

Morecambe Phase VI coastal defence development

Mitigation works - Technical Note 2

1. End of Mitigation Habitat Creation Work

To provide information required by English Nature and Lancaster City Council, this note summarises the work done as part the skear mitigation/creation work for the Morecambe Phase VI Coastal Defence Development.

- (1) **Completion date:** - Having commenced on 23.3.06 (see Note 1) the Mitigation Habitat Creation Work was completed on 5.5.06 (end of Week 6). Dr Barber (Shoreline Management Partnership) and Colin Scott (ABPmer) were in attendance on the final day.
- (2) **Skear resource:** - By the end of the work all the available skear resource beneath the footprint of the Sunnyslopes Breakwater had been relocated into the mitigation area. This included the area of barren and loose cobble deposits within the top 10m of the shoreline (i.e. adjacent to the sea wall and above the neap tide high water mark). This loose cobble area had originally been excluded because it did not have precisely the same clay/cobble matrix as the main skear. However, because these cobbles can still be used to provide an appropriate skear substratum they were relocated when the supply of materials from all other parts of the natural skear had been exhausted. The excavated areas on the south and north sides of the proposed breakwater footprint are shown in Photos 1 and 2 respectively.
- (3) **Final Deposits:** As the skear resource was exhausted by the final day, a large proportion of the last materials being relocated was clay (around 70-80%) rather than pebble/cobble. Photo 3 shows these last deposits being laid and the differences between them and the main body of the skear (which is cobble-dominated) is evident in this picture. Due to the very high proportion of clay, these final materials were no longer suitable for cobble skear creation.
- (4) **Skear creation:** - As no more suitable materials were available for relocation it was concluded that the skear creation work should end on 5.5.06. The total area of skear created has yet to be calculated but it is expected to be around 11,000m². This is less than the original objective because there was less skear available (see Note 1) and because the depth of the skear created is slightly greater than the depth of the original excavations. The option to redistribute the re-laid skear materials such that they extend over a larger area but at a shallower depth was considered but it was concluded that this could adversely affect the appearance and structure of those materials that had been already laid. It was also thought that making the materials thinner could compromise the longer term stability of the materials making them more susceptible to erosion and accretion.



- (5) **Skear Appearance:** - Due to the measures that were taken when re-laying the skear materials (see Note 1) the new skear habitat shows encouraging similarities with other natural skear areas in the vicinity. It is largely dominated by coarse rocky materials, it has a firm clay matrix and has large boulders scattered across its surface that give the appearance of natural glacially deposited 'eractics'. Crucially, ponds have formed in the tracks left by the digger that laid the materials and it is hoped that these will help to enhance species settlement and epifaunal abundance in the new habitat. The habitat as viewed from distance is shown in Photo 4. Across the new skear there is a change in the habitat types with the northern third of the area being a cobble and pebble dominated substratum while the southern two thirds are a mixture of firm exposed clay and fine sand (covering between 10 and 50% of the surface) with pebble and cobbles covering the remainder of the area. Large boulders were scattered relatively evenly across all parts of the feature.
- (6) **Establishing Sampling Location:** - As required by the proposed monitoring programme, 6 sampling points (labelled A to F) were set up and accurately positioned across the skear area. Photographs of the substratum were taken at each site to provide a visual baseline record. Two of the sites were located within the cobble/pebble-dominated area to the north (see Photos 7 and 8 show Sites 'A' and 'B') and four sites were positioned in the mixed substratum to the south of the area (see Photos 9 and 10 show Sites 'E' and 'F').
- (7) **Fixed-point photographs:** - As on Day 1 of the mitigation work fixed-point photographs were taken on the final day from 16 locations around the site both at beach level and from elevated vantage points on the bank behind the promenade. Additional photographs and videos were also taken to describe the final stages of the work. These photographs/videos are being collated on an interactive CD and website (<http://www.abpmer.net/morecambe>).
- (8) **Next stage:** - For the next stage of work, the contractor (Birse) will map the final extent of the mitigation area and will take baseline elevation readings across the feature. This information will be used as the basis for future assessments of the stability of this new habitat. Later in the summer (July) ABPmer will revisit the skear to: assess the ecological development of the habitat; take further fixed-point photographs describing the habitats and the breakwater construction work and to analyse the habitat development at the 6 sampling locations. The results of these future analyses will indicate whether further intervention work is required to achieve required habitat quality. A third technical note and website update will be issued after this visit.

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