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**Subject:** ESSENTIAL WORKS TO BE CARRIED OUT AT DOVER MUSEUM AND THE BRONZE AGE BOAT EXHIBITION HALL

**Meeting and Date:** Cabinet – 6 November 2017

**Report of:** Roger Walton, Director of Environment and Corporate Assets

**Portfolio Holder:** Councillor Trevor Bartlett, Portfolio Holder for Property Management and Environmental Health

**Decision Type:** Key Decision

**Classification:** Unrestricted

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**Purpose of the report:** To consider the business case to undertake essential works at the Bronze Age Boat exhibition hall and Dover Museum.

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**Recommendation:** To approve the undertaking of essential works at the Bronze Age Boat exhibition hall and Dover Museum.

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## 1. Summary

1.1 The existing museum ventilation plant that provides heating and cooling has reached the end of its economic life and is by modern standards extremely inefficient hence expensive to operate. This is affecting the regulation of the climate for the preservation of the Bronze Age boat.

## 2. Introduction and Background

2.1 The former White Cliffs Experience was built in 1991 and much of the current ventilation plant which delivers fresh air and heating is around 26 years old. As a result, and despite efforts to maintain the equipment, most of it is at the end of its life. At present the top floor History gallery only has one out of three supply air fans and heating coils operational and no extract provision as the motor plant for this is inaccessible.

2.2 The ventilation system was designed and built as a full fresh air system but is, by modern standards, of a poor design and energy intensive. Modern systems are designed to reduce energy consumption and have controls that govern the environment more closely. The inefficiency of the current system is causing an unpleasant environment in the museum galleries due to the inadequate circulation of fresh air in the summer and inadequate heating in the winter. The current system is also expensive to operate.

2.3 The Bronze Age Boat is housed in an enclosed glass case at the Dover Museum and must be preserved in a controlled environment (i.e. 19 °C ± 2°C and 52% relative humidity ± 3 %). This climate control system was designed in collaboration with the Mary Rose Trust.

2.4 The glass case and associated air handling units were installed around 1999; at this time the existing exhibition hall roof-top Air Handling Unit was modified and a chiller was installed on the supply side with filtration. The boat case Air Handling Unit is located internally drawing air from the exhibition hall and is in perfect condition.

- 2.5 The exhibition hall roof-top Air Handling Unit filter and chiller modules are not ideally situated being directly on the supply air entry adjacent to the DX units which reject heat in to the coiling coils that they supply creating additional load. The filters are constantly saturated being directly exposed to the elements and the air handling unit being 26 years old is suffering from server corrosion.
- 2.6 The environment inside the boat case relies upon the air in the exhibition hall being at the correct temperature (21°C) to prevent excessive fluctuations and load on the temperature and humidity of the air around the boat. We have recently ascertained that the extract duct for the exhibition hall is directly underneath the supply air duct. This prevents the cooled or warmed air to the exhibition hall circulating correctly to work in harmony with the boat case and is also extremely inefficient as this is once again a full fresh air system where the conditioned supply air is extracted immediately.
- 2.7 A consultant has completed a survey at the museum and produced a report. This in essence recommends removing the existing roof top plant and replacing the air handling units with new heat recovery units. These will provide heating and cooling as required to the museum Bronze Age Boat and top floor galleries. New extract ducting will be installed across the roof to ensure separation and adequate distribution of supply air.
- 2.8 It is proposed to install high level extract fans to the raised roof skylights to vent additional heat at peak times; these sky lights are to be insulated to prevent excessive solar gain.
- 2.9 Recommendations include the installation of new steam humidifiers to supply the boat case that will incorporate automatic change over and fault indication and be easier to maintain, along with a modern more efficient plug fan to supply air to the case.
- 2.10 As previously approved by Cabinet (CAB42 8.9.14) The Building Management System (BMS) that controls all of the plant is to be upgraded to a modern modular open protocol system. Compatible parts for this are readily accessible from a number of manufacturers, ensuring longevity and ease of future maintenance.
- 2.11 A draft specification has been prepared by the consultants, which when finalised will go to competitive tender through the Kent portal in line with contract standing orders.

### **3. Identification of Options**

- 3.1 Option 1. Is to do nothing
- 3.2 Option 2. Is to use the provisions included in the current Medium Term Financial Plan in addition to the existing budget to cover essential works at the Bronze Age Boat exhibition hall and Dover Museum.

### **4. Evaluation of Options**

- 4.1 Option 1 - this is not recommended as much of the existing plant is inoperable making the museum environment unstable in respect of ventilation and temperature swings. This is not only undesirable for visitors; it also places a strain on the Bronze Age Boat display case due to fluctuations in the temperature and humidity of the boat. The remaining plant is not maintainable and will fail soon; the system in its current state is woefully inadequate and extremely inefficient.

4.2 Option 2 would enable a modern efficient maintainable heating /cooling and ventilation system to be put in place, thus creating a pleasant and stable environment for the Bronze Age Boat and visitors to the museum.

## 5. **Resource Implications**

5.1 The value of the proposed renovation amounts to £242,990. It is proposed to finance these works by using the £110,000 provision for replacement environmental plant / controls for the Bronze Age boat, and the £80,000 provision for general works at the museum; both provisions are included in current the Medium Term Financial Plan. The remaining cost will be covered from the existing budget which is in place for essential works at Dover Museum and the Bronze Age boat.

## 6. **Corporate Implications**

6.1 Comment from the Section 151 Officer: Accountancy has been consulted and has no further comment to add. (KW)

6.2 Comment from the Solicitor to the Council: The Solicitor to the Council has been consulted in the preparation of this report and has no further comments to make. (HR)

6.3 Comment from the Equalities Officer: This report does not specifically highlight any equalities implications however, in discharging their responsibilities members are required to comply with the public sector equality duty as set out in section 149 of the Equality Act 2010 <http://www.legislation.gov.uk/ukpga/2010/15> (KM)

6.4 Other Officers (as appropriate): Climate Change and Energy Conservation Officer - Replacement of outdated, energy inefficient heating/cooling equipment at Dover Museum and the Bronze Age Boat will reduce future energy costs, cut carbon emissions, and support international (Kyoto Agreement, European Energy Performance of Buildings Directive), national (Climate and Energy Acts) climate change ambition, and local commitments (DDC Corporate Plan Priority Two focus - Minimising the Council's impact on the environment) (AM).

## 7. **Appendices**

None.

## 8. **Background Papers**

Cabinet decision CAB 42 of 8 September 2014

GPJ Consulting Engineers Report No 1 revision A.

GPJ Consulting Engineers draft tender documentation

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