes of the unit	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Plan to conduct an electromagnetic field assessment	<p>1.1 Define the scope and objectives of the assessment taking into consideration the client's lifestyle, risk and resources</p> <p>1.2 Develop a client questionnaire and checklist that incorporates the EMF mapping tool to conduct the assessment</p> <p>1.3 Research external and internal sources of AC magnetic fields and RF-EMFs that impact the site</p> <p>1.4 Research sources of radioactivity that impact the site</p> <p>1.5 Research the adverse health effects arising from exposure to AC magnetic fields and RF-EMFs</p>

	<p>1.6 Identify exposure standards relating to electromagnetic fields that impact the built environment</p> <p>1.7 Select and prepare assessment tools to conduct the electromagnetic field assessment</p> <p>1.8 Assign timing, schedule and responsibilities for the assessment</p>
2. Undertake an electromagnetic field assessment of the built environment	<p>2.1 Conduct a visual inspection of the site for sources of electromagnetic fields</p> <p>2.2 Use a gauss meter to locate and measure AC magnetic fields specific to the site using the EMF Mapping Tool</p> <p>2.3 Use a high-frequency meter and its' associated antennas to locate and measure RF-EMFs specific to the site using the EMF Mapping Tool</p> <p>2.4 Identify building materials that may influence the electroclimate of the built environment</p> <p>2.5 Document and retain records of information, data and findings</p>
3. Analyse results	<p>3.1 Analyse data and findings</p> <p>3.2 Compare results with the relevant exposure standards to assess risk to client and consequences of findings</p>
4. Make recommendations to reduce exposure	<p>4.1 Provide recommendations to mitigate exposure to AC magnetic fields and RF-EMFs</p> <p>4.2 Make recommendations for lighting</p> <p>4.3 Provide advice on shielding (where appropriate)</p> <p>4.4 Make recommendations for client's diagnosed with Electromagnetic Hypersensitivity</p>
5. Report the outcomes of the	<p>5.1 Provide solutions that take into consideration the client's risk and lifestyle</p>



electromagnetic field assessment	5.2	Document assessment findings and recommendations in a professional report
	5.3	Identify key personnel required to assist in implementing the solutions

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

Skill	Description
Reading skills to:	Evaluate the potential relevance of various sources of written information based on the author's standing in the field. Follow instructions and technical drawings presented in equipment and instruction manuals.
Writing skills to:	Use a variety of words and grammatical structures to achieve precise meaning. Spell with a high degree of accuracy using patterns and rules that are characteristic of English spelling, or by taking measures to check the accuracy and make corrections. Draw diagrams and label components
Oral communication skills to:	Listen in order to take notes about key points from a spoken conversation within the context of discussions with a client. Determines customer requirements through open-ended questioning, active listening, paraphrasing and summarising.
Numeracy skills to:	Calculate, compare and interpret numerical descriptors to determine answers to numerical equations such as frequency of electromagnetic waves. Create maps, diagrams, and/or plans based on and including actual measurements.
Learning skills to:	Research information relevant to the electromagnetic effects debate. Research current products used to reduce exposure.



Problem-solving skills to:	Determine solutions suitable for the client and building environment		
Planning and organising skills to:	<p>Conceptualise, analyse, and research in order to make recommendations.</p> <p>Assess the appropriateness of testing tools and equipment relevant to the context.</p>		
Self-management skills to:	Use simple organising methods to manage reference material.		
Technology skills to:	<p>Use software capabilities to insert footnotes or references and prepare automatic contents page.</p> <p>Use software and the internet to store and access information and project documentation.</p> <p>Use equipment for electromagnetic field testing.</p>		
UNIT MAPPING INFORMATION	Code and Title Current Version	Code and Title Previous Version	Comments
	NAT10913002 Conduct an electromagnetic field assessment	BLDBIO602 Conduct an electromagnetic field assessment	Equivalent unit

TITLE	Assessment Requirements for NAT10913002 Conduct an electromagnetic field assessment
PERFORMANCE EVIDENCE	<p>The learner must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, manage tasks and contingencies in the context of the role of a Building Biology Consultant. There must be demonstrated evidence that the learner has completed the following tasks:</p> <ul style="list-style-type: none"> • Analysed two client's homes • Used communication and questioning skills to determine the client's needs • Conducted an electromagnetic field survey of the site • Developed a client questionnaire • Developed a checklist to conduct the electromagnetic field assessment which incorporated the Electromagnetic Field (EMF) Mapping Tool • Tested and demonstrated the correct use of the Gauss Meter and High-Frequency Meter and associated antennas • Identified sources of AC magnetic fields and RF-EMF's unique to the site • Identified building materials that influence the electro-climate of the built environment • Researched the sources of radioactivity impacting the site • Used the EMF Mapping tool to quantify AC magnetic fields and RF-EMFs unique to the site • Researched the adverse health effects arising from exposure to AC magnetic fields and RF-EMFs • Sourced and critiqued knowledge from a range of authoritative sources • Analysed results of the site assessment against the relevant exposure standards • Provided solutions in accordance with building biology recommendations, to mitigate exposure to AC magnetic fields and RF-EMFs • Used computer software

	<ul style="list-style-type: none"> Completed a client report in plain terms incorporating assessment findings, adverse health effects and recommendations.
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<p>KNOWLEDGE EVIDENCE</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively undertake the task outlined in the elements and performance criteria of this unit, and manage the task and contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> Electrical terminology: <ul style="list-style-type: none"> Standard International (SI) Units specific to electricity Ohms law Voltage and current Building wiring types Terrestrial radiation AC magnetic fields and radiofrequency electromagnetic fields Features of the electrical distribution network Electromagnetic spectrum and bands Radiometric Map of Australia and Radon Map of Australia External and internal sources of AC magnetic fields that may impact the built environment External and internal sources of RF-EMFs that may impact the built environment Building materials that influence the electroclimate of the built environment including metal vapour barriers/sarking, metal roof, mirrors, metal flyscreens, and potentially radioactive materials such as granite Exposure standards relating to electromagnetic fields in the built environment (ARPANSA, ICNIRP and Building Biology Testing Standards) Analysing information from a range of authoritative sources including government, non-government, industry associations and YouTube videos
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	<p>relevant to the field of study, systematic reviews and peer-reviewed scientific papers</p> <ul style="list-style-type: none"> • Adverse health effects arising from exposure to AC magnetic fields and RF-EMFs • Electromagnetic Hypersensitivity • Lighting that does not emit harmful EMFs, blue light or high flicker rate • Assessment tools to quantify AC magnetic fields and RF-EMFs (Gaussmeter, High-Frequency meter and associated antennas) • Building biology recommendations to address electromagnetic fields in the built environment encompassing avoidance, distance (inverse square law), shielding materials (fabrics, films and specialised paints) and mobile phone limiting devices such as earpieces • Key personnel to implement solutions such as a licensed electrician and shielding companies
<p>ASSESSMENT CONDITIONS</p>	<p>Both practical skills and knowledge must be assessed. Skills must be demonstrated in a simulated environment or a real-life working environment, such as a client's home. Learners must have access to all relevant equipment and resources required to undertake electromagnetic field testing.</p> <p>Assessment methods must include:</p> <ul style="list-style-type: none"> • knowledge questions/quiz • client questionnaire • checklist • written professional report • photographic evidence taken of the home • practical assessment in a simulated environment <p>Assessor Requirements</p> <p>Assessors must:</p> <ul style="list-style-type: none"> • have a minimum of two years' experience working as a Building Biologist.

