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The hidden heritage at Nantwich and York: Groundwater and the urban cultural sequence

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ABSTRACT

This paper will describe two phases of investigation to characterize conditions that have led to preservation of archaeological remains beneath the historic core of Nantwich. It will discuss the different types of monitoring employed and the relative merits between methodologies for monitoring key indicators, and outline experimental methods for the application of gas monitoring. The Nantwich project is in the middle of a five year programme and therefore interpretations presented here are provisional, and are briefly compared to similar studies from York. The continuation of conditions that have preserved organic remains beneath these two historic centres for over a thousand years are now subject to threat due to various causes from the impact of the modern world, and the conclusions suggest that achieving long-term sustainability of preservation conditions will require a holistic approach from spatial planners, engineers, hydrologists and archaeologists.

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1. Introduction

Although waterlogged deposits in Britain have revealed spectacular archaeology over the past century, interest in characterising the kinds of environment in which these survivals occur, and methods for their management have only recently developed a more strategic approach (e.g. Christensson et al., 2008; Reed and Martens 2008 de Beer et al., 2008; Petersén and Bergersen, 2012). Many earlier studies were concerned with rural wetlands (e.g. Coles, 1995), the potential these had for future discoveries, and the holistic management of monuments and wetlands for sustainable preservation (Coles and Olivier, 2001).

The scale of development within urban centres over the past two generations has raised awareness of the particular depth and diversity of archaeological deposits within urban contexts (e.g. Holden et al., 2009; Reed and Martens 2008, Matthiesen et al., 2008), and the need to investigate alternative strategies rather than continuous excavation in response to development. National policy (SHEP 2010; NPPF 2013; PPW 2012,) is to conserve remains, preferably *in situ*, but no systematic approach has been developed to understand and manage these types of waterlogged deposits.

2. Investigations at Nantwich

2.1. Background

In 2007 English Heritage and Cheshire Council commissioned SLR Consulting, supported by Ian Panter of York Archaeological Trust, to undertake a pioneering study of Nantwich, a historic salt-production town located on the western and eastern side of the River Weaver, and situated half-way between Chester and Manchester. The centre of Nantwich is a conservation area, designated for its built heritage, much of which is constructed on top of 3–4 m of archaeological deposit. The aim was to characterize the physical and chemical nature of the burial environment, map its extent, interpret the cause of preservation and current threats, and to design a management strategy for the waterlogged deposits which enabled economic growth and new development.

As the project developed the benefits of undertaking a long-term monitoring programme became apparent, and 11 dipwells were installed at strategic locations in anticipation that a second phase to the project would be commissioned as funding became available. The Phase 2 project was designed in 2010–11 as an

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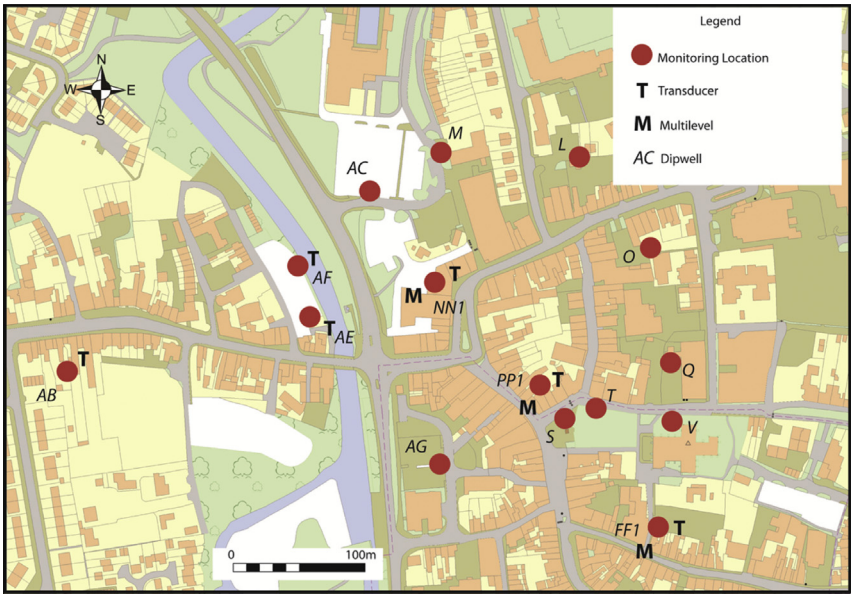

Fig. 1. Plan of Nantwich showing locations of dipwells.

iterative process between SLR Consulting, York Archaeological Trust, Cheshire East Council, and English Heritage, with the aim of undertaking a monitoring programme that would provide scientifically robust data, but attainable within the budgetary limitations of English Heritage's strategic funding. Initially a three year programme was agreed upon, but in 2013 a variation for an additional two years was approved so that the exceptional drought and rainfall conditions for two of the three years (2011 and 2012) would not skew the data that had been collected. Six additional dipwells were installed at the commencement of Phase 2 so that monitoring of specific cultural horizons could be targeted at key locations, and so that the spread of dipwells provided a reasonable sample for monitoring on both sides of the river (Fig. 1).

3. Methodology

3.1. Desktop study

The first stage in the investigation was a desk based assessment (SLR, 2007) to map the extent, depth and location of previously identified waterlogged deposits beneath Nantwich. This study aimed to utilise non-archaeological data from borehole logs recorded by the British Geological Survey and local development schemes, but unfortunately from the 103 locations very little usable data was available from these sources. This was due to the fact that borehole logs had not been retained once the application had been determined. Instead data from previous archaeological investigations was used to establish the areas where waterlogged deposits had been recorded and to provide target areas for investigation as part of the characterization project.

3.2. Coring programme

In order to characterize the waterlogged deposits further, a series of samples were required for detailed recording and analysis which could be retrieved most cost effectively through a programme of borehole coring. It was also possible to obtain samples from restricted locations and depths that would not be practical using traditional archaeological excavation techniques.

The most suitable drilling technique chosen was a compact windowless sampling rig which would obtain percussive core samples, extracted in cylindrical Perspex sampling tubes to minimise the disturbance to the samples and protect them during transportation. Although a certain amount of compaction can occur using this technique, the disturbance is minimal compared to rotary drilling techniques. Safe working methods were designed as part of the health and safety plan for the project to avoid danger to the public and to avoid accidental damage to utilities.

The drilling technique used a heavy weight attached to a sliding runner enclosed behind a metal cage to hammer in a metre long sampling barrel to obtain a 1 m core of soil contained within the plastic tube (Fig. 2). A tubular metal case was advanced outside the

Fig. 2. Drilling equipment used in the coring programme.

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