

- c. The identification of significant historic assets meriting consideration for protection by means of statutory designation (listing or scheduling)
 - d. The identification of areas where heritage assets may be at high risk of damage or destruction
 - e. The establishment of future research priorities for the coast
- Enhance public understanding and enjoyment of the coastal heritage

2.4 The *first* aim of the RCZAS, therefore, is to provide heritage information which can be fed directly into Defra's Shoreline and Estuary Management Programme, at the levels of Plans, Strategies, and Schemes, thereby helping to ensure appropriate protection, or mitigation of damage, to historic assets.

coastal survey. To make best use of resources it is important to build into the timetable some nearby alternative survey areas which will always be accessible. Where conditions for intertidal survey are found to be unpropitious (e.g. when, on arrival, all exposures are found to be obscured by deep recent mud or sand), the team should be re-deployed elsewhere. Survey teams have been known to continue with the planned survey route, even though to do so was plainly fruitless. Conversely, the project design should highlight sites which are very rarely exposed (e.g. at extreme low tides combined with offshore winds, or after severe storm scour) so that advantage can be taken of these conditions immediately, if they occur during the survey period. Any variations from the planned survey programme must comply with reporting-in and emergency planning procedures.

9. Health and safety

The intertidal zone is an exceptionally hazardous environment but with careful advance planning hazards can be minimised. Some general H&S considerations are outlined in Appendix 2. As part of developing the Project Design, a Risk Assessment must be undertaken, and all project designs must include a Health and Safety statement which pays particular regard to the requirements of operating in the intertidal zone. Project staff must undergo appropriate safety induction. An example of a Risk Assessment produced by the Norfolk Archaeological Unit is reproduced in Appendix 3. A useful H&S checklist is also provided in the appendix to Milne *et al.* (1998).

English Heritage, 2006. *'Shoreline Management Plan Review and the Historic Environment: English Heritage Guidance.*

Everett, L., Allan, D., & McLannahan, C., 2003, *Assessment Report. Rapid Field Survey of the Suffolk Coast and Intertidal Zone*, Unpublished Report, Suffolk County Council.

Fulford, M., Campion, T., and Long, A. (eds.), *England's Coastal Heritage: A Survey for English Heritage and the RCHME*, English Heritage Archaeological Report 15, English Heritage and RCHME, London.

Health and Safety Executive (1997) *Provision of welfare facilities at transient construction sites*, HSE Information Sheet, Construction Information Sheet No. 46.

Heppell, E & Brown, N., 2001, *Greater Thames Estuary Essex Zone – Archaeological Assessment Report*, Essex County Council.

Heppell, E., Brown, N., and Murphy, P., 2004. *Greater Thames Estuary Essex Zone Monitoring Survey – Assessment and Updated Project Design.* Essex County Council, Chelmsford.

Historic Scotland, 1996: *Historic Scotland Coastal Zone Assessment Survey* (Version 1.1), Historic Scotland Archaeological Procedure Paper 4, Edinburgh.

Isle of Wight Council, 1997: *Time and Tide: An Archaeological Survey of the Wootton-Quarr Coast*, Isle of Wight Council.

Maritime and Coastguard Agency (undated) *The safety of small workboats and pilot boats – A code of practice*, DETR, London.

McInnes, R., 2003 *Coastal defence. A Non-Technical guide.* SCOPAC/Isle of Wight Centre for the Coastal Environment.

Milne, G., McKewan, C., and Goodburn, D., 1998 *Nautical Archaeology on the Foreshore: Hulk Recording in the Medway*, RCHME, Swindon.

Robertson, D., Crawley, P., Barker, A. and Whitmore, S, 2005 *Norfolk Rapid Coastal Zone Assessment Survey. Assessment Report and Updated Project Design.* Norfolk Archaeological Unit Report No. 1045.

RCHME, 1995: *Guidelines and Specification Manual for the National Mapping Programme.*

Suffolk County Council, 2003. *Rapid Field Survey of the Suffolk Coast and Intertidal Zone. Assessment Report* (June 2003). Suffolk CC, Bury St Edmunds

Suffolk County Council, undated. *The Archaeology of the Suffolk Coast and Intertidal Zone.* A report for the National Mapping Programme (NMP Acceleration (2912). Suffolk CC/English Heritage, Bury St Edmunds/Swindon.

6.12 Experience has demonstrated that the experience of sites and terrain gained as a result of field survey may permit an enhanced interpretation of aerial photographs and documents. Time should therefore be allowed for selective re-examination of key photographs and documents following field visiting.

8. Health and safety

All project designs must include a health and safety statement which pays particular regard to the requirements of operating in the inter-tidal zone and project staff must undergo appropriate safety induction. The statement should include *as a minimum and in addition to normal H&S requirements*:

- A knowledge of local tidal conditions and coastally specific hazards, such as working on or below cliffs, overhangs, rock-falls, mud-flows etc., drawing on appropriate local knowledge
- A minimum survey team of two
- The provision of two-way radios and/or mobile telephones
- Protocols for notifying and “signing-off” with appropriate coastal authorities (e.g. coastguards)
- Safety equipment such as flares
- Risks of dehydration, heat exhaustion, and exposure to cold, wet and wind
- Provision of appropriate safety clothing (e.g. dry suits and buoyancy aids)
- Access by means of a boat, where appropriate, having regard to the safety implications of boat use
- Protocols for dealing with biohazards and needles etc.

A useful H&S checklist is provided in the appendix to *Nautical Archaeology on the Foreshore* (Milne *et al.* 1998).

Appendix 2.

Intertidal survey and excavation: some general Health and Safety considerations.

Besides the risks inherent in any archaeological project, some of the main hazards include:

- Risks associated with the handling of boats, including loss of control or power, or loss of people overboard.
- Getting stuck in intertidal mud, due to injudicious venturing onto unstable surfaces. Related problems are disorientation on featureless mud- or sand-flats, and loss of sense of time. Additionally, at some locations the tide comes up *through* the mud- or sand-flat, so that surfaces may become unstable before there is any visual clue to the turning tide. In all these cases, there is a serious risk of drowning.
- Fractures/dislocations or twisted ankles caused by falls from cliffs, or into narrow creeks on salt marsh, or bait-diggers' holes on mud- and sand-flats. Injuries caused by rock- or sand-falls or mud slides.
- Dehydration, exhaustion, (related to low blood sugar levels), sunstroke, exposure.
- Exposure to biohazards, particularly sewage effluent, but also discarded hypodermics. Risk of contracting Weil's disease, Tetanus and Hepatitis A. Risks from infected cuts and insect bites.
- Danger from unexploded munitions where foreshores have been used by the military as ranges.
- Risk of gunshot wounds from wildfowlers.
- Risk of injuries from attacks by birds adjacent to nesting sites, or by bulls on unfenced grazing marsh.
- Risk of injuring or disturbing wildlife.

The relative importance of these hazards will vary from site to site, and needs to be assessed separately for each study area. Advice should always be taken from locals familiar with the area. Key Health and Safety considerations are:

- Boats must be used judiciously, and operated by adequately trained and experienced staff. Small vessels operating in British waters must comply with '*The safety of small workboats and pilot boats – a code of practice*' (Maritime and Coastguard Agency, undated). Local marine by-laws must be adhered to.

Boat operators must hold a commercially endorsed powerboat qualification and all personnel who will be expected to work on board must have sea survival qualification. A Health and Safety Information Sheet on *Personal buoyancy equipment on inland or inshore waters* describes the requirements and need for lifejackets.

- The team must be provided with VHF radio. The VHF requires certification for use and must be licensed. Mobile telephones must not be relied upon during survey since they may not receive a signal behind cliff faces - even low salt-marsh edge scarps. In the event of an emergency, signals on the local emergency channel will be picked up by all VHF users in the area, and the Coastguard will be able to take bearings on VHF signals.
- There must be an agreed protocol for the team to report to the local Coastguard or Harbour Master and their own base staff when arriving at, and departing from, sites. This must be strictly adhered to. Advance plans must be made for emergency procedures
- Reference must be made to Tide Tables before starting work in the intertidal zone. Team leaders must be familiar with their use, and also their limitations.
- A minimum team of two must be on site at all times, and safety equipment including first aid box, compass, rope, water, food and flares must be carried. There should be a first-aider in the team, and one member of the team must have particular responsibility for H&S. Special care must be taken when entering unfamiliar areas on foot, and team members must maintain visual and audible contact at all times.
- The time taken to return from a site may be much longer than that taken to arrive, following an often arduous working period.
- Cliffs must be surveyed initially from a distance, using binoculars and telephoto lenses. Common sense and local experience should be applied when deciding whether close-up survey is safe. Falling rocks and slumping of unconsolidated sediment are obvious hazards.
- Clothing and protective gear must be appropriate to the circumstances. Lifejackets are essential on boats. Hard hats are required for cliff survey. Experience shows that heavy clothing is a burden when working on intertidal muds or sands, and wet-suits may be impractical. People generally prefer to wear the minimum possible most of the time, though waterproofs and warm clothing must be available to avoid exposure resulting from sudden changes in weather.
- Wellington boots rather than waders are required, for it is easier to get out of boots and abandon them if necessary.
- Where biohazards are suspected, surgical gloves and antiseptic wash must be provided.

- Unidentified metal objects suspected of being munitions should not be disturbed.
- In some areas local groups have been recording intertidal sites for years with scant regard for safety, and may feel that outside advice is at best unnecessary, or at worst intrusive. Nevertheless, local 'amateur' recorders recruited to assist in the project must adhere to the same H&S procedures as the professional team.
- Maintenance of the survey team's health, fitness, morale, and effectiveness are closely related to standards of accommodation, washing facilities, shelter, toilet facilities and meals. Care must be taken to ensure that these are adequate. Welfare facilities required for transient construction sites are outlined by the Health and Safety Executive (1997), and should be provided wherever reasonably practicable.

NORFOLK ARCHAEOLOGICAL UNIT: NORFOLK COASTAL SURVEY 2004

Location: Norfolk Coast between Terrington St Clement and Hopton-on-Sea

RISKS ASSOCIATED WITH WORKING IN ISOLATED PLACES

Hazard	Who may be Harmed	Existing Controls (Ensure adequate training)	Further Controls
<p>Survey team do not have precise location information in event of an incident</p>	<ul style="list-style-type: none"> • Employees carrying out field survey • Volunteers helping with field survey • External specialists accompanying field survey team 	<ul style="list-style-type: none"> • No lone working • Staff awareness training • Day plan to be produced evening before surveying visit • Before surveying begins each team member will be asked to read the day plan • A copy of the day plan will be carried by a team member • A copy of the day plan will be left in the vehicle • Familiarisation with landscape, consultation with maps etc. • Two hand held GPS units will be carried • All survey team to carry a map and a compass • All survey team to carry a walkie talkie and a whistle (alarm = 3 short bursts) • All team members to remain within visual contact 	

	field survey team	<p>consultation with maps etc.</p> <ul style="list-style-type: none"> • All team members to be familiar with weather reports for day (can be obtained from Coastguard in Yarmouth 01493 851338 or from Marinecall Anglia 0981 500455) • All team members to remain within visual contact • Each team member to carry walkie talkie to alert others of dangers 	
Changes in weather conditions, potentially sudden changes	<ul style="list-style-type: none"> • Employees carrying out field survey • Volunteers helping with field survey • External specialists accompanying field survey team • Members of the public 	<ul style="list-style-type: none"> • Staff awareness training • No lone working • Visual survey of area • Familiarisation with landscape, consultation with maps etc. • All team members to be familiar with weather reports for day (can be obtained from Coastguard in Yarmouth 01493 851338 or from Marinecall Anglia 0981 500455) • On a daily basis one team member will be designated with responsibility for monitoring weather conditions - they will identify any possible changes • All team members to remain within visual contact • Each team member to carry walkie talkie to alert others of dangers 	<ul style="list-style-type: none"> • Postpone work during unsafe conditions

PERSONAL INJURY RISKS

