LANDFILL & TRANSFER STATION CONFERENCE

FROM CONCEPT TO CONSTRUCTION

Wonthaggi Final Cap
Closed Landfill Rehabilitation

All-in-one cuspated geocomposite capping
ABG Pozidrain 7SK500D

Bass Coast Shire Council | 15-minute case study



The strongest benefits are fewer interfaces and less material movement

DEMONSTRATED PROJECT FACTS

- Specified integrated drainage / barrier system
- **EPA Victoria approval for this project**
- End-to-end manufacturing and installation assurance
- Majority of material installed under full-time supervision

POTENTIAL PROJECT BENEFITS

- Reduced need for multiple traditional layers
- Simplified sequencing and potentially faster installation
- Reduced reliance on imported clay materials
- Potential cost and embodied-carbon efficiencies

No percentage saving, cost figure, carbon reduction or universal performance claim is presented.

The transferable value is a tested delivery model for evaluating alternatives—not a one-size-fits-all cap.

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

ABG's engineering input tested whether the concept could perform

SYSTEM SUPPLY + TECHNICAL SUPPORT

01 SLOPE STABILITY

Calculations to assess stability for the proposed build-up and site conditions.

02 FLOW CAPACITY

Calculations to test drainage capacity against design requirements.

03 MATERIAL TESTING

Assistance with material testing and technical evidence for assessment.

These assessments supported engineering evaluation of project suitability; they do not replace designer, auditor or regulator responsibilities.

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

Engineering innovation only works when evidence travels with it.

From concept to construction, the Wonthaggi Landfill project demonstrates how engineering innovation, rigorous quality assurance, regulatory collaboration, and a commitment to sustainability can help advance landfill rehabilitation.



BASS COAST

THE CHALLENGE

A legacy site — and a long-term obligation



Waste acceptance ceased in 1997

The closed landfill remained a legacy environmental asset requiring a durable final barrier and ongoing management.

Management is the following principles:

- Limit Rainfall infiltration into the waste mass.
- Manage landfill gas and leachate pathways.
- Protect surrounding land and environmental values.
- Deliver a cap that can be constructed and verified.

85,000 m^2 site footprint*

*Project context supplied for this presentation

DESIGN PRINCIPLE

The innovation started with a different question

What if we specified the environmental performance first — then challenged the materials used to deliver it?

01

Define

Required environmental outcomes

02

Test

Alternative engineering configuration

03

Verify

Regulatory review + construction QA

Innovation was pursued without lowering the environmental objective.

THE DESIGN SOLUTION

Victoria's First All-in-one Cuspated Geocomposite Drainage Capping System.

Wonthaggi Landfill – ABG All-in-one Pozidrain Capping system



Key Benefits:

- All-in-one drainage & capping barrier
- High flow capacity in all directions
- Specially designed geocomposite with integral geomembrane overlaps
- High interface friction on both sides
- Large rolls for fast installation
- Reduced construction time, cost and embodied carbon

A simpler system. A stronger solution. A more sustainable future.

DESIGN CHOICE

From material-heavy layers to an integrated system

CONVENTIONAL CONCEPT



Bulk material demand • haulage • placement

WONTHAGGI ALTERNATIVE



Integrated barrier + drainage function

Conceptual comparison only — refer to approved design drawings and specification for actual extents and details.

Pozidrain 7SK500D: one engineered composite



ABG product illustration

- Impermeable HDPE cuspated drainage core
- Geotextiles bonded to both sides
- Integral overlapping selvedges / geomembrane overlaps
- Designed for high flow capacity in all directions
- High interface friction on both sides; large rolls support efficient deployment

Specified product quantity in ABG case study: 100,000 m^2

Pozidrain 7SK500D integrates drainage and barrier functions in one installed layer

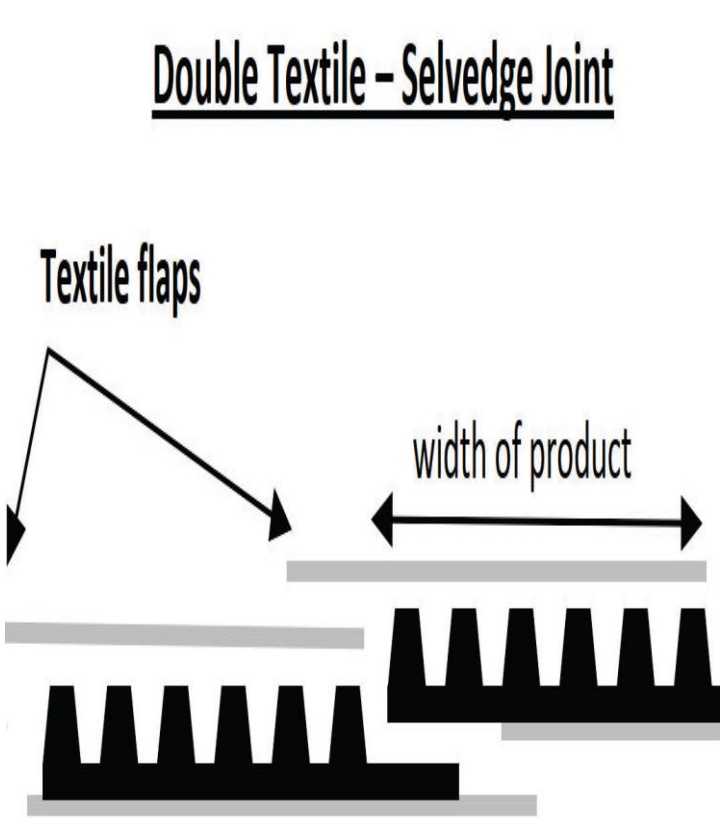
EDITABLE TECHNICAL SECTION — NOT TO SCALE



Barrier function = HDPE core | Drainage function = cuspated core geometry

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

Pozidrain 7SK500D integrates drainage and barrier functions in one installed layer







Barrier function = HDPE core | Drainage function = cuspated core geometry

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SPECIFICATION → CONSTRUCTION

The details that make the design buildable

01	**Prepared surface**	Smooth, stiff, graded and free of protrusions; inspect immediately before deployment.
02	**Layer control**	Minimum 300 mm compacted subsoil; topsoil/mulch at least 200 mm over cap geosynthetics.
03	**Interface stability**	Direct shear testing informs where reinforcing geogrid is required.
04	**Water management**	Stormwater attenuation, perimeter drainage and infiltration drainage are part of the design.
05	**Hold points & survey**	Sign-off and survey verify levels, grades and layer thickness before covering.

The integrated system simplifies sequencing while retaining proof requirements

Dimension	Conventional reference approach	Pozidrain 7SK500D concept
Configuration	Functions distributed across multiple soil and geosynthetic layers	Integrated cuspated HDPE core with bonded geotextiles
Installed layers	Several distinct placement and acceptance stages	One integrated drainage/barrier layer, plus prepared blinding and protection
Materials	Multiple soils, drainage media, barrier and protection products	Reduced reliance on separate drainage materials and imported clay may be possible
Construction	Repeated placement, conditioning, compaction and interface protection	Wide-panel deployment, selvedge continuity, inspection and protective backfill
Functions	Drainage and barrier functions occur in separate layers	HDPE core provides barrier and drainage pathway; geotextiles protect/filter
Efficiency	More sequencing and interface coordination	Potentially simpler sequencing and faster installation
Cost + carbon	Transport and handling can be material contributors	Potential efficiencies only; no verified percentage claimed
Suitability	Approved design remains site-specific	Project-specific evidence, audit and regulatory review remain essential

Potential advantages are credible hypotheses until measured against the approved design, records and project outcomes.

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

BAJWA
ENVIRO
CONSULT

ASSURANCE

Regulatory acceptance is an engineering process

DESIGN BASIS

Performance objective + alternative configuration

TECHNICAL REVIEW

Designer, auditor and regulator engagement

CONSTRUCTION QA

Material testing, inspections, hold points, surveys

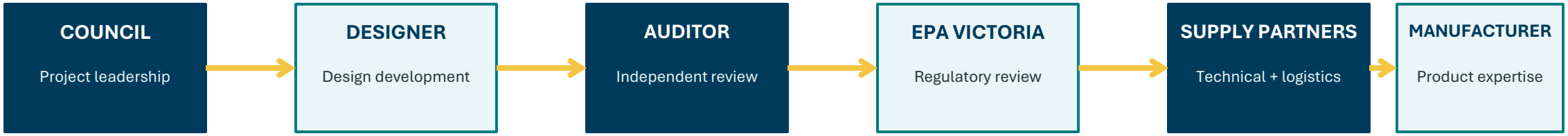
VERIFY & MANAGE

Monitoring and ongoing environmental management

The specification requires formal verification not simply confidence in a product.

EPA review of the alternative design was described as reasonable and indicative of sufficient performance, with ongoing monitoring and management required.

A collaborative approach



ALTERNATIVE SYSTEM EVALUATION

Performance

Can the system meet project-specific hydraulic, barrier and stability requirements?

Compliance

Can the evidence support design, audit and EPA review for this site?

Constructability

Can it be installed, inspected and protected under field conditions?

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

Quality assurance from the manufacturing stage

MANUFACTURING QUALITY CONTROL

Production controls • specification checks • traceable product records

≈ 3 MONTHS

planned UK manufacturing oversight

INDEPENDENT VERIFICATION

Council-engaged CQA/Audit Team supervision • random sample selection • independent laboratory testing

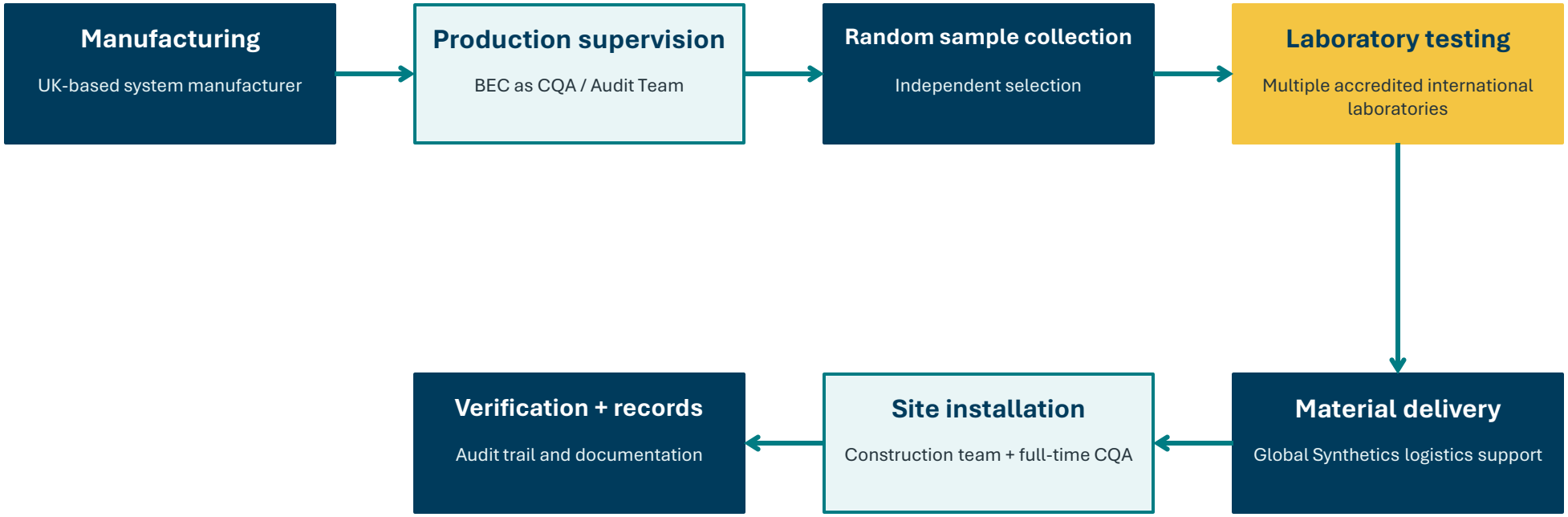
SITE ASSURANCE

IQA • CQA • audit oversight • installation inspection • documentation and records

The QA approach was designed to produce evidence before and after the material reached site.

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

The assurance chain stayed intact from UK production to Wonthaggi installation



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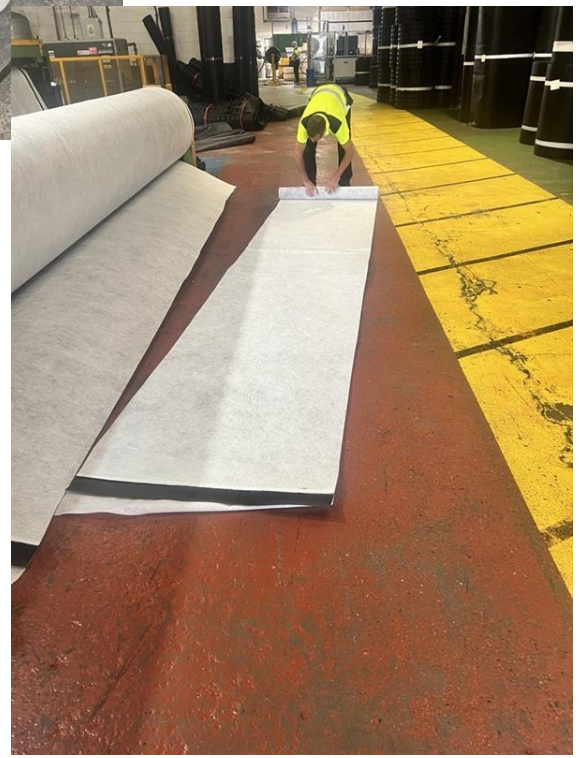


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08 FACTORY TO SITE









Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

08 FACTORY TO SITE







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The closure challenge was never only technical

Environmental values

Long-term environmental protection

Regulatory requirements

Construction efficiency

TRANSPORT

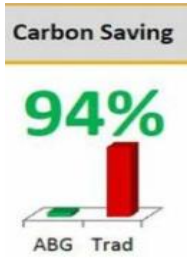
Forecast reduction in truck movements and associated haulage

MATERIALS

Substantially less virgin clay and bulk soil demand

PERMANENT LANDFILL CLOSURE

CARBON



Engineering performance

Project cost + sustainability

The project team therefore tested whether a different system architecture could meet the same project-specific performance and compliance obligations with fewer materials and interfaces.

Source: project information supplied by Bass Coast Shire Council; verify against project records before external publication.

COST • LOGISTICS • MATERIALS

The forecast value case

~$9m

alternative cap forecast cost

Council-supplied estimate

$16–17m

estimated conventional approach

Council-supplied comparator

$7–8m

forecast saving

Approx. 44–47%

REDUCED BULK MATERIAL MOVEMENT

~3,750 fewer truck-and-dog movements (forecast)

WHAT DRIVES THE VALUE?

Less imported clay and bulk soil:

- less handling
- fewer haulage movements
- simpler placement sequence

These are forecast comparisons, not audited final savings; validate against final outturn cost and actual logistics.

RESOURCE RECOVERY

A local circular resource loop

COMMUNITY
Green waste

RECOVERY
Processing

MULCH
Recovered material

REHABILITATION
Topsoil blend

OUTCOME
Environmental protection

~12,000 m^3
processed community mulch*

50:50
topsoil / mulch blend*

Local
resource retained in use

**Council project details supplied for this presentation; use subject to the approved specification and material compliance.*

THE WONTHAGGI LEGACY

Build for the outcome - not habit.

A regulator-engaged, technically specified alternative that challenges material-heavy convention while retaining the environmental objective.

Less material. Less haulage.
A different way to cap a legacy site.





PROJECT PARTNERS + TECHNICAL CONTRIBUTORS

Special Thanks – Wonthaggi Landfill Capping Project

BASS COAST

Project leadership, coordination and implementation

ABG — UK-based System Manufacturer

Product development, manufacture and technical consultation. Geocomposite supply, design assistance, material-testing support; slope stability and flow capacity calculations.

EPA Victoria

Regulatory review and approval of the specified alternative system for this project.

Global Synthetics



Australian supply, shipping, handling and delivery support; no manufacturing role implied.

BAJWA ENVIROCONSULT

Project auditor and CQA/Audit Team; review, manufacturing oversight, sample selection, testing coordination and site supervision.

Tonkin + Taylor

Project designer; design development and technical documentation.

Thank you to everyone who contributed their expertise, collaboration, and commitment to delivering an innovative landfill rehabilitation solution for Wonthaggi.