



Land Off Shapters Way, Cattedown, City Of Plymouth

Archaeological Watching Brief





LAND OFF SHAPTERS WAY, CATTEDOWN, CITY OF PLYMOUTH

ARCHAEOLOGICAL WATCHING BRIEF

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Figure 1 Site location

Figure 2 Proposed site layout and location of buildings with concrete pad foundations

LAND OFF SHAPTERS WAY, CATTEDOWN, CITY OF PLYMOUTH**ARCHAEOLOGICAL WATCHING BRIEF****SUMMARY**

Wessex Archaeology was commissioned by Hanson Aggregates to undertake an archaeological watching brief in a backfilled former quarry off Shapters Way, Cattedown, Plymouth as works required to meet a planning condition, placed by Plymouth City Council, on planning consent for the construction of a concrete batching plant with ancillary facilities.

The Site lay 70m to the east of Worth's Cattedown Bone Cave, a Scheduled Ancient Monument known to contain deposits, in the cave and in associated fissures, of the Devensian Glacial (110,000-12,000 BP) with human and faunal remains of Middle to Late Upper Palaeolithic date.

All deep foundations of the batching plant that impacted on the limestone bedrock were monitored to ensure that any additional archaeological deposits of similar importance encountered in any previously unrecorded fissures could be preserved in situ or, as a last resort, recorded and removed for appropriate analysis.

A pair of parallel, clay-filled fissures, aligned North-South and approximately 0.50 m apart, was observed in the side and the floor of a receiving hopper pit, which covered an area of approximately 25 sq m, 5 m below the modern surface. No artefacts were noted.

Elsewhere an area of 202 sq m of limestone bedrock exposed to construct foundations for the plant revealed only undisturbed bedrock.

Due to the negative results from the watching brief it is proposed to confine dissemination to placing a note about the watching brief in an appropriate journal.

LAND OFF SHAPTERS WAY, CATTEDOWN, CITY OF PLYMOUTH

ARCHAEOLOGICAL WATCHING BRIEF

ACKNOWLEDGEMENTS

WA Heritage (Wessex Archaeology) was commissioned by Hanson Aggregates and we would like to thank John Bown and Paul Finch for their assistance and providing useful background documentation. We would also like to thank Dr John Salvatore, Historic Environment Officer of Plymouth City Council.

The project was managed for WA Heritage by Paul Falcini (Principal Heritage Consultant). The watching brief was carried out by Phil Harding who also compiled this report. The illustrations were prepared by Linda Coleman.

LAND OFF SHAPTERS WAY, CATTEDOWN, CITY OF PLYMOUTH**ARCHAEOLOGICAL WATCHING BRIEF****1. INTRODUCTION****1.1. Project background**

- 1.1.1. Wessex Archaeology was commissioned by Hanson Aggregates to undertake archaeological mitigation on land off Shapters Way, Cattedown, Plymouth, centred on National Grid Reference 249544 536670. This work was required to meet conditions placed by Plymouth City Council to achieve planning consent (Application No. 06/01181/FUL) for the construction of a concrete batching plant, including cement silos, mixer, aggregates bins and a receiving hopper with ancillary facilities.
- 1.1.2. The Site lay 70m to the east of Worth's Cattedown Bone Cave, a Scheduled Monument (No. 29678). Deposits of the Devensian Glacial (110,000-12,000 BP) containing human and faunal remains of Middle to Late Upper Palaeolithic date and considered to be of national importance were recorded from fissures within this cave in 1887.
- 1.1.3. An archaeological desk-based assessment (Wessex Archaeology 2006) undertaken to collate the published data from the area and assess the possible impact of redevelopment concluded that natural fissures or solution features, similar to those in the Cattedown Bone Cave, may extend within the bounds of the development Site.
- 1.1.4. It was considered possible that deposits within the fissures may also include faunal, including human, remains of the Devensian Glacial or other evidence of human activity from the Upper Palaeolithic period. Any such remains would, by inference from those recorded in the Scheduled Monument of Worth's Cattedown Bone Cave, be of potential national importance.
- 1.1.5. In order to mitigate the potential threat to any archaeological resource within the Site, English Heritage advised the planning authority that a programme of appropriate archaeological work was required, encompassing:
 - monitoring of all deep excavations associated with the development to identify any deposits of significant archaeological material.
 - arrangements to record, remove and analyse in a controlled manner any such significant archaeological material.
- 1.1.6. The foundation design for the proposed batching plant and ancillary facilities was revised to minimise the possible adverse impact of the development and avoid any penetration of the limestone bedrock across the Site.

- 1.1.7. A Written Scheme of Investigation (WSI) to address the mitigation requirements advised by English Heritage was drawn up by Wessex Archaeology setting out the methodology to be employed during the watching brief. This document was submitted to, and approved by, the Historic Environment Officer of Plymouth City Council.

1.2. The Site

- 1.2.1. The Site is situated on Shapter's Way in the Cattedown Industrial Estate, on the southern side of Plymouth (**Figure 1**) and on the western boundary of the area known as Cattedown Quarry, which was active during the 19th century. Quarrying finished shortly before the Second World War and the edge of the quarry is marked by a narrow limestone ridge carrying the former road left between two quarries.
- 1.2.2. The underlying solid geology comprises Middle Devonian Limestone (Geological Survey of Great Britain Solid and Drift 1:50,000; Sheet 349). This deposit is characterized by an absence of regular and obvious jointing or bedding planes.
- 1.2.3. The Site covers an area of approximately 0.5 hectares, bounded to the north by the line of a fuel pipe and industrial buildings and to the east by Shapter's Way. To the south the Site is bounded by a railway line, industrial buildings and fuel storage tanks and, to the west, by the rock cliff of the narrow limestone bluff supporting Higher Cattedown Road, a disused roadway running along the top of the quarry face.
- 1.2.4. The ground level across the Site, at the time of the watching brief, lay at approximately 10m above Ordnance Datum (aOD). The northern third of the Site was surfaced with tarmac, the remaining ground being covered by concrete slabs and remnants of steel uprights from framed prefabricated buildings relating to the 20th century use of the Site as an abattoir, a hide factory and meat market. Limited geotechnical pitting suggested that a consistent deposit of made ground, approximately 3-4m thick, was present across the entire Site.
- 1.2.5. The results of the geotechnical investigations indicated that heavy metals such as arsenic, selenium, nickel and zinc were present in quantities exceeding safe levels for parks and playing fields. Borehole data similarly encountered water that was likely to be polluted at the interface between the limestone and the made ground.

2. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1. Summary

- 2.1.1. The desk-based assessment prepared by Wessex Archaeology on behalf of Hanson Aggregates (Wessex Archaeology 2006) indicated that archaeological remains dating from the Palaeolithic to the Roman period and later have been recorded in the area. Human and faunal remains dating from the Upper Palaeolithic period were recorded from deposits filling

natural fissures and caves in the limestone at Cattedown during the 19th century

- 2.1.2. Within the Plymouth region (from Mount Wise in the west to Yealmbridge in the east) 40 cave sites are known or thought to contain fossil-bearing Quaternary deposits (**Figure 1** inset). Five sites produced human remains or diagnostic flint tools of possible Upper Palaeolithic date (40,000 – 10,000 years ago) (Chamberlain and Ray 1994, 1). The most prolific of these, Worth's Cattedown Bone Cave, is situated approximately 70m from the western boundary of the Site (**Figure 1**) on the western side of the limestone bluff which supports the now defunct Higher Cattedown Road.
- 2.1.3. The limestone of Cattedown was extensively quarried from the 17th century, a process that accelerated during the 19th century. This removed all archaeological remains from the topsoil or surface of the bedrock.
- 2.1.4. Once quarrying ceased gas works, fuel depots and chemical factories sprang up benefiting from water-frontages, railways and a low density of population. The Site housed an abattoir, a hide factory and meat market from the 1930s.

2.2. Worth's Cattedown Bone Cave

- 2.2.1. The Scheduled Monument of Worth's Cattedown Bone Cave lies on the western side of the residual ridge of limestone that forms the western boundary of the site. Following its discovery in the face of the quarry in 1887, the cave was excavated by a local archaeologist, R.M Worth, who recorded a pair of chambers connected by a fissure.
- 2.2.2. Among the faunal remains recovered from the cavern were human teeth from the lower cave earth stratum and the bones of fifteen individuals, including children and adults of both sexes, from the uppermost cave breccia deposits. Thirty three species were present in the faunal assemblage, which ranged from the Middle Palaeolithic to Upper Palaeolithic/Ipswichian-Devensian (c. 128,000 – 10,000 years ago).
- 2.2.3. Recent re-analysis of the original 19th century collections has concluded that the provenance of the deposits excavated from, and still preserved within, the cave is probably the result of a collapse in the floor of a cave higher up in the system. This resulted in the infiltration of human and faunal remains deep into the more inaccessible reaches of the cave system, from what was probably a fairly accessible cave above, closer to the contemporary land surface.
- 2.2.4. Unfortunately, a combination of the taphonomic complexities of cave sites, the techniques used by the 19th century excavators and the loss of much of the excavated archive during the Second World War has led to uncertainty as to the association of the broadly datable faunal remains with the human remains. It is uncertain whether the human remains from Worth's Cattedown Bone Cave represent some of the earliest remains of anatomically modern humans (*Homo sapiens sapiens*) in the country, dating to the Early Upper Palaeolithic (40,000 to 25,000 years ago) or from the Later Upper

Palaeolithic (18,000 to 10,000 years ago), when Britain was reoccupied the last glacial maximum (25,000 to 18,000 years ago).

- 2.2.5. The original excavators did not empty all cave deposits from the chambers or adjoining fissures and deposits, up to 8m in depth, may survive below the level of the former quarry floor. It was also thought possible, that natural fissures, or solution features filled with Pleistocene deposits, may therefore extend into the Site.

3. MITIGATION STRATEGY

3.1. Development proposals

- 3.1.1. The revised design for the plant proposed that ancillary buildings and smaller structures would be constructed on concrete rafts within the made ground. The foundations for the main plant, comprising cement silos, mixer and aggregates bins and pit for a receiving hopper would be excavated through the made ground to the limestone bedrock and raised to the necessary level on steel reinforced concrete piers (**Figure 2**).
- 3.1.2. This revised design and construction technique greatly reduced any potential adverse impacts to geological and archaeological deposits.

3.2. Mitigation

- 3.2.1. In order to eliminate completely any threat to previously undetected deposits within fissures in the natural limestone bedrock it was requested, following advice from English Heritage, that all deep excavations on the site be accompanied by archaeological supervision.
- 3.2.2. All deep foundations to the bedrock were therefore monitored with an archaeologist in attendance and contingency made that in the event that significant archaeological deposits were encountered, provision made for access to ensure that all deposits could be recorded and removed, where necessary, for appropriate analysis.

3.3. Aims and objectives

- 3.3.1. The mitigation programme aimed to establish the presence or absence, location, extent, date, character, condition, significance and quality of any surviving archaeological deposits within areas of the Site affected by deep foundations. This was specifically directed towards any archaeological deposits of Upper Palaeolithic date that may be related to Worth's Cattedown Bone Cave.
- 3.3.2. The mitigation programme aimed;
- to identify and record significant archaeological deposits encountered during the course of groundworks on the Site;
 - where appropriate, to remove and analyse any significant archaeological deposits threatened by the development;

- to compile a site archive, including any artefacts and ecofacts, to a level commensurate with the significance of the deposits encountered;
- to disseminate the results of the project in an appropriate format, according to the significance of the results and
- to ensure the long-term conservation of the site archive, artefacts and ecofacts, in an appropriate store.

4. FIELDWORK METHODOLOGY

4.1. Deep excavation

- 4.1.1. All made ground in the areas of the deep foundations was removed by mechanical excavator to the top of the truncated natural limestone bedrock, which formed the base of the former quarry. The sides of the excavations were battered back as a routine measure to allow safe access for all personnel including those employed to monitor the archaeological deposits. This made it possible to observe the exposed limestone bedrock surface and determine conclusively the presence/absence of possible fissures and/or cave deposits.

4.2. Archaeological recording

- 4.2.1. Contingency was provided to ensure that all archaeological deposits were cleaned manually to an acceptable standard to enable them to be defined, planned, photographed, recorded and sampled as appropriate. Detailed survey data, including site layout, trench location and levels, was available and supplied by the contractor.
- 4.2.2. The recording system enabled any recorded archaeological deposits to be located relative to the Ordnance Survey national grid. All archaeological deposits were to be accompanied by a full written, graphic and photographic record using Wessex Archaeology's *pro forma* recording system. This system included for plans to be drawn conventionally at a minimum scale of 1:20 with sections/elevations at 1:10. A full photographic record, illustrating both the detail and the general context of any archaeological deposits, complemented the written archive using colour transparencies, black and white negatives (on 35mm film) and digital photographs.
- 4.2.3. The project design also included a comprehensive strategy for sampling any archaeological deposits for artefact and environmental analysis. Contingencies were put in place to ensure that, in the event that significant deposits were encountered, the construction requirements could be reviewed with the developer to eliminate or minimise the impact of development to preserve significant deposits *in situ* or, where this was not possible, to record, remove and analyse any significant deposits that would be threatened by the development.

5. RESULTS

5.1. Introduction

- 5.1.1. The record of the watching brief is preserved as a series of entries in a day book, cross referenced to a photographic archive that document the time and purpose of each visit. These entries form basis of this report.

5.2. Receiving hopper

- 5.2.1. An initial visit was made to the site on 7 November 2007 when a trial hole was excavated through the made ground to the quarry floor within part of the area intended for the construction of the receiving hopper. This hole established that a previously unrecorded vertical quarry face remained approximately 2 m below the modern ground surface in the north-west part of the trial hole.
- 5.2.2. Following discussion with the Historic Environment Officer, the rock face was removed, with appropriate archaeological monitoring, to allow construction of a foundation sufficient to accommodate the receiving hopper, the position of which was realigned to provide better use of space within the plant.
- 5.2.3. Excavation of the limestone was undertaken using a hydraulic Concrete breaker fitted to an excavator.
- 5.2.4. The limestone bedrock at the base of the receiving hopper pit was fractured with vertical bedding planes aligned approximately North-South. The rock in the NE part of the hole was more heavily fractured and relatively easier to break up than on the NW side of the hole where the rock was more 'massive', less well bedded and very resistant.
- 5.2.5. The junction between the two contrasting forms of bedrock was marked by a pair of parallel fissures, aligned North-South and approximately 0.50 m apart, that could be traced down the rock face, across and through the floor of the receiving hopper pit, which covered an area of approximately 25 sq m, 5 m below the modern surface.
- 5.2.6. The fissure to the north averaged 0.24 m wide while that to the south was approximately 0.44 m wide. Both fissures were filled with grey brown clay with small angular fragments of limestone. Traces of bedding were visible in the clay filling the southernmost fissure suggesting that the deposits were water lain.
- 5.2.7. Ingress of water from the surrounding made-ground and the subsequent use of pumps to empty the hole caused clay to be scoured from the fissures. It was noted that heavy objects that washed from the clay and accumulated at the base of each fissure included no faunal or archaeological remains. No artefacts were visible in the washed sections.

5.3. Concrete Plant

- 5.3.1. Four pits each approximately 10 m long, 4.8-5 m wide and 2.5-3 m apart were excavated through the made ground to the floor of the former quarry to construct steel reinforced concrete pier bases to support the cement silos, mixer and aggregate bins of the main concrete batching plant.
- 5.3.2. Each pit was excavated individually and the pier base constructed before the next pit was dug. The sides of each pit were battered back to ensure safe access, which caused the holes to coalesce at the surface into an area of approximately 328 sq m, although each pit was separated by a ridge of made ground at the base and only 177 sq m of the former quarry floor was exposed.
- 5.3.3. The excavations established that the level of the former quarry floor rose gradually from the east towards the back wall of the former workings in the west. It was necessary to reduce natural limestone forming the base of the most westerly pit by 1 m to achieve the required foundation level.
- 5.3.4. All excavation through the made ground and reduction of the natural limestone was monitored by the on-site archaeologist. No geological structures, Pleistocene or archaeological deposits were observed, nor were any artefacts recovered.

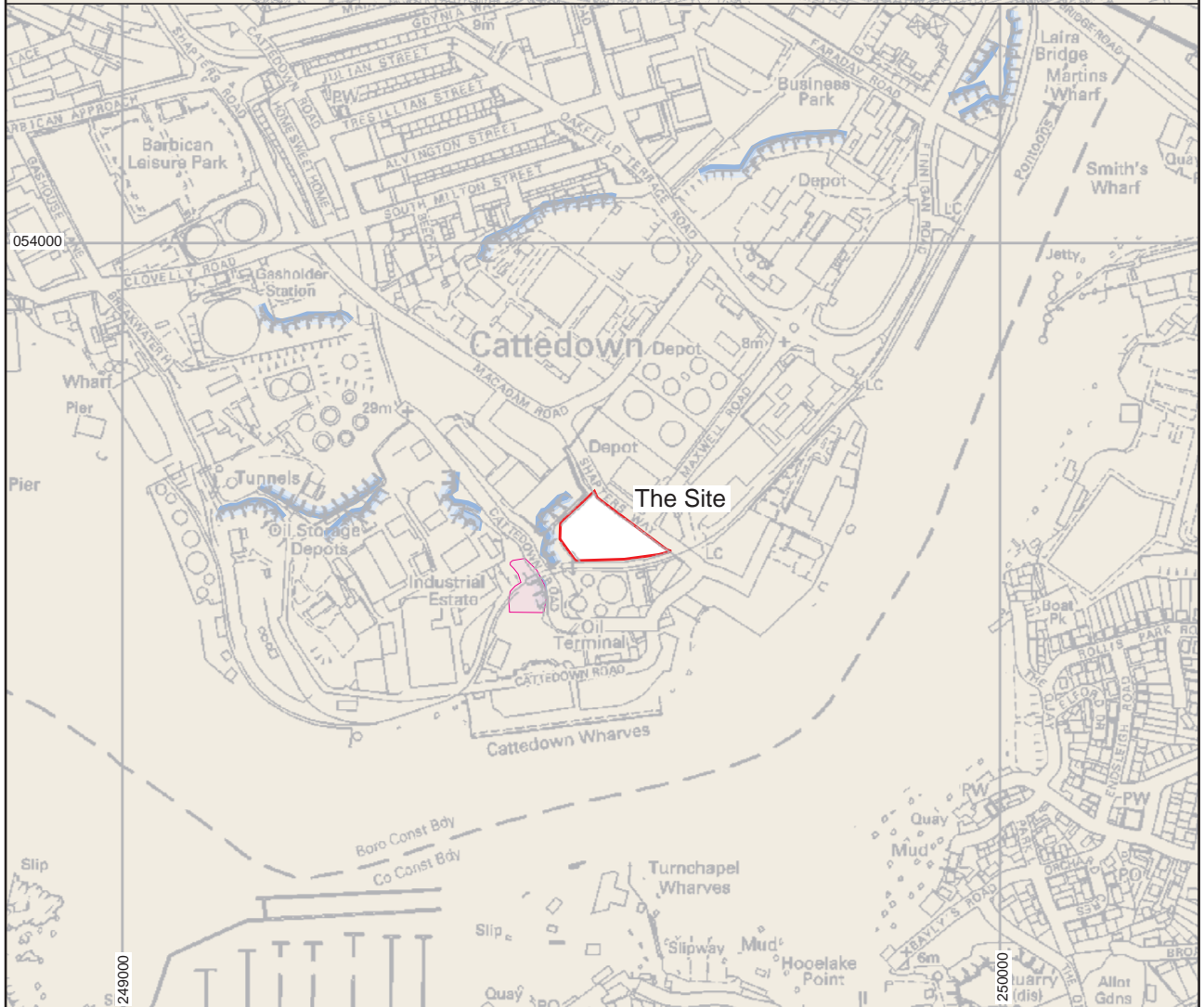
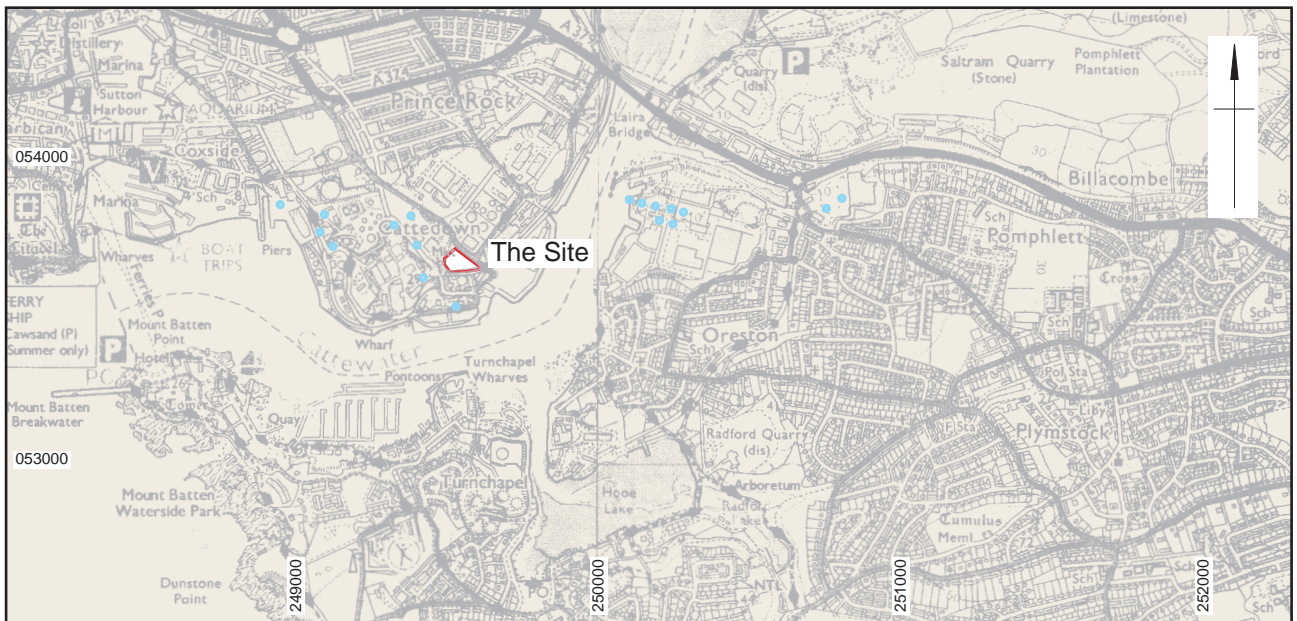
6. CONCLUSIONS

- 6.1.1. The agreed methodology put in place to ensure that undisturbed Pleistocene cave or fissure deposits at Shapter's Way, Cattedown were identified, preserved *in situ* or recorded and excavated to an acceptable standard achieved its desired aims. A total of 202 sq m of undisturbed limestone were exposed across the site and certain levels reduced to permit construction of foundations for the concrete batching plant.
- 6.1.2. Two fissures, filled with finely bedded clay, were observed in the base of a foundation constructed for a hopper base; neither contained fossiliferous deposits, Pleistocene faunal remains or archaeological material. No other fissures or cave deposits were observed across the site.
- 6.1.3. A summary of the archaeological results will be provided to the Devon Proceedings and the archive will be deposited in the Plymouth City Museum and Art Gallery.

7. REFERENCES

Wessex Archaeology 2006, Proposed Concrete Batching Plant, Cattedown Industrial Estate, Plymouth: Archaeological Desk-based Assessment. Unpublished client report, Ref. 64360.01

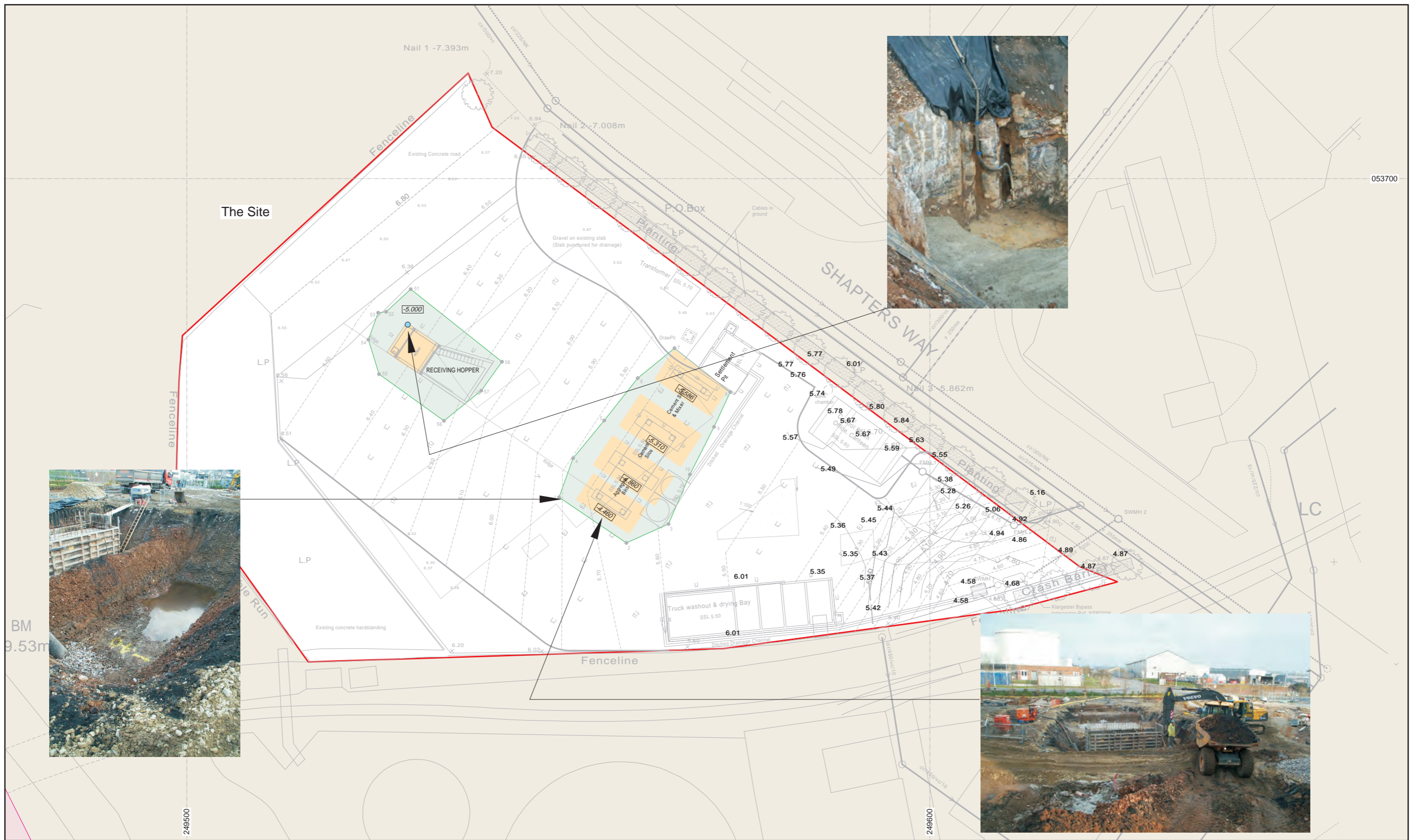
Wessex Archaeology 2006, Proposed Concrete Batching Plant, Cattedown Industrial Estate, Plymouth: Addendum. Unpublished client report, Ref. 64360.02



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Site location

Figure 1



- Exposed natural limestone
- Area of deeper excavation
- Fissures
- 5.77 Existing level
- 5.000 Level to base of excavation (depth from ground level)



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Proposed site layout and location of buildings with concrete pad foundations

Figure 2



Plate 1: Groundworks for Receiving Hopper from the east



Plate 2: Close-up of fissures

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