The Australian Historic Shipwreck Preservation Project: 

*in-situ* preservation techniques for wooden shipwrecks

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• Australian Historic Shipwreck Preservation Project (AHSPP) – a collaborative research project between Australian government cultural heritage managers, researchers and universities

• AUD$500,000 Australian Research Council Linkage Grant 2011 (3 years)

• Ten partner organisations contributed $180,000 and over $500,000 in–kind

• Local businesses and organisations sponsorship of c. $100,000
Project aims:

- Investigate options for research and rescue excavations without long-term conservation and storage issues
- Research and develop reburial methodologies
- Test *in-situ* preservation methodologies through case studies:
  - *Clarence* (1850) – a ‘rapid recording and reburial’ strategy
  - *James Matthews* (1841) - development and investigation of an innovative reburial strategy
Why undertake *in-situ* preservation?

- Imminent risk of deterioration
- Imminent risk of damage from anthropogenic causes
- Evidence of stable system becoming unstable,
- Intrusively investigated in the past and increasing deterioration.
- Recently discovered, at risk from visitation and difficult to monitor
- Significant values at risk of anthropogenic impacts.
Clarence (1850)

Project tasks:

- pre-disturbance surveys (archaeology, marine ecology, physico-chemical);
- excavation;
- *in-situ* artefact recording & recovery of artefacts;
- *ex-situ* ‘rapid’ recording (X-ray, 3D imaging, photography, cataloguing);
- conservation, tagging & wrapping;
- artefact reburial (on site or in repository);
- placement of sacrificial samples;
- site reburial;
- post-extraction sediment cores;
- annual ongoing monitoring & sampling.
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PRESERVATION PROJECT

THE IN-SITU PRESERVATION & REBURIAL
OF THE COLONIAL TRADER CLARENCE (1850)
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THE IN-SITU PRESERVATION & REBURIAL OF THE COLONIAL TRADER CLARENCE (1850)
Method for deploying the mesh

Animation by Kalle Kasi
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Images by Jon Carpenter
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THE IN-SITU PRESERVATION & REBURIAL OF THE COLONIAL TRADER CLARENCE (1850)

3D model by Kevin Edwards
James Matthews (1841)

Project tasks:

• Fill > 1000 sandbags;
• transfer Road Crash Barrier (RCB) to site & partially fill with rock for ballast;
• place on seabed & ¾ fill with rock;
• fill and install connector pins;
• complete cofferdam & seal gaps with plastic sheet;
• sediment dumping (via bespoke sand barge);
• shade cloth cover;
• Cofferdam fills with sand dropping from water column.
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So you want to preserve in situ?

- Passive (little/no physical intervention):
  - measure, protect, monitor

- Active (medium/large scale physical intervention):
  - measure, record, physical protection (e.g. cover/bury), excavate, recover, record, redeposit/rebury, protect, monitor
Selecting an *in-situ* preservation management strategy

- Range of methods
- Constraints:
  - site type, environment, integrity, and *funding*.
- Measures will be a compromise between:
  - archaeological value;
  - expected effects of strategy;
  - time span;
  - effect on local environment; and
  - resources.
*In-situ* preservation protocols (eight point process-based approach):

- 1. Ascertain site extent;
- 2. Assess most significant deterioration processes;
- 3. Assess pre-disturbed local burial environment and major factors affecting long-term stability;
- 4. Identify the major material types and extents of deterioration;
- 5. Implement appropriate strategy to mitigate deterioration and stabilise site;
- 6. Implement long-term monitoring programme;
- 7. Provide alternative plans and procedures if strategies unsuccessful; and
- 8. Provide resources for conservation and storage of recovered artefacts.

(Gregory (2010) and Richards (2011))
Accepted ACTIVE *in-situ* preservation methods may include:

- backfilling, sediment, gravel dumping;
- deposition of polymeric sand bags, ballast, stones;
- application of geotextiles, netting, seagrasses;
- sediment encapsulation or entrapment;
- plastic cofferdams or corrals;
- relocation; and
- underwater repositories.
Project outputs:

- Conduct and improve conservation monitoring techniques following reburial.
- Contribute to development of sustainable, cost-effective and strategic national approach for shipwreck management.
- Make significant contributions to current international reburial and *in-situ* preservation protocols.
- Develop *In-situ* Preservation Protocols and Guidelines for long-term stabilisation of at-risk shipwrecks.
Limitations
Each site has unique environment, thus guidelines will be general recommendations of processes, not prescriptive steps.

Environmental assessments and understanding of the range of impacting factors are key to ensuring successful in-situ management of underwater cultural heritage.