**Supporting document 2 - Existing Digital Work**

**2013-2017**

**The Invincible web tour** – Produced by Pascoe Archaeology for Historic England and created by ArtasMedia (cloudtour)

The Web tour is a virtual interactive diver trail built in HTML5 which was created for maximum dissemination to the general public. This is easily accessible by anyone with the internet because it does not require any extra downloads or applications. The system has been custom built, so all the code is modular and owned by ArtasMedia and Cloudtour. There is potential for any part of the tour to be linked to a physical display and exhibition.

The web tour is created from a digital archive or outputs from the 3DS Max model rendered through Vray. These outputs range from High Definition imagery, video, panoramas and ultra HD (10K) tiles. The 3DS Max model and archive has been created from a variety of archaeological data including, hand drawn site plans, multi-beam bathymetry, photographs, video and 3D photogrammetry models. The model has also been created with the interpretations of the archaeologist and specialists who are most familiar with the site.

The 3Ds Max file is the raw unedited digital archive of all the work up 2017. It is a resource that can be added to and developed into whatever output is required. It therefore represents the building blocks for any future project.

**Creations from the 3DS Max Model**

- Web tour - an interactive tour around the whole site ([www.cloudtour.tv/invincible](http://www.cloudtour.tv/invincible))
- Archive of rendered content ([https://www.dropbox.com/sh/5reoo1jx74aqy52/AAAsVo8Pg1o7Kcvc74FQCZGHa?dl=0](https://www.dropbox.com/sh/5reoo1jx74aqy52/AAAsVo8Pg1o7Kcvc74FQCZGHa?dl=0))
  - Reconstruction shot of Invincible
  - Underwater environment tests
  - Panoramas of all areas of the site
  - Test renders
  - Final renders
  - High resolution base images
  - Photogrammetry models
  - Sketch fab model link through the via the web tour
  - Descriptive images for reports and tour interpretation
  - Video breakdown of photogrammetry editing (the making of)

- 3D geometry of all areas exists in the model and this includes photogrammetry and hand model assets. ([https://www.dropbox.com/sh/6msg8lirpk86s6l/AADCDCk8KKEnAvdYOVKfh1rha?dl=0](https://www.dropbox.com/sh/6msg8lirpk86s6l/AADCDCk8KKEnAvdYOVKfh1rha?dl=0))
Shade and textures for wood, sand, concretions and any organic material on the site. ([https://www.dropbox.com/sh/6msg8lirpk86s6l/AADCDCk8KKEnAvdYOVKfh1rha?dl=0](https://www.dropbox.com/sh/6msg8lirpk86s6l/AADCDCk8KKEnAvdYOVKfh1rha?dl=0)) Textures/materials are archived inside file.

There is a link to the web tour with information about the project here: [https://artasmedia.com/portfolio/the-invincible-web-tour/](https://artasmedia.com/portfolio/the-invincible-web-tour/)

And blog post about the making of:


**2017-2018 – digital work created as a result of the current excavations**

During the current excavations the primary method for recording the excavated parts of the wreck has been with the use of photogrammetry. Multiple surveys have been conducted throughout the excavation not only capturing the site in 3D but also in 4D (time). These photogrammetric surveys have recorded a time lapse record of the site as the different layers of stratigraphy within the wreck are revealed. The results have produced multiple high-resolution 3D models. These models are an accurate representation of the wreck and essential for the analysis and interpretation of the site. The models have been produced in Agisoft Photoscan. In addition to the textured 3D models, Depth Elevation Models and orthophotomosaics have also been produced.

**Examples of Models produced**

2017 excavation area (Trench 1), the port side bow from the first gun station on the remains of the gundeck and down into the orlop and hold.
2017 model of the spare rope on the orlop deck before recovery.

2018 model of trench 1, which was a continuation of 2017 trench 1.
Depth Elevation Model of *Invincible’s* Portside Bow
2018 model of Trench 2 – This is the amidships section of the lower hull.

Photographs and films of the 2017 and 18 dive seasons

Diver and cameraman/Producer Michael Pitts, has been documenting the excavations since the 2017 dive season. Below is an example of his work.
Michael Pitts will be diving the 2019 season and will produce a 360° film in the next dive season in preparation for the exhibition. Below are notes on what he plans to do.

Notes from Mike Pitts

I have drawn up a sketch which illustrates what I feel is very much achievable on the Invincible site. This system whilst not true VR will give anyone watching this projection a real feeling of being on the wreck. As the cameras move slowly forward across beams, along decks and over the cannonball field (shot locker) the viewer is taken on a journey. As a working diver appears out of the gloom the image will sharpen as the cameras get closer and the sound of their breathing intensifies - it then fades as we pass them continuing our journey. OR the cameras pause and we mix to the detail of what they are doing - perhaps freeing a wooden bowl from the gunners store or a rigging block from the jumble of blocks off the starboard bow. The surround, soundscape design is crucial too to give that feeling of being 30 feet below the surface of the Solent. If you look up you would see the surface of the sea above your head and perhaps the sound of breaking waves. Certainly the sounds of a work barge above the site with compressors running and the clanking of chains and the communication system between the surface supervisor and the divers. This would give real atmosphere. I would also choreograph a diver to slowly swim towards me with torchlight shining at camera - they move past and it gives scale and again illustrates what it’s like to be down there.

I would start on the barren seabed of shingle and sand off the wreck and then move up over the bow and into the excavation areas. Remember, the site is criss crossed with 3 metre square scaffolding grids which are numbered and are always referred to when planning the dives and excavating that particular grid. As an example, when someone refers to, Grid 4 you know exactly that position so essential knowledge on this complex site, especially so in low visibility. So the scaffolding poles will be in vision but for the most part they will appear at the top of screen and the cameras move under them. I would film on the days when the visibility was at its best. I know from experience and from reviewing my own footage what looks good but I would also shoot in more difficult conditions as that too can have added drama with strong currents pushing the broken kelp past the lenses and disorienting the viewer. But this would illustrate the difficulties of hands on archaeology in the Eastern Solent Channel.

To achieve the best results I have trialled a system of three to four cameras with wide angle lenses on a purpose-built rig. But the results will be staggering and no VR headsets needed. I have ordered the main Nauticam A7s housing with monitor and the camera bracket is being manufactured now. With three additional GoPro kits and new lenses.
INVINCIBLE

IMMERSIVE VIDEO PROJECTION
CONCEPT DRAWING.

OVERHEAD DIFFUSED PROJECTION OF SEAWATER
AND SURFACE WAVES.

THREE CAMERA PROJECTION
FROM FLOOR LEVEL TO GIVE
180° VIEW FORWARD

SEABED - SAND AND SHINGLE EFFECT FLOOR.

Note: Surround sound to
give underwater effect and
divers at work. Cameras move forward to give the effect of
swimming over the Invincible.