1 SUMMARY AND CONCLUSIONS

1.1 General

The strategy area encompasses a section of coastline characterised by cliffs that have formed in the first instance by marine action and are steep, largely vegetated, coastal slopes whose bases are subject to the frequently aggressive wave environment of the English Channel. Recession of the cliffs and shoreline is being driven by the resultant erosional forces. This in turn exacerbates the inherent instability of the coastal cliffs and slopes that are prone to landslide activity. The boundaries of the strategy area are naturally defined by the two headlands of Peveril Point and Durlston Head, with Durlston Bay forming the intervening embayment.

Despite the high incidence of instability along the strategy coastline, the mean cliff top recession rate is low, and the generally undeveloped nature of the cliff top area renders little requirement for engineering intervention, and the 'do nothing' approach is recommended for much of the area.

Notwithstanding the above, an area towards the centre of the bay is developed with residential properties, and the occurrence of recent landslide activity has raised concern with respect to the long-term stability of the area. It is this area, around the Purbeck Heights apartments, and other properties along Belle Vue Road that the focus of the strategy is based.

1.2 Inspection Programme

A six-monthly inspection of the entire strategy coastline is recommended. This will focus on the encroachment of the cliffline on the clifftop path and its potential undermining. The inspection programme will pay particular attention to the area around the Purbeck Heights development where recent large-scale landslide activity was sustained, and Durlston Cliff flats that are bordered by extensive landslide remediation works completed in 1989. Incipient instability is also apparent on the spur between the above areas and in the grounds of Durlston Cliff flats, and this will in addition form a key area for special attention during the routine inspections.

The cliff condition within Durlston Country Park is currently monitored, and it is possible that either the current inspection arrangements may be augmented to incorporate the entire bay frontage, or that a new inspection programme will require to consider the area outside of the Country Park only.

1.3 Monitoring Programme

The presence of substantial developments in close proximity to the cliff is of particular significance around Purbeck Heights and Durlston Cliff Flats. The encroachment of the clifftop into the grounds of Purbeck Heights due to recent landslide activity is not of immediate threat to the structures. However, there is potential for instability to propagate towards Purbeck Heights and into the adjacent area to the north of the landslide due to the altered stress regime in the ground and this requires special attention. Further, whilst the cliff seaward of Durlston Cliff flats was subject to an extensive remediation programme following cliff falls in the late 1980's, indications of instability persist, and again this area is defined as requiring special attention.

In both respects, it is proposed to install a system of inclinometers and remote instruments to assist in quantification of the risk to the properties, and thereafter better develop remediation scheme options should such prove desirable.

1.4 Pinecliff Walk Landslide Scheme

The encroachment of the clifftop into the grounds of Purbeck Heights, including the breach of the cliff top path, has highlighted the requirement for engineering intervention in this area. Several scheme options have been identified and assessed with respect to benefit/cost. The study has illustrated that immediate attention in the area is desirable in order to control further encroachment into the property. A stabilisation scheme including reinforcing of the ground by the use of shear piles within and adjacent to the landslide system is recommended. In addition, the stabilisation scheme includes for drainage improvements to be installed within the landslide bowl.

1.5 Drainage

As part of an emergency works package instigated following the reactivation of landslide activity in the Pinecliff Walk Landslide in 2000/2001, a stream to the south of the area, which forms the main drainage line for the catchment was diverted. This stream previously discharged into the landslide complex, and was considered as a contributory element to the landslide development.

It is also concluded that the poor drainage in the cliff top area will be contributory to the instability. The majority of the properties include soakaway drainage systems, and there are no adequate surface water sewers

in the area. As such a comprehensive programme of drainage improvements is recommended for the area.

It is recommended that a policy is established to prevent the use of soakaway drainage in future developments in the vicinity of the Pinecliff Walk Landslide. The exclusion area would ideally include all properties within the catchment and near to the coast, and should include the following roads:

- Belle Vue Road;
- Durlston Road south of Bon Accord Road;
- Purbeck Terrace Road south of Bon Accord Road;
- Bon Accord Road to the junction with Southcliff Road;
- Southcliff Road;
- Sunny Dale Road;
- Osmay Road;
- Lighthouse Road (north of Solent House).

1.6 Programme of Works

As mentioned above, the study has concluded that there is an ongoing risk of short-term reactivation of the Pinecliff Walk Landslide. Potential ground movements to the north of this landslide complex are not easy to predict, although data obtained from the monitoring system will assist in this assessment.

Considering the above, the programme of works is to install the monitoring system and complete remediation in the vicinity of the Pinecliff Walk Landslide as a matter of urgency. Other works, including the drainage improvements in the cliff top area are proposed to be installed in the short term.

It is a requirement of the Strategy to reassess the extent of engineering interventions with respect to the area to the north of the Pinecliff Walk Landslide as results become available from the recommended monitoring programme.

1.7 Events Subsequent to the Draft Strategy Report Submission

The 2nd Draft of the Strategy Study report was issued in April 2003. A period in excess of 2 years has therefore elapsed prior to the finalisation of the report. Protracted discussions have taken place over this period regarding the content of the document within Purbeck District Council, and with DEFRA and other consultees.

The main element of these consultations has centred on the causal mechanisms of the landslide activity at Pinecliff Walk, and the relative importance of marine and terrestrial processes in the formation and propagation of instability. The driving force behind the discussions centred on the relative interests of potentially affected residents, which included sentiment both in favour and against engineering intervention, and whose causes were adopted by representatives within the local authority.

The discussions culminated in a generally unfavourable dispensation within DEFRA to assist financially with the proposed remediation scheme or recommended monitoring. This opinion arises from influence of terrestrial processes, and land drainage on the reactivation of the Pinecliff Walk Landslide in 2001, with the view being taken that these factors override the principal genesis of the cliff being from marine erosion.