



GEOSYNTHETIC ENGINEERING CAPABILITY STATEMENT

Introduction

Red Earth Engineering (REE) has developed a reputation as being a leader in geosynthetic engineering in Australia and internationally.

This reputation comes from applying robust engineering principles and an understanding of materials science to properly specify and push the limits of these ever evolving materials. Our understanding of geosynthetics and development of detailed engineering calculations takes the "guesswork" out of using products such as geomembrane liners, floating covers, geosynthetic clay liners, geocomposite drains, geotextiles, geogrids and erosion mats.

REE has developed our own Liner Integrity Testing (LIT) services which make us the only Company in Australia with the capability to provide a fully independent, engineering certified Quality Assurance package from design through to installation. REE also drives innovation and continues to fund research and development of emerging technologies and products to further improve the design and installation of geosynthetics.

REE has established strong relationships with world renowned experts and researchers to supplement our in-house skills and to optimise our designs.



“Integrating the design of geosynthetics with the entire structure”

Our Approach

At REE we start with the end in mind. We recognise that the geosynthetic system must perform over a required design life and that failure of these systems can have significant consequences to our environment and to communities. Our service includes comprehensive Quality Assurance to ensure that you get what you paid for, as well as providing the necessary certifications that materials have been placed, tested and commissioned in accordance with the design requirements.

Our services extend to providing Operators with maintenance and operating plans, forensic investigations into existing liner system failures and rectification/remedial designs. We also carry out annual inspections of lined dams to provide regular “Health Checks”.

At REE we prepare detailed specifications that will not include statements such as “installation in accordance with manufacturer’s guidelines”. We believe designers should understand how to achieve the best installation for each material.

REE has led the industry in developing thorough engineering methods for calculating Action Leakage Rates (ALR), floating cover design and the application of leak detection technologies. REE is also developing the use of emerging technologies (such as drones) to better investigate and document existing infrastructure.

“We engineer successful outcomes because we understand the materials and their limits ”

Our Services

Material Selection & Concept Design

- ✓ Pre-selection of geosynthetics to ensure chemical compatibility and appropriate durability
- ✓ Development of testing programme (for critical and aggressive exposure infrastructure)

Detailed Design

- ✓ Incorporation of test results (if undertaken)
- ✓ Review / revision of geosynthetics selection
- ✓ Integrated design of geosynthetic system
- ✓ Geomembrane liner selection and design
 - ✓ Geomembrane Types (HDPE, LLDPE, CSPE, PVC etc.)
 - ✓ Geomembrane composition (resin source, carbon black/ antioxidants)
 - ✓ Geomembranes (smooth, textured, bituminous and composite)
- ✓ Geocomposite drainage systems
- ✓ Geostructures (bladder tanks / floating covers)
- ✓ Soil improvement using geogrids and geotextiles
- ✓ Development of Leakage Detection & Recovery Systems (LDRS) and Action Leakage Rates (ALR)
- ✓ Preparation of design reports, drawings, specifications and scope of work documentation



GEOSYNTHETIC ENGINEERING CAPABILITIES



"Specialist knowledge and expertise to solve complex problems"



- ✓ Independent conformance testing
- ✓ Construction supervision and quality assurance services
- ✓ Liner integrity testing (LIT)



- ✓ Operations plans
- ✓ Annual Inspections
- ✓ Maintenance and inspection manuals and guidelines
- ✓ Risk assessments and prioritisation of repair works
- ✓ Geomembrane integrity and end of life (EOL) monitoring and testing
- ✓ Asset management advice



Specialist Skills

- ✓ Forensic investigations for failed geosynthetic systems
- ✓ Action leakage rates and trigger level responses
- ✓ Floating covers
- ✓ Rapid response repair team (RRRT) for damaged geomembranes in critical infrastructure
- ✓ Arrhenius modelling for geomembrane liner selection

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