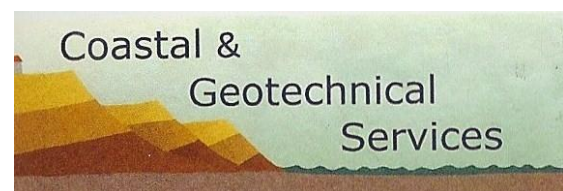


# **‘ASSESSMENT ON THE POTENTIAL IMPACTS OF DEVELOPMENT ON LAND STABILITY AT FAIRLIGHT COVE COASTAL ZONE, EAST SUSSEX’**



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**DOCUMENT CONTROL GRID**

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**Front Cover Images**

Top: Oblique view of the whole of the Fairlight frontage with coastal defences completed. June 2021.

Photo: Gully Moy.

Bottom Left: View of Fairlight Cove from the east showing coastal protection and slope works in progress. Photo: Professor Roger Moore.

Bottom Right: Extract from Rother District Council Local Plan (2019) showing the Coastal Zone Buffer in red.

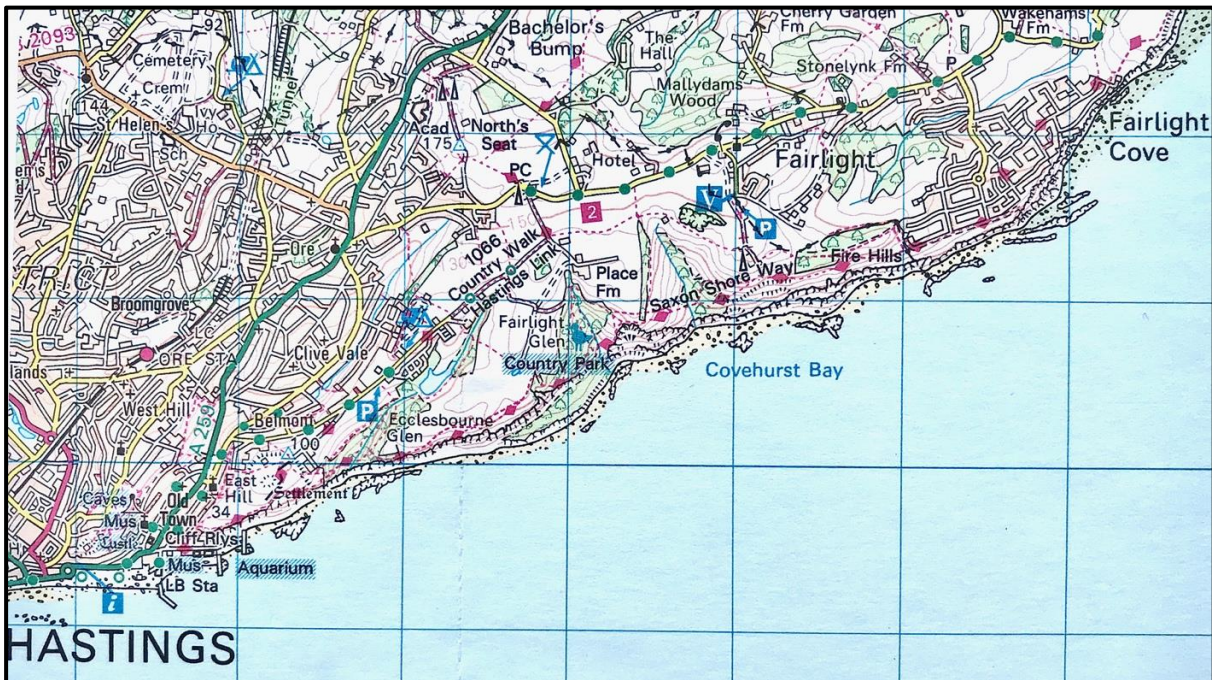


Figure 1.1: Location Map showing Fairlight Cove to the east of Hastings, East Sussex. Map reproduced with the permission of Ordnance Survey on behalf of controller of Her Majesty’s Stationary Office Crown Copyright. All Rights Reserved.

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## 1. Executive Summary

The coastline of East Sussex is considered by many to be one of the most beautiful and iconic coastal regions of Great Britain. Some parts of this striking scenery, so important for a visitor-based economy, are strongly influenced by the underlying geology, coastal erosion and resulting instability problems. These same factors have presented particular challenges for the village of Fairlight, which lies 3km to the east of the town of Hastings. Occupying land adjacent to the clifftop the community at Fairlight has experienced ongoing problems of coastal erosion and cliff instability that have led to a number of properties being lost since the 1980s as a result of cliff retreat. Since that time the current and future impacts of coastal erosion and cliff instability have been investigated and a phased programme of coastal protection works and drainage has been undertaken, which has helped to slow down the rate of cliff recession.

However, despite this, predicted impacts of climate change over future decades including sea level rise, increased winter rainfall and an increase in coastal storms could potentially reduce the effectiveness of the existing coastal risk management measures that are in place along this frontage (Committee on Climate Change, 2018<sup>1</sup>). The potential for long-term coastal change was recognised in the *South Foreland to Beachy Head Shoreline Management Plan* (Halcrow, 2006<sup>2</sup>), with long-term (50-100 years) defence policies being set out for the whole of the developed Fairlight frontage.

Rother District Council, as Local Planning Authority, has developed and implemented policies for the sustainable management of the village of Fairlight and these are set out in its *'Development and Site Allocations Local Plan'* (Rother DC, 2019<sup>3</sup>) and support the policy recommendations contained in the Shoreline Management Plan. In view of the proximity of part of Fairlight village to the sea cliff and resulting coastal erosion and cliff instability risks local planning policies are already in place, which seek to prevent inappropriate development that might otherwise have adverse impacts on coastal land stability. The Council wishes to explore whether these instability risks could be reduced still further by making an *Article 4' Direction under the Town & Country Planning (General Permitted Development) (England) Order 2015*, which would withdraw existing 'permitted development' rights within a defined area of the Fairlight coastal zone. In particular the Council is seeking evidence on the value or otherwise of the introduction of this legislation and, if introduced, the scope and geographical coverage that the Direction should encompass. The recommended approach to both the coastal risk management and geotechnical questions (posed in Section 2.7. I – III of the Study Brief), and the planning-related questions (posed in V – XII) have been assessed and evaluated drawing on best practice advice and guidance, where available, from other UK coastal risk sites and internationally.

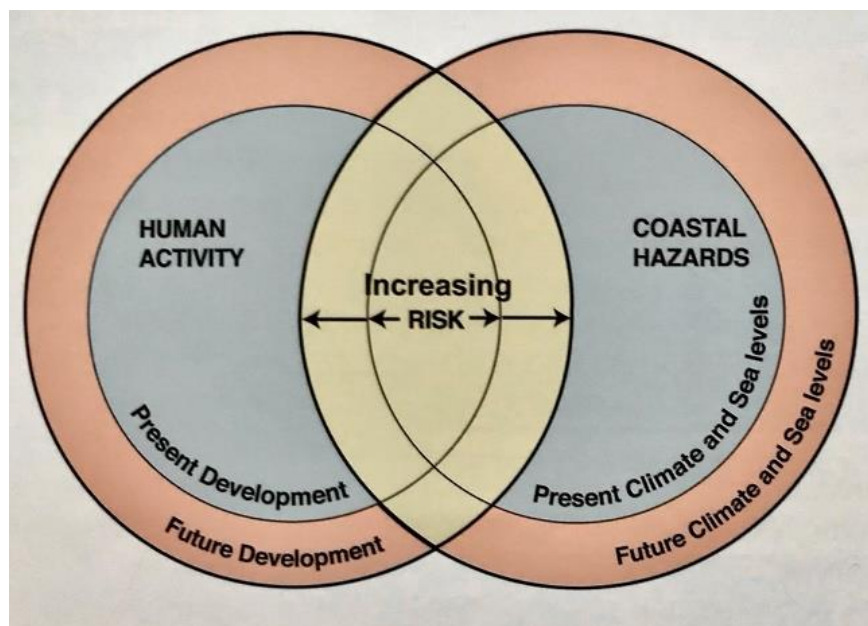
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## 2. Study Background – Understanding and Managing Coastal Instability Risks

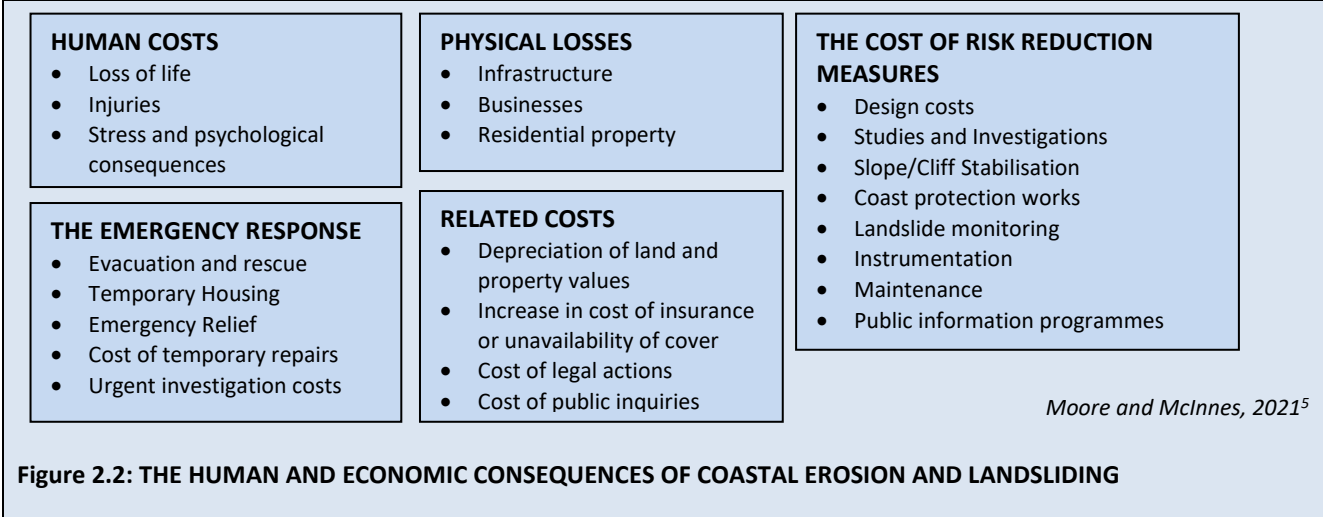
Local authorities such as Rother District Council, working with key partners including the network of Coastal Groups, the Environment Agency and local stakeholders have gained a long-standing experience of addressing risks that can arise from both coastal erosion and land instability. The evolution of shoreline management planning, which provides a long-term, forward-looking strategy for managing coastal risks, has developed progressively over the last three decades. Decision-making is now supported by a range of technical data and information, monitoring programmes and non-technical guidance (Defra, 2011<sup>1</sup>; Defra, 2020<sup>2</sup>; McInnes & Moore, 2011<sup>3</sup>; 2014<sup>4</sup>; Moore & McInnes, 2021<sup>5</sup>; Bradbury et al. 2007<sup>6</sup>).

Today many of those involved in coastal management regard climate change as one of the most serious threats to coastal communities and this highlights the need for effective policies to be put in place to help address these concerns (Moore and McInnes, 2021<sup>5</sup>). The rate and scale of change that is now being experienced, and which is widely expected to increase over the next decades, demands closer integration between the coastal risk management and planning disciplines, both at the national policy level and particularly at the local government level. Whilst coast protection is a non-statutory function the Planning system is statutory and, therefore, provides an effective framework for setting out policies for the management of risks arising from coastal change. Such policies are established with the aim of building more resilient communities at locations such as Fairlight through encouraging increased awareness of the importance of risk reduction as an integrated component of sustainable development.

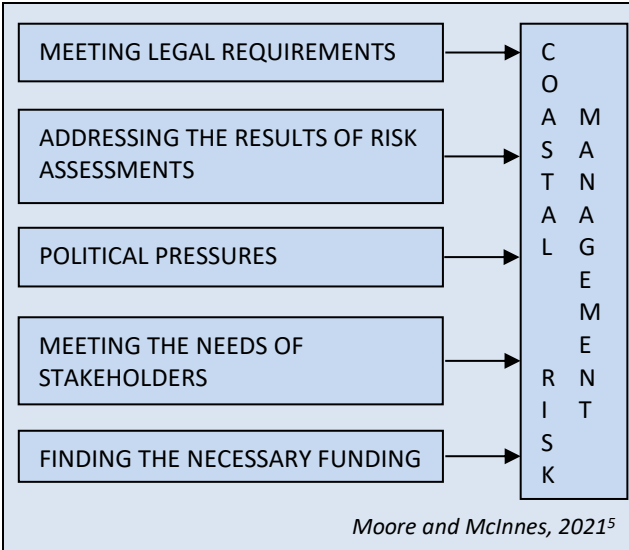


**Figure 2.1: The concept of risk as the interaction of the human environment with the physical environment such as at Fairlight is illustrated here. Only when the two systems are in conflict do the hazards of coastal instability and erosion become a threat to the local community. Over the last centuries urban development has spread progressively along our coastlines and interacted with hazards. This results in an increased level of risk (adapted from DOE).**

It can be seen from Figure 2.2 (below) that coastal erosion and land instability can result in a variety of consequences, and many of these have been experienced along the Fairlight coastal zone over the last thirty years. Therefore, a range of risk reduction measures can often offer the best long-term solution for such vulnerable locations. Experience has shown that such measures achieve greatest success if they're accompanied by stakeholder engagement with affected local communities, interest groups and individuals and this has been particularly successful at Fairlight.



The development and implementation of a system of coastal risk management has become increasingly complex in recent years, and solutions often involve the reconciliation of conflicting demands and, not least, finding the necessary funding to address these local needs. At Fairlight technical solutions to coast protection have had to be designed in sympathy with the environmental and geological significance of the coastline and its Area of Outstanding Natural Beauty.



**Figure 2.3: Effective coastal risk management involves the reconciliation of a range of demands including the legislative requirements, political pressures, the needs of the local population and funding for implementation.**



**Figure 2.4: Since the late 1980s meeting the challenges of coastal risk management at Fairlight Cove has involved extensive investigations, research, physical coast protection works, drainage and updated planning policies for managing coastal land instability. Collectively, the measures provide significantly improved standards of protection for the frontage in the future.**

Coastal instability and erosion risk management involves mitigating and monitoring risks and the outcomes of a coastal risk assessment (such as a Shoreline Management Plan and geotechnical advice) will be either that:

- The risks are tolerable, or even acceptable and no mitigation options need be considered; or
- The risks are intolerable, and risk mitigation options need be considered. This has been the case along the Fairlight frontage where the implementation of planning policies, coast protection schemes, drainage and monitoring of ground water levels have significantly reduced the level of risk for many previously threatened coastal residences.

Projections of cliff recession as a result of coastal instability and coastal erosion are fundamental to coastal planning and shoreline management. Indications of the likely position of the coastline at various points in time over the next 100 years have provided the economic justification for grant-aided coast protection and drainage works at Fairlight. An understanding of coastal change is required to inform land use policy-making and to avoid locating new developments in areas at risk of cliff recession. Projections can, therefore, be used by coastal authorities to adopt a proactive approach to evaluating the risks to existing development, to provide warnings of potential risks and to mitigate the potential impacts of cliff instability and recession events through various adaptation measures.

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### 3. What is the scale of the coastal instability problem at Fairlight?

#### 3.1 Site History

Fairlight lies 3 km to the east of the town of Hastings. The village and the neighbouring community of Fairlight Cove have experienced ongoing problems of cliff erosion and land instability in the vicinity of Sea Road and Rockmead Road in particular. This has led to a number of cliff top properties being lost as a result of cliff retreat. Subsequently the construction of three phases of coastal protection works in 1990, 2008 and 2016 together with slope drainage and provision of pneumatic pumps have reduced risks significantly along the frontage.

The coastal geology at Fairlight comprises weak clay-stones, siltstones and sandstones of the Lower Cretaceous Ashdown Beds, a sub-unit of the Hastings Beds, which, in turn, form the lowest sequence of the Wealden Series. Near the base of the cliff a 1.8 metre thick clay horizon is present, which extends along a 340 metre frontage (Palmer, 2002<sup>1</sup>); this outcrop has had a marked effect on the stability of the cliffline.

The site is of significant geological interest and was designated a Site of Special Scientific Interest (SSSI) on account of its Wealden stratigraphy and its illustration of the '*Alpine Structure of Southern England*'. The coastal cliffs and countryside adjoining Fairlight lie within the High Weald AONB, which extends from Hastings Cliffs to Winchelsea.

At Fairlight Cove prior to the coast protection works an insufficient beach allowed marine erosion of the basal clay bed within the sea cliff, thus undercutting the overlying siltstone and sandstone beds. Sea spray and groundwater, together with the reduction in horizontal stress due to erosion cause softening of the clay to take place. Joints in the overlying beds of massive siltstone blocks opened eventually falling from the cliff. The talus (debris) at the base of the cliff was very quickly removed by the sea, enabling the process of events to initiate once more.

Superimposed upon these erosion processes a second slower process was evident particularly along the north-east section of the Cove. Slaking of the clays and weaker siltstones at the base and higher up in the cliff, due to wetting and drying effects of spray, rainwater, groundwater seepage and the sun, causes the gradual denudation of these horizons beneath stronger siltstone beds. Softening occurs, joints open and blocks rotate forward. Debris accumulates in the joints and groundwater causes this material to swell, exerting pressure on the jointed blocks. Individual blocks detach and contribute to the partial or complete collapse of the cliff (Palmer, 2002<sup>1</sup>).

There were significant rates of cliff retreat at Fairlight prior to the coastal protection schemes being undertaken. For example, along the Rockmead Road frontage annual retreat of up to 17 metres has been observed whilst fronting Sea Road the rate of recession has typically been up to 3 metres per annum (East Kent Engineering Partnership, 2015<sup>2</sup>). There has been a long history of investigation of cliff instability problems at Fairlight together with remedial options put forward (Moore, 1986<sup>3</sup>; Palmer, 2002<sup>1</sup>, East Kent Engineering Partnership, 2015<sup>2</sup>). To limit the rate of cliff recession a number of schemes were considered including solutions proposed by the Fairlight Preservation Trust, a pro-active group of well-informed local residents.



In the late 1990s the Council's technical advisors, Halcrow, consulted with the Nature Conservancy Council (now Natural England) and a mutually acceptable rock berm scheme that would reduce erosion to acceptable limits and be environmentally acceptable was developed for the Sea Road frontage covering a length of 500 metres. This comprised a rubble mound bund constructed on the foreshore running parallel to the cliff. The construction of the foreshore bund first, prevented the direct wave erosion of the basal clay layer and, second, allowed talus to accumulate at the bottom of the slope and provides a further element of protection to the face against weathering and cliff face denudation. As a result of this scheme the overall rate of erosion was greatly reduced, although, as anticipated, minor local collapses from the cliff face did continue particularly after prolonged wet periods.

By 2002, Rother District Council, the Coast Protection Authority, and cliff top residents represented by the Fairlight Cove Preservation Trust, the Fairlight Residents' Association and the Parish Council were becoming increasingly concerned about cliff retreat and slope failures in the vicinity of Rockmead Road which was resulting in loss of properties. As a result, it commissioned the Halcrow Group in December 2002 to inspect and report on the cliff failures and carry out a further inspection in June 2003.

Halcrow reported that erosion of the toe was promoting further displacement of a coastal landslide in this area and that high groundwater levels were a major cause of the ongoing displacement and instability. A further study estimated that between 148 to 195 properties could be lost if cliff failure was allowed to continue uninterrupted for the next 100 years (Oakes, 2004<sup>4</sup>). The long-term Coastal Risk Management Strategy for Fairlight was set out in the South Foreland to Beachy Head Shoreline Management Plan (Halcrow, 2005<sup>5</sup>), which proposed the following policy options for three time epochs (0-20 years, 20-50 years and 50-100 years):-

**Table 3.1 SHORELINE MANAGEMENT PLAN POLICIES FOR FAIRLIGHT COVE**

Frontage	0 - 20 Years	20 - 50 Years	50 - 100 Years
Fairlight Cove East* (Sea Road)	Managed Realignment	Managed Realignment	Managed Realignment
Fairlight Cove Central ** (Rockmead Road)	Hold the Line	Hold the Line	Hold the Line
Fairlight Cove West	No Active Intervention	No Active Intervention	No Active Intervention

\*The intention of these policies is to maintain but not improve the coastal defence rock bund.

\*\* The intention of these policies is to maintain the defences for the first 50 years and thereafter to allow shoreline retreat.



**Figures 3.1 (above) and Figure 3.2 (below) showing work in progress on the phase 2 scheme for coast protection and drainage works along the Rockmead Road frontage in 2008. Photos: Prof Roger Moore.**





Figures 3.3 (above) and 3.4 (below): In order to preserve the geological interest of the cliffs at Fairlight Cove the rock berm was not set directly against the base of the cliff. This means that an element of erosion and weathering will continue to occur. This can lead to shallow slides and rockfalls particularly after long, wet periods. Following completion of the first two phases of coast protection there remained an undefended vulnerable gap in the defences between the two rock berms. With the assistance of grant aid and partnership funding provided by the Parish Council and Fairlight residents the stage three 250 long berm scheme was completed in early 2017 thereby providing a significantly higher level of coast protection for the whole village frontage.

Photos: Gully Moy.



Representatives from the Fairlight Preservation Trust visited the Isle of Wight in 2003 to discuss with the author of this report how schemes had been undertaken successfully there. Cliff instability issues and environmental concerns had to be addressed in order to establish whether such approaches, as implemented on the Isle of Wight, were applicable at Fairlight (Moore and Longman, 1991<sup>6</sup>; McInnes, 2007<sup>7</sup>). Through joint-working with Defra and Natural England a second phase 250 metre long scheme comprising toe protection, cliff profiling, pneumatic pumped wells and drainage was completed at Fairlight in 2008; this scheme helped to reduce risks for the cliff top residents whilst helping to try and maintain the environmental importance of the cliff and slopes. Following completion of the first two phases of coastal protection there remained an undefended, vulnerable gap in the defences between the two rock berms. With the assistance of grant aid, and partnership funding provided by the Parish Council and residents of Fairlight, the stage three 250 metre long berm scheme was completed successfully in early 2017 thereby providing a significantly higher level of coastal protection for the whole village frontage.

### **3.2 The challenges for the Fairlight frontage looking ahead to the end of this century are:-**

- 1. Ongoing weathering of the face of the cliffs by rain, wind, frost and emergent groundwater leading to undermining and cliff falls, but at a much reduced level as a result of the coast protection and drainage works;**
- 2. Rising sea levels and overtopping by waves of the rock berms leading to removal of beach and cliff materials behind the berm;**
- 3. Changes in the groundwater regime and drainage patterns;**
- 4. Impacts of any further cliff top developments such as increased loadings.**
- 5. The current approaches to risk reduction being adopted by the Council as *Coastal Risk Management Authority* are described in Section 4 below.**

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**Figure 3.5: View looking westwards along the Fairlight frontage from above Rockmead Road with Channel Way beyond. June 2021. Photo: Gully Moy.**

## **4. How are Coastal risks currently being managed at Fairlight Cove?**

### **4.1 Planning Policy Measures**

The government is committed to ensuring that planning policies help coastal communities to adapt to the hazards and risks arising from coastal change, particularly in the face of climate change (Defra, 2020<sup>1</sup>). Land use planning, therefore, has an important role to play in helping locations such as Fairlight to manage risk and adapt to these changing conditions.

Being a branch of both physical and socio-economic planning, land use planning assesses the values or limitations in the way that coastal land can be used. This often involves a range of studies and baseline mapping, analysis of environmental and hazard data, formulation of land use planning options and design of a long-term plan for different geographical and administrative scales. Such plans should take a long-term view and a proactive approach to mitigating and adapting to coastal change, considering the implications for coastal erosion, cliff instability and the wider implications for landscapes and biodiversity. *“Planning policy should be developed with the objective of supporting appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts on the coast, such as coast protection measures or relocation of vulnerable development and infrastructure”* (MHCLG, 2019<sup>2</sup>). More details on implementation of these objectives are set out in the government’s *Planning Policy Guidance on Flood Risk and Coastal Change*’ (MHCLG, 2014<sup>3</sup>).

### 4.1.1 Rother Local Plan

Rother District Council has set out its overall vision for future land use in its *Core Strategy* (Rother DC, 2014<sup>4</sup>) within which Policy OSS3 considers the suitability of land for development, and constraints such as land instability and coastal erosion. Furthermore, the Council has embedded land stability issues in its *Development and Site Allocations Local Plan* (Rother DC, 2019<sup>5</sup>) through Policy DEN 6 (Land Stability), which covers the need to assess instability, safe development practices and drainage. Importantly also a *Coastal Buffer Zone* is delineated within and adjacent to which specific requirements such as Ground Stability Reports may be required.

### 4.1.2 Coastal Hazards and Risk Management

More widely local government encourages a proactive approach to mitigating and adapting to coastal climate change, considering the long-term implications for cliff instability and erosion risk. The development of policies that support future resilience of coastal communities such as Fairlight to climate change hazard impacts are particularly important. New development can be planned in ways that avoid increased vulnerability to the range of coastal hazards and climate change impacts that have been described above.



Figure 4.1: Map showing the designated *Coastal Buffer Zone* at Fairlight. The map is included within the Council's *Development and Site Allocations Plan 2019* Appendix 6.

Coastal planning policy for Fairlight supports a risk-based approach towards managing the impacts of coastal change by:

- Ensuring proper consideration of the impacts of climate change in formulating planning policies and in determining planning applications;

avoiding inappropriate development in areas threatened by coastal erosion and cliff instability directing development away from the areas of risk;

Across Rother District the Council is taking coastal change into account when dealing with all planning policy issues within its coastal frontages and this generally involves:

- Reducing the occurrence of potentially damaging events through active coastal management in order to reduce the magnitude and frequency of erosion and cliff instability; this has involved the use of permissive powers to intervene and prevent coastal erosion or to protect cliffs and slopes through appropriate defence measures along much of the Fairlight frontage.
- Avoiding vulnerable areas, such as through measures to control new development in areas of risk from natural hazards;
- Ensure that decision-making in such vulnerable areas is based on a thorough understanding of the hazards and the potential for change over time, whilst still recognising that uncertainties do exist.

An appropriate approach to new development in areas that may potentially be at risk from erosion or cliff instability is to require an assessment of the risk acceptability of a proposed development in terms of both current and potential instability problems. The scope and content of this assessment should be tailored to the degree of risk and the scale, nature and location of the development. In essence, such an assessment should satisfy a number of criteria:

Ensuring that the new development does not impair and, where possible, may enhance the ability of communities and the natural environment to adapt sustainability to potentially changing coastal conditions;

Ensure a new development will be safe through its planned lifetime without increasing risks to life or property, or requiring expensive additional coastal defence or ground stability measures, and ensuring that the natural balance of instability in the area concerned does not exacerbate change in adjoining areas upslope or downslope, or adjacent to it.

The Council does take land stability into account when dealing with all planning applications within its geographical area. Hazard and risk maps prepared for the Isle of Wight Council for example, as Figure 4.3 overleaf, can provide information to assist making planning decisions,

although further specialist advice may be required in certain circumstances. This might involve, for example:

- Publication of summary planning guidance for applicants on land instability issues;
- Engagement with developers over pre-planning application discussions;
- Provision of a check-list for Ground Stability Reports in support of applications.



**Figure 4.2: The publication of practical advice for home-owners can raise awareness amongst those living within the Coastal Buffer Zone thereby helping to encourage good practice in property management and maintenance and avoiding acceleration of cliff instability. Photo: Isobel Horsley.**



**KEY:**

**DEVELOPMENT PLAN**

**NOTES**



Areas likely to be suitable for development. Contemporary ground behaviour does not impose significant constraints on Local Plan development proposals.

This map is one of a series which provide information about the landslide complex extending from Luccombe to Blackgang. All maps should be used in conjunction with the accompanying report by the Isle of Wight Council based on the 1:2500 scale Ordnance Survey maps with the permission of Her Majesty's Stationary Office. Crown Copyright reserved. Contours added by Huntings Survey Limited for the Natural Environment Research Council in 1980.



Areas likely to be subject to significant constraints on development. Local Plan development proposals should identify and take account of the ground behaviour constraints.

This map provides only general indications of ground conditions and must not be relied upon as a source of detailed information about specific areas, or as a substitute for site investigations or ground surveys.



Areas most unsuitable for built development. Local Plan development proposals subject to major constraints.

Users must satisfy themselves that ground conditions are suitable for any particular land use development, by seeking expert advice and by carrying out site investigations as appropriate.



Areas which may or may not be suitable for development but investigations and monitoring may be required before Local Plan proposals are made.

The Isle of Wight Council is grateful for the expert advice and scientific contributions made by Professor J. N. Hutchinson of Imperial College, University of London and Professor D. Brunsden, King's College, University of London.

The Department of the Environment, Transport and the Regions (DETR), is acknowledged for their contributions.

This map is based on geomorphological field survey and the interpretation of 1:2500 scale photographs taken in 1995.

ALL BOUNDARIES SHOULD BE CONSIDERED APPROXIMATE

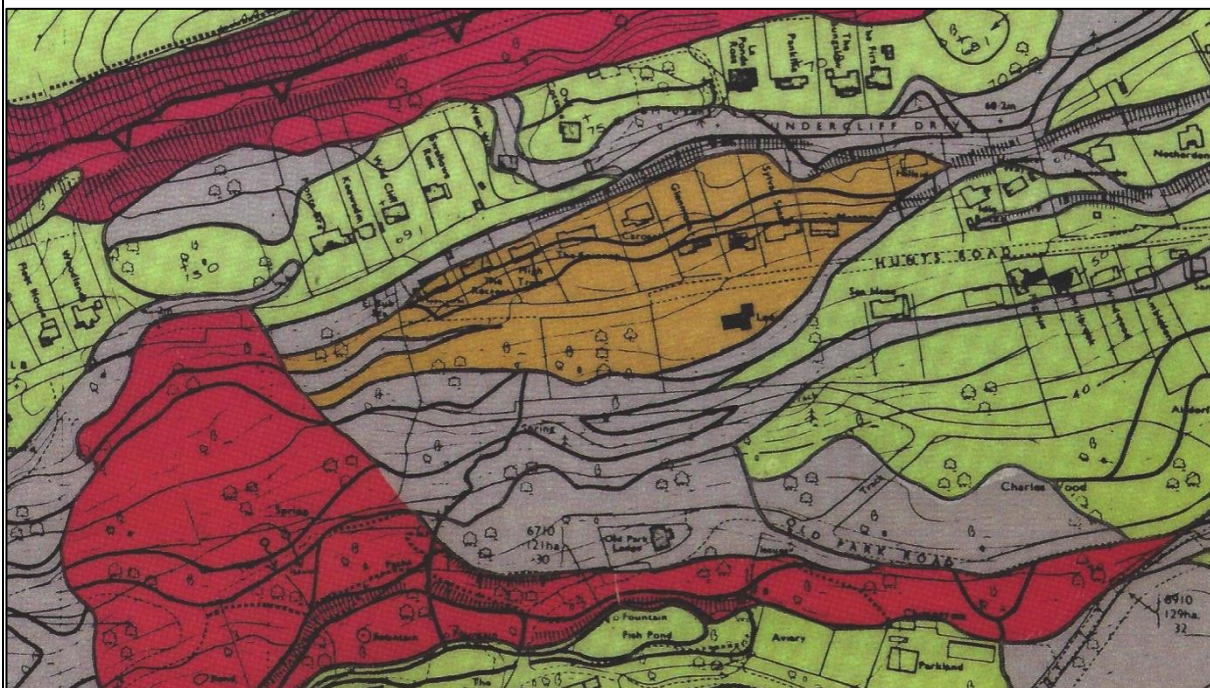


Figure 4.3: Part of a Planning Guidance Map for the Isle of Wight Undercliff, United Kingdom (image courtesy: Isle of Wight Centre for the Coastal Environment).

## 4.2 Development Management Measures

Over the last 20 years coastal hazard mitigation has become increasingly integrated within the planning system. The identification of policies for *Coastal Change Management Areas* have now been put in place by many planning authorities (Moore and McInnes, 2021<sup>5</sup>).

When considering applications for specific purposes, planners can use the information they hold on land instability together with other reports furnished by the applicant as the basis for deciding whether application sites can be developed safely.

On receipt of a planning application the Planning Department will decide whether or not land instability is a material issue for consideration in this case. This is likely to depend on the nature and scale of the proposed development and its location with respect to hazards identified through previous mapping activities or research. All applications within the Fairlight Coastal Buffer Zone are required to be accompanied by a '*Stability Report*'.

The responsibility for the stability and safe development of a site usually rests with the developer, and it is recommended that a '*Stability Declaration Form*' accompanies a Ground Stability Report, which should be submitted by the developer with the planning application. Pre-application discussions between the developer and planning department will assist in identifying specific requirements for proposals at an early stage and should be encouraged.

### **Issues that would normally be considered in such Planning applications include:**

- The level of risk at the development site, taking particular account of the consequences of coastal erosion or instability;
- Any particular needs associated with the land use, for example, in coastal zones any possible requirement for coast protection works;
- Space that may be required for any coastal instability measures or for cliffs to achieve their future natural angle of repose after coastal defence works have been completed.

### **Discussions can be aided further by :-**

- drawing the attention of developers to the policies on land instability that are clearly set out in Policy DEN6 of the *Development and Site Allocations Local Plan*.
- publication of concise specific planning guidance on land instability issues;
- drawing the attention of developers to a national list of suitably qualified Geotechnical Engineers who are competent in the preparation of Ground Stability Reports in support of planning proposals (see Section 8.XI below).

Some forms of development do not fall within the development management framework and the option does exist for the Council to consider making a Direction under Article 4 of the Town & Country Planning Act (General Permitted Development (England) Order 2015. This is considered thoroughly in Chapter 7 below.

### 4.3 Building Control Measures

The Building Act 1984 is the primary enabling legislation under which secondary legislation, the Building Regulations, are made. The legislation was introduced with the purpose of *securing the health, safety, welfare and convenience of persons in or about buildings and of others who may be affected by buildings...*

The Building Regulations provide a complementary mechanism to the Planning system for ensuring land stability issues are considered in permitting development.

Part A of the Building Regulations is quite specific in this:-

*'The building shall be constructed so that ground movement caused by:-*

- *swelling, shrinkage or freezing of the sub-soil; or*
- *landslip or subsidence (other than subsidence arising from shrinkage), in so far as the risk can be reasonably foreseen, will not impair the stability of any part of the building'.*

Land instability is, therefore, clearly a factor that needs to be taken into account under these Regulations before proceeding with the design of buildings and their foundations.

The Act empowers local authorities to enter buildings, ensure compliance with work plans and deal with dangerous structures. It can be seen, therefore, that Building control can have an important role to play in relation to properties being altered or reaching the end of their lives within coastal zones affected by natural hazards such as within the Coastal Buffer Zone at Fairlight Cove.

If a site is deemed suitable for development, building controls ensure that the construction is carried out in a manner that guarantees the health and safety of people in and around the vicinity of the development. Building Regulations will normally require a developer to ensure that the construction is sufficient and appropriate so that the ground conditions will not impair the stability of any part of the building.

A range of construction measures can now be implemented to ensure that any possible impacts of ground movement on the fabric of the structure are minimised, for example through the construction of a property on a reinforced raft and by ensuring the building is of lightweight timber construction with the ability to also accommodate a degree of ground movement without incurring damage to the structure and achieving a reduced loading.

### 4.4 Coastal Engineering Measures

Planning policies such as those set out by the council ensure that development is only allowed to take place if the nature of the instability has been properly assessed and appropriate remedial measures are included. If, however, development is deemed essential in an area of possible risk construction-related protection measures should only be undertaken, in terms of reducing a potential hazard, where there is already a land use worthy of such protection. Coastal instability reduction measures, coast protection and surface water and ground water drainage solutions are all responses that have been used by the council at Fairlight Cove.

Coastal instability is most commonly addressed through a range of solutions, which attempt to remedy problems associated with ground water levels, loading or excavation of slopes and the impacts of past human activity. Generally, works of this kind reduce risks to development from slope movements but do not prevent risk entirely. For this reason preventative measures are often accompanied by programmes of inspection or monitoring.

In certain locations, such as at Fairlight Cove, it may be necessary to reconcile the demands for improved levels of public protection with landscape, nature and earth science conservation interests. Issues of maintaining biodiversity, geological exposures and habitats will have to be weighed up against the socio- economic and sustainability arguments for each site.

Drainage works such as those installed as part of the Phase 2 Rockmead Road scheme divert surface and groundwater more effectively within the coastal zone. This can also be achieved by means of either drainage blankets or relatively shallow land drains or deeper cut-off drains, which intercept ground water at the top of the slope landward of the area of instability. In some locations horizontal drains can be drilled into a slope or cliff to assist in removal of ground water. Finally, it is possible to remove water through pumping mechanisms by means of wells or siphons such as those provided also as part of the Phase 2 scheme at Fairlight Cove. Ongoing weathering and erosion of the Fairlight cliffs are still occurring even with the coastal protection berm in place and as evident by accumulations of cliff debris behind it.

#### **4.5 Ground Water and Drainage Measures**

Many ground movement problems can be linked to high ground water levels which, in combination with other factors such as human activity, can promote slope instability. Measures, which control these factors will assist in reducing the likelihood of future movements but they will not, however, eliminate the risk altogether.

Rainfall and groundwater can act in a number of ways in promoting cliff and slope failure, first as preparatory factors, which make the location increasingly susceptible to failure without actually initiating it. Second, as triggering factors, which actually initiate movement, changing the slope or cliff from a marginally stable state to an actively unstable one. Smaller communities sometimes have inadequate sewage and drainage systems, and leakage from water supply pipes can aggravate instability problems.

Rother District Council has recognised the importance of establishing sustainable drainage arrangements at Fairlight and also that the use of soakaways can be unacceptable because of concerns about increasing instability problems. As part of the second phase of coast protection works fronting Rockmead Road an extensive system of surface water drainage was provided within the coastal slopes and a line of pneumatic pumped wells assist in controlling ground water levels in the coastal zone. As part of this system monitoring data can be downloaded and interpreted in order to improve understanding of the hydrology within the cliff line. With predictions of a significant increase in winter rainfall over the next decades it is very important that the downloading and utilisation of monitoring data is continued so that trends can be identified.



**Figure 4.4 (Above) and 4.5 (Below) show the extent of the surface water drainage provided as part of the Phase 2 scheme fronting Rockmead Road. A line of wells and pneumatic pumped drains along the road behind and parallel with the sea cliff assists in lowering groundwater levels.**

**Photos Gully Moy**





**Figures 4.6 Above and 4.7 Below show the coastal slope fronting Rockmead Road and the layout of ditches include the main line ditch, which discharges pumped groundwater flows from the drainage wells down towards the sea.**



## 4.6 Strategic Monitoring

A tried and tested approach to coastal monitoring has been undertaken in England and Wales where local authorities and the Environment Agency, with financial support from the government, implemented a national strategic monitoring programme that commenced in south-east England in 2002. This programme has provided a systematic approach to collection, management and analysis of data for strategic and operational management of coastal erosion and flood risk. The monitoring programmes are risk-based and integrate the requirements of local authorities with coastal defence responsibilities at both strategic and operational levels. Technical and financial benefits are evident at a range of temporal and spatial scales, tailored to the specific needs of Coast Protection Authorities.

Such strategic monitoring provides a basis for capturing the data required to make reliable assessments of coastal hazards, processes and to predict future changes. The accuracy of predictions improves dramatically with an extended length of records and hence long-term data sets (ideally 20- 30 years duration) are required, with data collected at a variety of spatial and temporal scales to ensure optimal decision-making. At Fairlight the frontage is monitored regularly as part of the South-East Programme using Laser Scan Data, which will be incorporated in the 2021 Annual Report.

Alongside strategic coastal monitoring, National Coastal Erosion Risk Mapping (NCERM) has been promoted by the Environment Agency in the United Kingdom, supported by Jacobs. The aim of this long-running project has been to build climate change projections into coastal erosion projections and to illustrate the possible extent of erosion for each of three time epochs, looking ahead for 20, 50 and 100 years. Such reliable projections are fundamental to coastal planning decision-making and shoreline management.

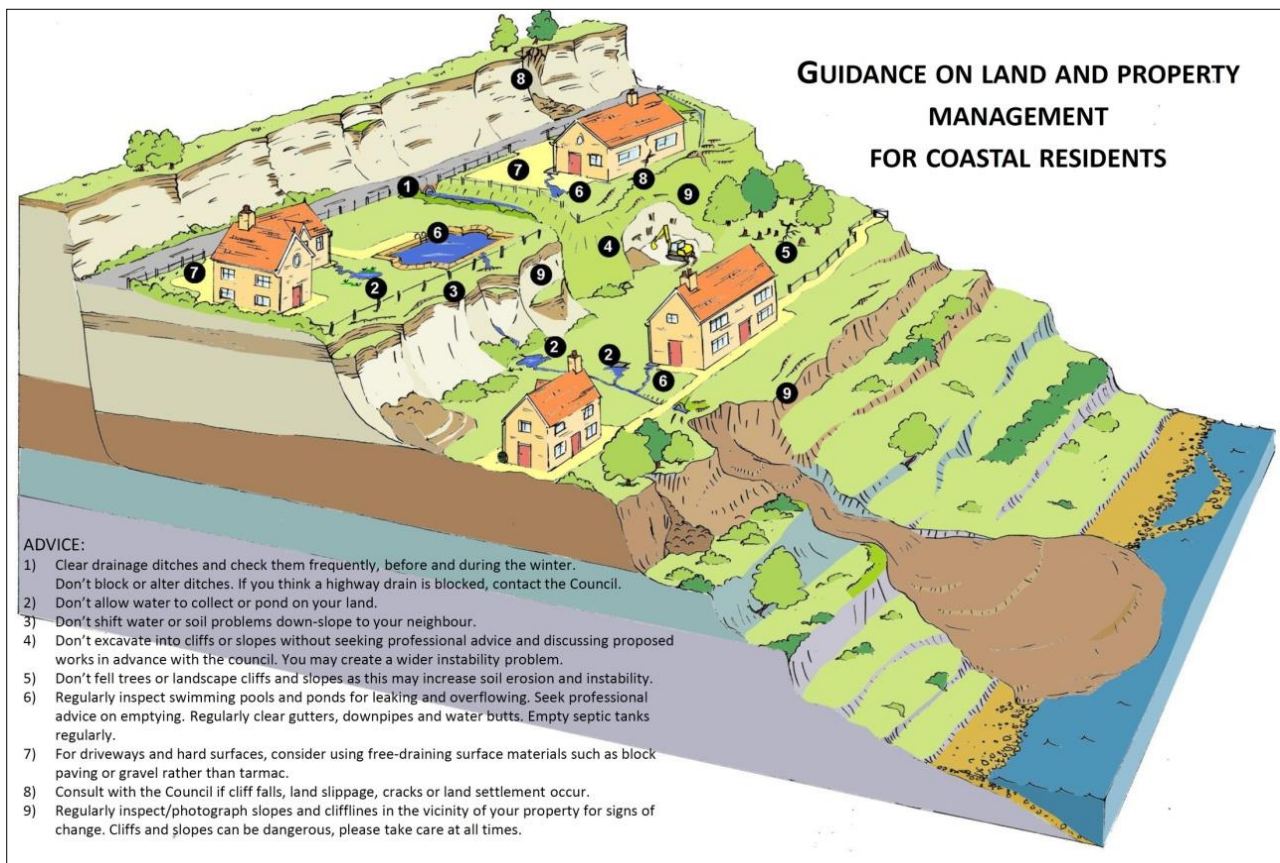
Monitoring in locations such as Fairlight is an integral part of coastal instability investigation and on-going management because it provides a means of accurately and objectively gauging the stability conditions of unstable or potentially unstable cliffs and slopes; it can also fulfil an important role in assessing risk. Therefore, the objectives of monitoring include:

- Providing information to assist investigation of coastal risks;
- Determining the rate and scale of ground movements particularly in vulnerable coastal locations;
- Identifying links between ground movement, rainfall and ground water levels that can be used to develop a methodology for landslide forecasting;
- Providing early warning in areas where movements could affect life and property;
- Monitoring the effectiveness of landslide management strategies.

For all the monitoring programmes it is essential that accurate records are kept of inspections and that due attention is given to trends or changes in the pace of readings. Not only will monitoring allow the implementation of an emergency response if required, but data can also provide baseline information and increased scientific knowledge for locations such as Fairlight Cove (McInnes & Moore, 2011<sup>8</sup>).

#### 4.7 Local Knowledge and Co-ordinating the Community Response

Whilst the risk reduction efforts of individual property owners in situations such as along the cliff tops at Fairlight may only have a minimal influence on the cliff instability problems within their community, the cumulative effect of efforts by many homeowners may be more significant. Building works such as inappropriate constructions, vegetation removal, slope regrading, cut and fill operations, lack of maintenance or inattention to leaking pipes, can all adversely affect stability in such locations. Residents, working individually or in groups, for example by area or by road, can ensure that issues such as adequate maintenance of highway drains and drainage systems are being addressed, be it the local authority or the water company. Before the onset of the autumn/winter period property drainage systems such as gutters and downpipes, should be checked by residents for leakage, and blockages in highway drainage systems and ditches should be cleared by the Highway Authority or owners of unadopted roads. A lack of maintenance will make the building all the more susceptible to slight ground movements, and so regular maintenance is particularly important (McInnes, 2007<sup>7</sup>).



**Figure 3.11: Practical advice for homeowners within a coastal zone affected by instability (McInnes & Moore, 2011).**



It is highly beneficial to provide non-technical information on risks to residents living in areas affected by coastal erosion and cliff instability. Residents should be encouraged to take local action collectively to reduce risks and build resilience. Many residents will have derived benefits from living in the area for many years; full use should be made of this valuable local knowledge and expertise. As part of a Coastal Risk Management Strategy leaflets and web information can provide details of good practice on property maintenance for homeowners.

Communication with stakeholders can be achieved successfully through visual displays and online covering typically:-

- What is the history of erosion and instability in the area concerned?
- What is the scale of the problem?
- Why is there a problem at this location?
- What causes ground movement?
- How can we define coastal hazard?
- How can erosion and instability problems be managed most effectively?
- What can be done to help control the problem by local authorities, developers and homeowners, and what can individuals do to help?
- What does the future hold for the local community if it works together with the local authority?

At Fairlight both the Parish Council and the Fairlight Preservation Trust, a registered charity, have been very proactive in terms of awareness-raising, lobbying for funding for the three coastal protection schemes and ongoing community involvement. In recent years to acquire the third berm the Parish Council publicized the need for the work and raised £150,000 locally as match funding.

This involved considerable work by many residents through fundraising and donations. The Parish Council also agreed to apply for a loan from the Public Works Loan Board to make up any shortfall. This loan is being repaid from the annual Parish Council precept. In addition, the Parish Council resolved to fund half of the ongoing electricity costs to run the compressor house and wells for the Rockmead Road drainage scheme in terms of once they were in place; a contribution currently of £3,500 per year. A telephone line to enable remote monitoring of the pumping system was also funded by the Parish Council for many years.

As well as financial support, the Parish Council through its Planning Committee provides comments to the Rother District Council Planning Department each month on new planning applications. The Committee has established that soakaway drainage should not be permitted and surface water run-off should be diverted into combined sewers.

Local residents continue to support the maintenance of the cliff defences, with regular monitoring of the pumping equipment. The Fairlight Preservation Trust is also in communication with the Council to ensure ongoing maintenance of equipment and monitoring of cliff falls.

#### 4.8 Current Key Coastal Risk Management Initiatives at Fairlight Cove

- The issue of Coastal Land Stability is firmly embedded in Planning Policy and Development Management approaches. However, it is acknowledged that not all developments require Planning consent, and may not, therefore, be evaluated in terms of their potential contribution to instability risk. The Building Regulations go, however, also provide a complementary mechanism helping to ensure that land stability issues are suitably addressed.
- The most developed frontages are now protected by major coastal defence schemes;
- Surface water and ground water drainage has been installed at several key sites;
- Fairlight benefits from particularly active local stakeholder interest and engagement.

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## **5. What are the Risks Now and into the Future?**

### **STUDY BRIEF SPECIFIC QUESTIONS I - V**

#### **I. What is the impact of loading near the cliff on ground instability?**

Loading or Surcharge can occur as a result of a change in the weight imposed on the top of a cliff or slope following either natural processes or as a result of human activity. Risks arising from such surcharge have been highlighted in many key publications (Moore and Lee, 1991<sup>1</sup>; Jones and Lee, 1994<sup>2</sup>; ODPM, 2006<sup>3</sup>; McInnes, 2007<sup>4</sup>; McInnes and Moore, 2014<sup>5</sup>).

On the cliffs above Fairlight Cove human activity will be the most likely cause of surcharge and usually as a result of a load such as soil or builder's waste being deposited or by actual construction works. Depending on the weight of the materials placed on the site and the proximity of the load/construction to the cliff edge this may cause the top of the cliff to fail and lead to cliff retreat. Along some sections of the Fairlight cliffline the top of the cliff has yet to reach a state of equilibrium (balance) and such surcharge may accelerate the instability processes.

Surcharge can have an increased effect if ground conditions are wet after periods of prolonged rainfall or caused by leaking pipes and drains, which may have raised groundwater levels. The clifflines along much of the Fairlight frontage can be regarded as *Marginally Stable*; a *Marginally Stable* cliff is where the cliff is likely to fail at some time. The state of the cliff can become *Actively Unstable* if aggravated by the human influences already described. It is important to remember that although the toe of the cliffs benefit from a level of coast protection by the rock armour berms, this does not rule out gradual retreat at the cliff top through sub-aerial weathering until the cliff has reached its stable angle of repose.

#### **II. If further loading near the cliff does/could impact on ground instability, what are the risk factors.**

Loading or surcharge close to the top of a cliff or slope can increase the risk of failure of part of the upper cliff particularly at or after times of rainfall. If the upper part of the cliff is heavily weathered, over-steepened or is affected by perched water-tables and emergent water it is likely to be more vulnerable. The results of excess surcharge have the potential to include accelerated coastal retreat of up to several metres with a possible impact on adjacent cliff-top property and other assets. In the most serious cases demolition and site clearance is likely to be required.

Loading, trench excavations, leaking pipes, poor roof water drainage and inadequate swimming pool emptying arrangements can all combine with loading to increase risks. Heavy garden furnishings such as hot tubs should be set back to the back of the site. Properties fronting Rockmead Road benefit from the pneumatic pumped drains installed in the highway as part of the Phase 2 berm scheme. Those to the east where such drainage could not be easily installed may be affected by cliff falls more frequently as groundwater emerges from the cliff face, and as the cliff establishes its preferred angle of repose.

### III. How significant are the risks?

The council has been managing risks along this frontage in three main ways in recent years:-

- through introduction of spatial planning policies for management of land affected by instability and through Development Management;
- through the provision of coastal protection works to reduce coastal erosion and cliff instability;
- through reducing the adverse impacts of surface water and groundwater on cliff stability along the Fairlight Cove coastal zone.

By far the most significant factors in terms of risk mitigation at Fairlight are coast protection works and water management. However, other factors have a part to play in risk reduction such as minimising the impacts of construction or property maintenance works, excavation of trenches by the service industries, the dumping or stockpiling of materials and the placing of heavy objects near the cliff such as hot tubs or machinery. It is natural that property owners living in close proximity to the cliff wish to try and extend the life of their home for as long as possible. Sometimes well-intentioned stabilisation or other measures though can actually aggravate the situation by increasing surcharge along this sensitive cliff top. Some such remedial works can trigger further cliff falls particularly when the ground is waterlogged but in most cases these falls will be minor and are unlikely to extend for more than a few metres within the curtilage of the property concerned.

The natural processes of the cliff face weathering, sliding and retreating as it wishes to reach its state of equilibrium, or a change in drainage regime are likely to be greater risk factors than small-scale activities within gardens. However, residents are advised to maintain a clear zone free of garden structures and furniture except safety fencing and thereby avoid what could be the expense of having to clear debris that has fallen down the cliff face after an instability event.

Larger developments within the Coastal Buffer Zone are likely to fall within the Development Management and or Building Control legislation frameworks where a *Ground Stability Report* or other further details of work proposed will be required by the council before consent can be given.

### IV. Does the Fairlight Cove Buffer Zone provide an appropriate geographical extent for an Article 4 Direction? If not, the assessment should make recommendations as to the extent of land that should be covered by the direction. The recommendation should be clearly justified.

The extent of the Fairlight Cove *Coastal Buffer Zone* is set out within the (DASA) Local Plan (Rother District Council, 2019<sup>6</sup>) through Policy DEN6 (Land Stability); land within this zone is outside the *Development Boundary* for Fairlight Cove. This means that development is generally more restricted in line with Policy DIM2 of the DaSA Local Plan. The extent of the

Coastal Buffer Zone and its exclusion from the development boundary was determined following the recommendation of the East Kent Engineering Partnership in its study report *Fairlight Cove Coast Protection Works Phase3* (East Kent Coastal Partnership, 2015<sup>7</sup>). This stated that:-

*Sensible measures need to be put in place to restrict development near to the cliff top via set-back lines and not permit soakaway drainage within 50 metres of the cliff face. The limit of development should be reviewed every ten years or so and should be part of Planning policy’.*

The incorporation of the *Coastal Buffer Zone* plan within the Council’s Local Plan was a key step in managing risks along the Fairlight Cove frontage into the future and follows similar initiatives elsewhere in the United Kingdom and internationally.

In some locations such as the Isle of Wight where the coastal instability problems cover a far greater geographical area and are more complex the designation of zones has been based upon field geomorphological mapping, which has allowed an improved understanding of ground behaviour to develop; this in turn led to the publication of 1:2500 scale Planning Guidance Maps as illustrated in Figure 4.3 (Moore and Lee, 1991<sup>1</sup>, McInnes, 2007<sup>4</sup>).

The principle of sub-dividing and designating such buffer zones taking account of the estimated rate of cliff retreat over time allows coastal development to retreat as the coastline changes as a result of natural processes. Sub-zones can then, in turn, be designated in terms of risk and the types of development that may be suitable in future decades as illustrated in Figure 5.2 below (McInnes, 2006<sup>8</sup>).

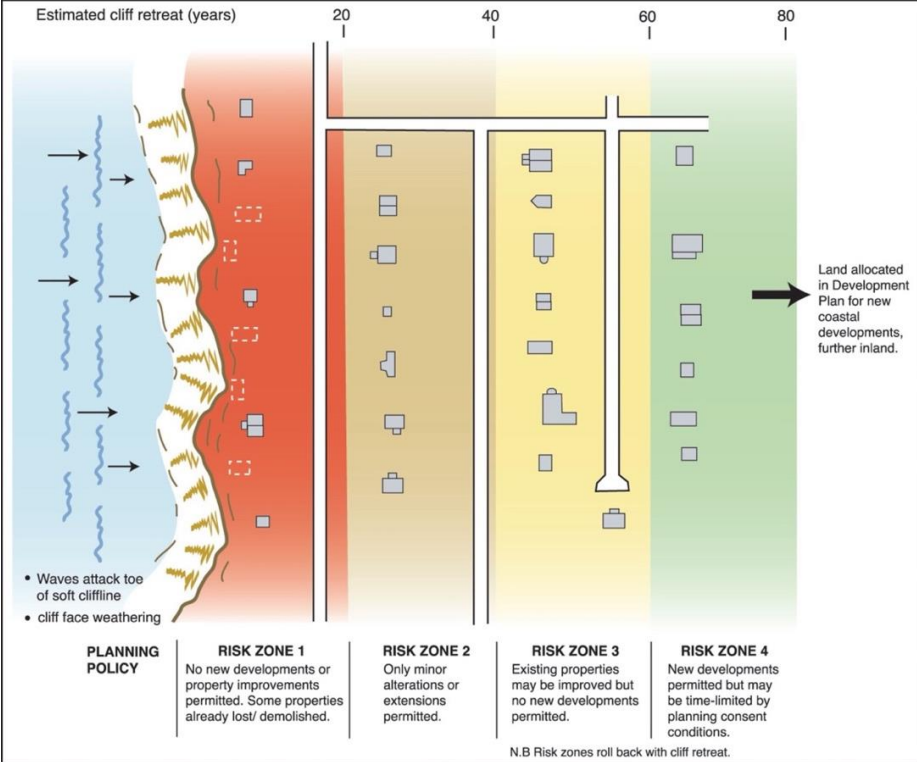


Figure 5.2: A model for planning set back along a retreating coastal frontage (McInnes, 2006<sup>9</sup>)

The area of land currently designated as the 'Coastal Buffer Zone' requires development proposals to be supported by a 'Stability Report'. However, the potential impacts of future developments, for example additional loading, vibration due to construction activities and excavations, are only likely to have possible significance in terms of increasing cliff instability within curtilages of those properties sited closest to the cliff top. Ongoing natural processes of cliff face weathering and resulting minor falls and slides will continue to be the most significant factor in terms of promoting coastal retreat.

Landward of the front line of properties the topography slopes inland and this helps to reduce the impacts of both development and surface water drainage on instability more widely. The case, therefore, for introducing an article 4 Direction is more relevant to those properties closest to the edge of the sea cliff (see also Section 7 below).

**V. Having regard to the physical protection already in place to mitigate the risks is there a need for further protection through greater planning control of minor household development proposals?**

**Addressing Question V of the Study Brief**

**V.1 Introduction**

The purpose of this study has been to explore current and potential risks from coastal erosion and cliff instability along the Fairlight Cove frontage and to consider whether the Council can reduce risks further by introducing an article 4 direction under the Town & Country Planning (General Permitted Development) (England) Order 2015, which allows withdrawal of specified *permitted development* rights across a defined area such as the Coastal Buffer Zone. The council has sought the evidence to assess the need for an article 4 Direction. Demonstration of the need must be robust and must inform and, if necessary, defend the Council's decision if it chooses to go down this route.

**V.2 About article 4 directions**

An article 4 direction is a direction under [Article 4 of the General Permitted Development Order](#) which enables the Secretary of State or Rother District Council as the local planning authority to withdraw specified permitted development rights across a defined area. Provided that there is justification for both its purpose and extent, an article 4 direction can:

- cover an area of any geographic size, from a specific site such as the Fairlight Cove Coastal Buffer Zone to a local authority-wide area;
- remove specified permitted development rights related to operational development or change of use;
- remove permitted development rights with temporary or permanent effect;

The use of article 4 directions to remove national permitted development rights should be **limited to situations where this is necessary to protect local amenity or the wellbeing of the area. The potential harm that the Direction is intended to address will need to be clearly identified, and there will need to be a particularly strong justification for the withdrawal of permitted development rights relating to cases where prior approval powers are available to control permitted development.** Some permitted development rights cannot be removed via article 4 directions. These exemptions are to ensure permitted development rights related to national concerns, safety, or maintenance work for existing facilities cannot be withdrawn.

**An article 4 direction only means that a particular development cannot be carried out under permitted development and, therefore, needs a planning application. This gives the local planning authority the opportunity to consider a proposal in more detail.**

If a local planning authority makes an article 4 direction, it can be liable to pay compensation to those whose permitted development rights have been withdrawn, but only if it then subsequently refuses planning permission for development, which would otherwise have been permitted development; or grants planning permission subject to more limiting conditions than the General Permitted Development Order. The grounds on which compensation can be claimed are limited to abortive expenditure or other loss or damage directly attributable to the withdrawal of permitted development rights.

An article 4 direction provides immediate protection. There are two types of directions under the General Permitted Development Order: non-immediate directions and directions with immediate effect. An immediate direction can withdraw permitted development rights straight away; however, they must be confirmed by the local planning authority within 6 months of coming into effect to remain in force. Confirmation occurs after the local planning authority has carried out a local consultation.

**Article 4 directions cannot prevent development which has been commenced, or which has already been carried out.**

An article 4 direction can remain in place permanently once it has been confirmed. However, it is important for local planning authorities to monitor any article 4 directions regularly to make certain that the original reasons the direction was made remain valid. Where an article 4 direction is no longer necessary it can be cancelled.

A local planning authority must, as soon as practicable after confirming an article 4 direction, inform the Secretary of State via the [Planning Casework Unit](#). The Secretary of State does not have to approve article 4 directions, and will only intervene when there are clear reasons for doing so. The Secretary of State will not use its powers unless there are clear reasons why intervention at this level is necessary.

### **V.3 How will an Article 4 assist in reducing risks for Fairlight Cove?**

The approved map showing the Fairlight Cove Coastal Buffer Zone indicates that there are approximately 48 properties or property gardens lying within the Buffer Zone. The map indicates that properties on both sides of Sea Road, Rockmead Road (east), the seaward side of Rockmead Road (west) and those on the seaward side of Heather Way all lie within the Coastal Buffer Zone. For the short to medium term the most vulnerable properties are up to 12 in number, which are closest to the cliffline. As described in Section 5.III above although coast protection works now protect the whole of this frontage and drainage has been installed along part of the frontage the cliffs will still be subject to some instability as they weather naturally and seek to establish a more stable angle of repose, albeit at a much reduced rate of retreat.

A review of planning applications in the Coastal Buffer Zone since 2015 identified 30 applications, which relate to 16 properties. Of these 16 properties 9 were regarded as being those that might raise issues relating to cliff instability. The number of applications received by the Council as planning authority from within the Coastal Buffer Zone and which may have

raised instability issues is, therefore, quite small – of the order of 3 a year. As explained in Section 4.3 (above) the Building Regulations provide a complementary mechanism to the Planning system for ensuring land stability issues are considered in permitting development.

Part A of the Building Regulations is quite specific in this:-

*'The building shall be constructed so that ground movement caused by:-*

- *swelling, shrinkage or freezing of the sub-soil; or*
- *landslip or subsidence (other than subsidence arising from shrinkage), in so far as the risk can be reasonably foreseen, will not impair the stability of any part of the building'.*

Coastal erosion and land instability are, therefore, clearly factors that need to be considered under these Regulations before proceeding with the design of buildings and their foundations.

Taking account of those developments that do already require planning consent and or Building Regulations approval an article 4 direction would require planning applications to be submitted for any developments that fall outside the current requirement for a planning application (and which may or may not require approval under the building Regulations). It would appear that the majority of these are likely to be minor developments, which may have very modest localised impacts on cliff instability within their own curtilages and which are likely to have much less impact on wider cliff instability than the ongoing natural processes of cliff face weathering and the effects of emerging groundwater flows. Taking account of these factors it suggests that the introduction of an article 4 direction may not be significant in its own right in terms of achieving a reduction in cliff instability except for a small number of properties located closest to the cliff edge.

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## 6. Introducing a Cliff Risk Management Strategy Approach

At key sites around the English coast, in locations where properties have been affected by coastal instability consideration has been given to the introduction of Article 4 but this has not been pursued. Along the Ventnor Undercliff on the south coast of the Isle of Wight this legislation was considered following the completion of major studies of coastal instability within the largest urban landslide complex in north-western Europe (Moore and Lee, 1991<sup>1</sup>). The council decided, however, that a more effective approach would be to follow a bottom-up public consultation and dialogue with residents as part of a co-ordinated *Landslide Management Strategy* (Moore and Lee, 1991<sup>1</sup>; McInnes, 2007<sup>2</sup>).

The Isle of Wight Council's technical officers and solicitor had also held discussions with Scarborough Borough Council over Article 4. Scarborough Borough Council's frontage had been affected by a range of instability problems in the 1990s, in particular the Holbeck Hall Hotel landslide in 1993. The Council there had also considered the question of Article 4 internally but they, like the Isle of Wight, also preferred to pursue a '*Coastal Instability Risk Management Strategy*' approach supported by stakeholder engagement. The courses followed within the Ventnor Undercliff, on the North Yorkshire coast at Scarborough and also at Lyme Regis in Dorset, a town developed on an ancient landslide complex, have proved to be successful and could provide an alternative or supplementary approach to the introduction of article 4 to address concerns over development that falls outside the frameworks of the Planning and Building Control legislation. However, it is recognised that every coastal instability site is different and an article 4 Direction does remain an option if there is strong evidence that such legislation will support risk reduction.

It is believed that the management response already introduced at Fairlight – Planning Policy Guidance, Development Management, Building Controls and Engineering Measures together with valuable inputs from the Parish Council, the Fairlight Preservation Trust and other stakeholders are already leading towards a *Fairlight Cliff Risk Management Strategy* and with some additional guidance for stakeholders this approach could prove to be very effective (see Figure VI.1 overleaf). The tasks faced by those managing such problems can be simplified if appropriate systems and measures have been put in place; these involve:-

- **Knowing the risks:** identifying, assessing and monitoring coastal risks;
- **Building local understanding and awareness:** Using knowledge, innovation and education to build a culture of good practice at the local level;
- **Reducing the risks:** Reducing the vulnerability through effective planning and management; environmental, social and economic measures.

A Fairlight Cliff Risk Management Strategy (see Figure 6.1 below) would aim to manage risk through the implementation of civil engineering measures, planning and building controls for developments, the monitoring of cliff changes and groundwater levels, and by benefitting from the ongoing interest and very active support of stakeholders.

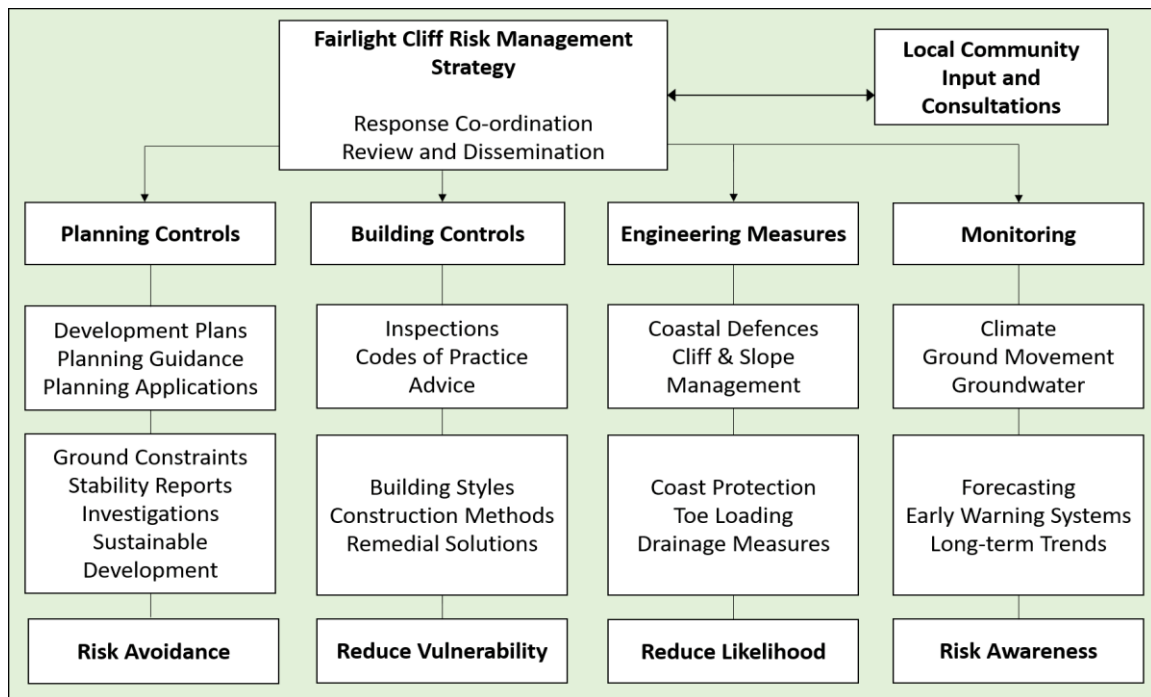


Figure 6.1: A model for a Cliff Risk Management at Fairlight Cove (McInnes, 2021).

Ongoing dialogue and services provided by council officers, the Parish Council and the Fairlight Preservation Trust are particularly valuable and this has assisted with day to day site management in the coastal zone in recent years. It is of considerable value if those living within the Coastal Buffer Zone can be provided with readily understandable information on coastal risks and they should be encouraged to take appropriate action themselves to reduce risks and build resilience. Simple guidelines on do's and don't's in terms of property and ground management can be particularly helpful and should be circulated to homeowners within the Buffer Zone. As highlighted in Section 4.6 (above) this can provide information on:-

- The scale of the problem?
- How the problems can be managed most effectively;
- What can be done to help managing the problem by local authorities, developers and homeowners, and what individuals do to help;
- What the future holds for the local community if it works together.

Experience has shown that the kinds of issues occurring along vulnerable clifflines can be managed most effectively and largely averted through engaging with residents and distributing easily accessible advice. An example of an 'Advice to Homeowners' document is attached for information as Appendix 1.

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## **7. Article 4 Direction and Forms of Development Addressing Questions VI - VIII**

**VI . If it is determined that an Article 4 Direction should be made, is it appropriate for it to cover all the forms of development detailed in paragraph 6.2 of the Study Brief.**

If the Council is mindful to make an article 4 direction then it would be appropriate to include all the categories of development included within GDPO Schedule 2 as set out in Section 6.2 of the Study Brief below:-

GPDO - Schedule 2, Part 1 - Development within the curtilage of a dwellinghouse

- Class A – enlargement, improvement or other alteration of a dwellinghouse (*note: larger extensions are subject to the Prior Approval process*).
- Class AA - enlargement of a dwellinghouse by construction of additional storeys (*note: subject to the Prior Approval process*).
- Class B – the enlargement of a dwellinghouse consisting of an addition or alteration to its roof.
- Class D – the erection or construction of a porch outside any external door of a dwellinghouse
- Class E – buildings etc incidental to the enjoyment of a dwellinghouse (i.e. (a) any building or enclosure, swimming or other pool required for a purpose incidental to the enjoyment of the dwellinghouse as such, or the maintenance, improvement or other alteration of such a building or enclosure; or (b) a container used for domestic heating purposes for the storage of oil or liquid petroleum gas).
- Class F – hard surfaces incidental to the enjoyment of a dwellinghouse.

GPDO - Schedule 2, PART 20 - Construction of new dwellinghouses (*note: subject to the Prior Approval process*):-

- Class ZA - demolition of buildings and construction of new dwellinghouses in their place
- Class A - new dwellinghouses on detached blocks of flats
- Class AC - new dwellinghouses on terraced buildings in use as dwellinghouses
- Class AD - new dwellinghouses on detached buildings in use as dwellinghouses

**The author of this report shares the view of the Council that the various minor developments described in Section 6.3 of the Study Brief, as set out below, are very unlikely to have any impacts of cliff stability and it is not necessary, therefore, to include these in any article 4 Direction:-**

**6.3** There are other Classes within Part 1 of Schedule 2 to the GPDO which give additional “permitted development” rights to householders (Class C – other alterations to the roof of a dwellinghouse, Class G – chimneys, flues etc on a dwellinghouse, Class H – microwave antenna on a dwellinghouse). There are also Classes within Part 2 (Minor operations) of Schedule 2 to the GPDO which give “permitted development” rights, including to householders (Class A – gates, fences, walls etc, Class B – means of access to a highway, Class C – exterior painting, Class D/E - electrical outlet/upstand for recharging vehicles, Class F – CCTV). Our view is that it is unnecessary to include these forms of development within an article 4 direction because they are unlikely to involve placing additional weight on the ground, cause vibrations, or increase drainage into the ground.

## **VII. Should any additional forms of development be included in an Article 4?**

It is noted that swimming pools are included within the Class E of the GPDO Schedule 2 Part 1 as often their weight and inadequate emptying arrangements have created problems elsewhere. With regard to trench excavations by the service industries in local roads it is likely that their powers would be retained to allow such work to be carried out outside of the Article 4 framework. However, as part of good practice advice and guidance on managing cliff instability it is recommended that utilities are informed about the need for care with excavations and timely infill of trenches as well as loading issues, particularly during periods of autumn and winter rainfall.

## **VIII. Does the fact that the ‘Prior Approval’ process applies to some of the Classes of development listed at paragraph 6.2 of the Study Brief have any impact on the justification for including these Classes within any Article 4 Direction?**

Some of the Classes under Parts 1 and 20 of the GPDO, as set out at paragraph 6.2 of the Study Brief are subject to the “prior approval” process. Prior approval means that a developer has to seek approval from the local planning authority that specified elements of the development are acceptable before work can proceed. The matters for prior approval vary depending on the type of development and these are set out in full in the relevant Parts in Schedule 2 to the GPDO. A local planning authority cannot consider any other matters when determining a prior approval application. The [Planning Practice Guidance](#) notes: *“there will need to be a particularly strong justification for the withdrawal of permitted development rights relating to cases where prior approval powers are available to control permitted development”*<sup>7</sup>. However, the matters considered under the relevant prior approval processes do not appear to include anything directly relevant to the potential effect of the development on ground instability.

Prior Approval is required by the Local Planning Authority on various aspects of Permitted Developments as scheduled in the Town & Country Planning (General Permitted Development) Order (England) 2015 known as the GPDO. For most types of Permitted Development issues surrounding risk are not included as a requirement for Prior Approval.

However, all Permitted Developments will also require Building Regulations approval.

The Building Regulations provide a complementary mechanism to the Planning system for ensuring land stability issues are considered in permitting development.

Part A of the Building Regulations is quite specific in this:-

*'The building shall be constructed so that ground movement caused by:-*

- *swelling, shrinkage or freezing of the sub-soil; or*
- *landslip or subsidence (other than subsidence arising from shrinkage), in so far as the risk can be reasonably foreseen, will not impair the stability of any part of the building'.*

Land instability is clearly a factor that needs to be taken into account under these Regulations before proceeding with the design of buildings and their foundations.

The Act empowers local authorities to enter buildings, ensure compliance with work plans and deal with dangerous structures. It can be seen, therefore, that Building Control can have an important role to play in relation to properties being altered or reaching the end of their lives within coastal zones affected by natural hazards such as within the Coastal Buffer Zone at Fairlight Cove.

**However, the Building Regulations consider applications only after the Planning process, and there is still the need to assess any potential impacts on ground instability, which is not required through the Prior Approval process. Therefore, such development proposals for any sites located close to the cliff edge should be included in an article 4 Direction.**

## **8. Additional Information Needs and Stability Reports**

### **Addressing Questions IX - XII**

**IX. Is it correct not to include demolition of buildings within any article 4 direction due to the control already provided through the Prior Approval requirements of this class?**

Within Part 11 of the GPDO permitted development rights are granted for demolition of buildings. Where essential demolition works are required in order to prevent the risk of loss of the property as a result of cliff recession then this provision is acceptable. The applicant would, in any case, still be required to submit a working method to the council as part of the Prior Approval process. In view of this the view of the council is supported that demolition works do not need to be included within an article 4 direction.

As part of Defra's long-term plan to tackle coastal erosion *Coastal Erosion Assistance Grants (CEAGs)* provide £6,000 per property to assist local authorities with the demolition and removal costs associated with homes at imminent risk from erosion.

**X. Policy DEN6 of the DaSA Local Plan and the need for any additional information requirements to be submitted with Planning applications.**

### **X.I Introduction**

In accordance with the policies set out in the Rother District Council DaSA Local Plan, (Rother District Council, 2019<sup>1</sup>) where the site in question is on unstable or potentially unstable land,

a 'Ground Stability Report' should be submitted to accompany a planning application. The report should be prepared by a competent and appropriately qualified Geotechnical Specialist (see Question XI below). Guidance for the preparation of Stability Reports is set out in the National Planning Policy Framework, which was published by the Department for Communities and Local Government (DCLG, 2019<sup>2</sup>) replacing all previous planning policy and guidance, including PPG14 'Development on Unstable Land'.

The following Sections in particular are relevant:-

109 "The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of *land instability*"

120 To prevent unacceptable risks from pollution and *land instability*, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. *Where a site is affected by land stability issues, responsibility for securing a safe development rests with the developer and/or landowner;*

121 The site must be suitable for its new use taking account of ground conditions and *land instability*, including from natural hazards arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;

## **X2. Contents of a Stability Report**

The contents of a land stability risk assessment report will vary in detail from one site to another depending on the potential causes of unstable land that need to be investigated and the development that is proposed (ODPM, 2006<sup>3</sup>, Halcrow, 2000<sup>4</sup>, McInnes and Moore, 2014<sup>5</sup>). It should present all the information obtained from investigations in a logical order and format which allows an assessment of the risks to the development and include the mitigation necessary to ensure that development will be safe and stable. Preparation of a land stability risk assessment will normally comprise a comprehensive desk-study and site inspections, but in some circumstances this may require additional intrusive site investigations. The land stability risk assessment report should include:

- A review of existing sources of geological information;
- Site history;
- Site inspection;
- Intrusive site investigation eg: boreholes (if necessary);
- Assessment of land instability risks; and
- Mitigation measures

It is the responsibility of developers and/or landowners to ensure that their developments will not initiate instability or will not be affected by instability originating outside the area of a development. Developers should therefore seek appropriate technical and environmental expert advice about the likely consequences of proposed developments on sites where landsliding is known or may be reasonably foreseen. They should also procure any necessary

investigations to ascertain that their sites are and will remain stable or can be made so as part of the development works. As well as being in the developer's interests, this information may be required by a local planning authority in determining an application for planning permission and, if building work is involved, to meet the requirements of the Building Regulations.

It is important that investigations are not limited to the development site. A site needs to be assessed in the context of surrounding areas where instability could threaten the development within its anticipated life or damage neighbouring land or property. This is essential since the feasibility of development may be severely curtailed where a site is threatened by landslides originating in neighbouring areas to which the developer has no right of access to carry out investigations or remedial measures or for which there are no cost-effective engineering solutions.

For these reasons, at least a preliminary assessment of slope stability should be carried out at the earliest possible stage before a detailed design is prepared. Only on the basis of such a geomorphological and engineering geological assessment, comprising a desk study of available information, including aerial photographs, and a ground inspection, can the need for further investigations to ascertain the true extent of the hazard and any necessity for precautionary measures required be understood. The Stability report should highlight the need if relevant for the following measures also to be taken into account :-

- Cuts and fills are limited in depth and any deep temporary excavations for surface or foul drains or other services are limited to short lengths at a time;
- Provision is made for free drainage of groundwater within the site and for inspection and facility for future works for maintenance of flows;
- Surface drainage is not restricted or diverted;
- Drainage from the proposed development is collected and conveyed in flexible piped systems; and any existing retaining walls are not removed or altered.

### **X3. Liaison with Building Control Authority**

Since landsliding is now clearly recognised as a material consideration under both the planning system and the building regulations, there are advantages in attempting to achieve a coordinated response between the two controlling authorities whether they are different departments of the same local authority or different authorities, e.g. county/district councils and approved inspectors under the Building Regulations. A common recording system of applications allows easy cross-reference.

Where consideration is given independently to a development proposal under the Town and Country Planning Acts and the Building Regulations, any requests for slope stability reports should be communicated to ensure that consideration is on a common basis. Slope stability reports submitted to one authority should be provided to the other, together with any drawings showing proposed remedial, preventive or precautionary measures. Both controlling authorities can thus draw on their relevant expertise and enable any necessary checks on compliance during inspections of the works. However, the need to satisfy the **Building Regulations** that ground instability, in so far as it can reasonably be foreseen, shall not threaten the security of a building may require the submission of a Stability Report to Building Control. There are clear benefits to local planning authorities in maintaining indexed central records of slope stability reports. Their existence should be noted and made known on request

to subsequent enquirers, who should be directed to the commissioners of the report for specific information.

#### **X4. Conclusions**

Assessment of instability and its consideration when determining planning applications will help to reduce the impact of undesirable consequences such as risks to public safety, property damage, avoidable costs to development and personal distress to those affected. The investigation and evaluation of stability recommended is consistent with current good practice. It will thus not lead to additional costs to responsible developers and is likely to enable savings in avoidable costs which might arise if the investigation falls short of this standard.

#### **References**

1. Rother District Council. 2019. *Development and Site Allocations Local Plan*. [www.rother.gov.uk](http://www.rother.gov.uk)
2. DCLG. 2019. National Planning Policy Framework.
3. DCLG, 2006. *Planning Policy Guidance 14 – Development on Unstable Land. Annex 1: Landslides and Planning*. HMSO. (Originally issued by DOE, 1996).
4. Halcrow. 2000. *Cowes to Gurnard Coastal Slope Instability Study Ground Behaviour Assessment. Section 7.5 Stability Reports*.
5. McInnes, R.G and Moore, R. 2014. *'Living with Ground instability and Landslides – An International Good Practice Guide'*. CH2MHILL. 80pps.



**Figure 8.1 (Above) show the Holbeck hall Hotel landslide site at Scarborough following completion of a programme of coastal protection, slope stabilisation and drainage works. Ongoing management is achieved through maintenance, monitoring and engagement with stakeholders. Images courtesy of Scarborough Borough Council.**



## Suggested Structure and Content of Stability Reports

- i. *Introduction*; a statement indicating for whom the work was done, the nature and scope of the investigation, its general location, its purpose and the period over which it was carried out.
- ii. *Description of History*; a detailed description of the site based on the observations made by the Competent Person during his site review and reconnaissance. It should be referenced to a plan of the site showing national grid co-ordinates and to a scale no smaller than 1:2500.
- iii. *Investigations*: information consulted during the course of the desk study should be referred to and listed as an appendix. Fieldwork should be described and full records of boreholes, trial pits or other exploratory methods included as an appendix and their locations shown on a plan. Site tests and laboratory tests and methods should be similarly described and their results included.
- iv. *Ground Conditions*; descriptions of the ground conditions found during the investigation and an interpretation of their relevance to the stability of the site and surrounding area. Anomalies in any of the data collected should be pointed out. The following items should be discussed, where appropriate: geological conditions; hydrogeology; history of past events and ground movement rates; soil and rock properties; other factors e.g. coast protection.
- v. *Evaluation of Stability*; the stability of the site and relevant adjacent area should be evaluated with respect to the proposed development and the assessment of ground conditions. Where stability calculations are carried out, the method of analysis should be stated. The stability calculations should demonstrate both the existing factors of safety and, where appropriate, the factors of safety that would be created by the proposed development and any associated stabilisation measures. It is expected that particular attention should be paid to the gradients of cut slopes and fills; drainage measures; retaining structures; failure mechanisms and the design criteria applied.
- vi. *Conclusions and Recommendations*; the Competent Person should summarise the main conclusions of the investigation and list the recommendations to ensure both the long-term stability of the site (taking account of the anticipated life of the development) and also in the short term whilst construction proceeds. It is expected that particular reference will be made to matters such as: the avoidance of fills near the crest of steep slopes; restrictions on the depth of excavation at the toe of steep slopes; the maximum length of trenches excavated along the contours of steep slopes at any one time; avoidance of septic tanks and soakaways; provision of flexible jointed pipes capable of sustaining small movements without leakage; provision for free drainage of groundwater; minimising drainage diversions and their lining where site conditions require them.

**Box 8.1 Recommended layout for Stability Reports**

### STABILITY REPORT DECLARATION FORM

<b>Site Name</b>	<b>Site Address</b>	<b>Development Control Area</b>
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Category	Question	Answer yes/no/?/na
A) Competent Person	<ul style="list-style-type: none"> <li>• Has a Competent Person or Geotechnical Specialist prepared the report?</li> <li>• Does the Competent Person or Geotechnical Specialist operate a Quality System which meets the requirements of BS EN ISO9001?</li> <li>• Does the Competent Person or Geotechnical Specialist have a minimum of £1 M Professional Indemnity Insurance?</li> </ul>	
B) Site History	<ul style="list-style-type: none"> <li>• Has the site been affected by past ground instability?</li> <li>• Is the site located within or adjacent to any instability features?</li> </ul>	
C) Site Inspection	<ul style="list-style-type: none"> <li>• Has a detailed site inspection been carried out?</li> <li>• Does the site and adjacent land bear any geomorphological evidence of past or incipient ground instability?</li> <li>• Does the site or neighbouring property bear any evidence of structural damage or repairs that might be associated with ground instability?</li> </ul>	
D) Geotechnical Desk Study	<ul style="list-style-type: none"> <li>• Has the report 'Coves to Gurnard Coastal Slope Stability Study' been consulted?</li> <li>• Have any previous ground investigation reports and/or borehole records from the site been consulted?</li> <li>• Is the information consulted and referred to sufficient to quantify the ground behaviour constraints, which could affect the stability of the site?</li> </ul>	
E) Ground Investigation	<ul style="list-style-type: none"> <li>• Has a ground investigation been carried out and have the results been submitted in support of this application?</li> <li>• Did the investigation identify the presence of sub-surface shear zones and low strength compressible soils at the site?</li> <li>• Is the information sufficient to quantify the ground behaviour constraints, which could affect the stability of the site?</li> </ul>	
F) Stability Assessment	<ul style="list-style-type: none"> <li>• Is the information in B,C,D and E (where applicable) adequate to assess the stability of the site and adjacent land?</li> <li>• Can ground instability reasonably be foreseen within or adjacent to the site within the design life of the proposed development, allowing for any deterioration of ground conditions caused by the development itself?</li> <li>• Can instability be reduced to a reasonable level through cost-effective mitigation and stabilisation measures that would be environmentally acceptable?</li> </ul>	
G) Mitigation Measures	<ul style="list-style-type: none"> <li>• Have mitigation measures been proposed with respect to ground instability issues?</li> <li>• Have these been designed to reduce the effects of actual or potential instability to a reasonable level?</li> <li>• Is it possible the mitigation measures may have an adverse effect on the stability of other, adjacent sites (for example by affecting groundwater drainage in the area)?</li> </ul>	
H) Name, Qualifications and Signature of Person Responsible for the Stability Report	Full Name:  Qualifications:  Signature:  Company Represented (if applicable):	

**Box 8.2 Stability Report Declaration Form (For Coves to Gurnard Isle of Wight Study, Halcrow, 2000).**

## **XI. The appointment of suitably qualified persons for preparations of Stability Reports**

The National Planning Policy Framework defines a *Competent Person (to prepare site investigation information)*, as being a person with a recognised relevant qualification, sufficient experience in dealing with *land instability*, and membership of a relevant professional organisation.

A Competent Person would normally be expected to be a Geotechnical Specialist, either a Chartered Engineer or Chartered Geologist, with an appropriate length of experience in assessing the stability of natural slopes and a Fellow or Member of the Institution of Civil Engineers or The Geological Society (Moore and McInnes, 2002; McInnes and Moore, 2014). The local planning authority can advise developers to consult the British Geotechnical Register which lists details of suitably qualified geotechnical practitioners operating in the UK.

### **References**

1. Moore, R and McInnes, R.G. 2002. 'Cowes to Gurnard, Isle of Wight Slope Stability Study'. Int. Conf. on Instability, Planning and Management'. Ventnor, IW. 2002. Thomas Telford. (ed's. McInnes and Jakeways). pps. 189-192.
2. McInnes, R.G and Moore, R. 2014. 'Living with Ground instability and Landslides – An International Good Practice Guide'. CH2MHILL. 80pps.

## **XII. The need for independent verification of an 'appropriately qualified person'**

Whilst a local planning authority is entitled to rely on the expert advice provided by a developer in relation to slope instability, it is recommended that the report covers the relevant issues and that it has been prepared by a competent person. The Local Planning Authority may, in some circumstances, for example in the case of major development proposals, obtain appropriate expert advice but the responsibility for stability and safety of development proposals remains that of the developer and does not pass to the Local Planning Authority as a result of such consultations. The decision on the planning merits may not require the local planning authority to check design assumptions and calculations. However, there will remain a need for the local authority or an approved inspector to check designs submitted for approval under the Building Regulations.

## 9. DISCUSSION

### 9.1 Introduction

Rother District Council, as Local Planning Authority for the Rother district, wishes to explore the possibility of making an “article 4 direction” on land at Fairlight Cove. The effect of an article 4 direction would be to remove “permitted development” rights for certain forms of householder development within a defined area close to the cliff edge. This would mean that any such development would require the submission of an application for planning permission. This is due to local concern that these minor developments, which could include residential extensions and outbuildings, for example, and which currently lie outside planning control, could have adverse effects on land stability in the coastal zone. Part of the Fairlight Cove area is already subject to restrictive local planning policies, which seek to prevent inappropriate development and adverse impacts on land stability. However, the effect of planning policy does not extend to development not requiring planning permission. Technical input was requested to gather and present the evidence necessary to inform the Council’s decision on whether to make an article 4 direction.

### 9.2 Objectives of the Assessment

National planning guidance states *“The use of article 4 directions to remove national permitted development rights should be limited to situations where this is necessary to protect local amenity or the wellbeing of the area. **The potential harm that the direction is intended to address will need to be clearly identified**”*.

*“Provided that there is justification for both its purpose and extent, an article 4 direction can:*

- *- cover an area of any geographic size, from a specific site to a local authority-wide area*
- *- remove specified permitted development rights related to operational development or change of use*
- *- remove permitted development rights with temporary or permanent effect”*

### 9.3 Evidence of Need for an article 4 Direction

The Secretary of State has the power to modify or cancel article 4 directions at any time before or after they are made, although they will not use their powers unless there are clear reasons to do so. Therefore, before an article 4 direction can be made, evidence is required to demonstrate:

- I. It is necessary to remove “permitted development” rights in the interests of preventing land instability so that consideration can be given to individual planning applications on a case by case basis;
- II. The geographical area it is necessary to include in the article 4 direction; and
- III. The form of development it is necessary to remove “permitted development”

The overall objectives of the assessment are to ensure that the Local Planning Authority has:

- a clear understanding of the current risks in relation to land instability at Fairlight Cove and particularly the effect of additional householder development and works on land on top of the cliff, and
- sufficient evidence to determine whether an article 4 direction should be made for certain forms of additional householder development within a defined geographical area.

**The Council required a robust piece of evidence to inform (and if necessary, defend) the Local Planning Authority's decision whether to make an article 4 direction, and the geographical coverage and scope of that article 4 direction.**

In the past the East Kent Engineering Partnership has provided comments to Rother District Council on a number of planning applications for development close to the cliff edge in recent years. These comments have included the following advice:

*“Any development close to the cliff edge will increase surcharge loading of the cliff and the risk of a localised shallow failure” and “Only lightweight plant and machinery should be used for the construction and should not be operated close to the cliff edge. No building materials or stockpiles of rubble or soil should be placed close to the cliff edge”.*

In line with these comments, there is local concern that any development in the coastal zone at Fairlight Cove which places additional weight on the ground, causes vibrations, or increases water into the ground is liable to destabilise the cliff. Therefore, the principal outcome of the assessment has been to evidence whether these concerns are warranted, and if so, whether making an article 4 direction is necessary to prevent further destabilisation of the cliff. The extent of the coastal zone, as detailed in the DaSA Local Plan, and also its exclusion from the development boundary, was determined following the recommendation of the East Kent Engineering Partnership in the Study Report *“Fairlight Cove Coast Protection Works Phase 3”* (2015) that:

*“Sensible measures need to be put in place to restrict development near to the cliff top via set back lines and not permit soakaway drainage within 50m of the cliff face. The limit of development should be reviewed every 10 years or so”.*

Some of the Clauses under Parts 1 and 20 of the GPDO are subject to the “prior approval” process. Prior Approval means that a developer has to seek approval from the local planning authority that specified elements of the development are acceptable before work can proceed. The matters for prior approval vary depending on the type of development and these are set out in full in the relevant Parts in Schedule 2 to the GPDO. A local planning authority cannot consider any other matters when determining a prior approval application. The [Planning Practice Guidance](#) notes: *“there will need to be a particularly strong justification for the withdrawal of permitted development rights relating to cases where prior approval powers are available to control permitted development”*. However, the matters considered under the relevant prior approval processes do not appear to include anything directly relevant to the potential effect of the development on ground instability.



**Figure 9.1 Above: View of properties located seaward of Cliffway and Rockmead Road close to the edge of the cliff.**

**Figure 9.2 Below: View along the line of the extensive three phase coast protection scheme and the area of slope that was re-profiled and drained as part of the Phase 2 scheme.**

**Images: Gully Moy.**



#### 9.4 The current approach to coastal planning and management at Fairlight Cove

The Council, working in partnership, has developed an approach to the management of instability risks at Fairlight Cove in the following ways:-

1. By firmly embedding in the issue of land stability within Planning Policy and Development Management processes;
2. With the assistance of funding partners and key stakeholders the more developed frontages are now protected by three phases of major coastal defence schemes;
3. Surface water and ground water drainage has been installed at several key sites and the importance of controls of soakaway flows has been recognized in Planning policy;
4. Fairlight Cove benefits from a long history of particularly active local stakeholder interest and engagement.

The current approaches contribute to a developing *Cliff Risk Management Strategy*, which with some recommended additions provides a sound basis for management of risks along the Fairlight Cove frontage for the rest of the century.

#### 9.5 What are the ongoing risks for the Fairlight Cove frontage?

The challenges for the Fairlight frontage looking ahead to the end of this century are:-

1. **Ongoing weathering** of the face of the cliffs by rain, wind, frost and emergent groundwater leading to undermining and cliff falls. This is likely to continue but at a much reduced rate as a result of the coast protection and drainage works in place.
2. **Rising sea levels and overtopping by waves** of the rock berms leading to removal of beach and cliff materials behind the berm. However, experience around the English coast has demonstrated that rock berms and revetments are very effective and durable forms of coastal defence and the frontage is likely to continue to benefit from the improved level of protection the defences provide for many decades.
3. **Changes in the groundwater regime and drainage patterns.** It is predicted that climate change will result in an increase in the level of winter rainfall. The maintenance of the existing drainage systems is, therefore, particularly important as is the recording and interpretation of monitoring data.
4. **Reducing impacts of any further clifftop developments** such as increased loadings through Development Management and Building Control systems and the possible introduction of additional legislation such as an Article 4 direction alongside advice and guidance for affected frontages along this coastal zone.

## **9.6 Can the introduction of an Article 4 direction contribute to reduction of risks for the Fairlight Cove frontage?**

Within its Local Plan the Council has identified a *Fairlight Cove Buffer Zone* within which some 49 properties are located. As the cliffline slowly recedes over time, until it gradually reaches a more stable angle of repose, there will continue to be minor falls and slides particularly after long periods of rainfall and where groundwater emerges through the cliff face. These natural processes are the greatest risk factor in terms of local cliff instability over future decades. The ongoing maintenance of the line of pneumatic pumped wells, the surface water drainage systems, and the downloading of data, interpretation of trends and cliff monitoring are all key factors in seeking to manage risks over the next decades.

In terms of risks arising from development proposals that might be considered as having any instability implications, it is evident from the number of planning applications received since 2015 within the coastal Buffer Zone, that numbers are quite low (an average of three a year). In terms of Building Regulations applications have been less than six a year in recent years. There have been some permitted developments and some de-minimus developments that fall outside the planning system. Also in some locations well-intentioned efforts to reduce cliff face erosion have been installed.

The use of article 4 Directions to remove national permitted development rights should be limited to situations where this is necessary to protect the local amenity or the wellbeing of the area. The potential harm that the Direction is intended to address will need to be particularly clearly identified. If an article 4 Direction is introduced every application within the Coastal Buffer Zone would be required to submit a Stability Report to accompany it. This would be likely to place an undue and unnecessary burden on those applicants who may be submitting applications that have no impacts on stability because they are located further from the cliff edge. Development work, construction and other activities close to the cliff are more likely to have implications particularly for those properties in the front line of the Buffer Zone, and here an Article 4 direction may be appropriate. This could be introduced alongside helpful *Guidance Notes for Homeowners* prepared by the Council perhaps similar to those illustrated in Appendix 1 of this report.

As explained earlier the potential impacts of future developments such as loading, construction activities and excavations, are only likely to have possible significance in terms of increasing cliff instability within curtilages of those properties sited closest to the cliff top. Ongoing natural processes of cliff face weathering and resulting minor falls and slides will continue to be the most significant factor in terms of promoting coastal retreat.

Landward of the front line of properties the topography slopes inland and this helps to reduce the impacts of both development and surface water drainage on instability more widely. The case, therefore, for introducing an article 4 Direction is most relevant to those properties closest to the edge of the sea cliff .



## **10. CONCLUSIONS**

**10.1** An effective framework is in place for the management of instability risks along the Fairlight Cove frontage comprising planning policies, Development Management, Building Controls, completed coastal engineering and drainage and ongoing monitoring. Some additional measures such as the provision of practical advice and guidance to homeowners in the Coastal Buffer Zone would support risk mitigation.

**10.2** Climate change may pose increasing levels of risk in the future as a result of sea level rise and higher levels of winter rainfall. However, a high standard of coastal defence is in place along the most vulnerable frontage together with effective drainage systems.

**10.3** Limited ongoing cliff recession in the form of minor slips and rockfalls is to be expected as the cliff seeks to establish its ideal angle of repose. Falls are more likely to occur after heavy rain when groundwater levels are higher.

**10.4** Cliff instability can result from both natural physical processes and human activity. The most significant factor is likely to be natural cliff processes rather human activity.

**10.5** An article 4 direction covering the whole of the Fairlight Cove Buffer Zone would require planning applications and a Stability Report to be submitted in each case. The case for a direction must be robust and clearly demonstrate the need. Minor developments are unlikely to have significant impacts if the work is carried out carefully and taking advantage of good practice guidance. It is recommended that such guidance should be prepared and circulated by the council to all Buffer Zone land owners, residents and other interested groups and organisations.

**10.6** The Coastal Buffer Zone could be divided into an Inner Zone away from the sea cliff, and an Outer Zone abutting the sea cliff. In view of the greater level of risk and sensitivity of the Outer Zone covering properties on the seaward sides of Sea Road, Cliff Way and Rockmead Road (part) the Outer Zone would be more appropriate for an article 4 direction. The rear boundary of the Outer Zone could roll back subject to coastal retreat over time. The zoning could be reviewed at ten yearly intervals.

**10.7** The current oversight of the pumping system controls, maintenance and data recording contribute to an effective way of monitoring groundwater fluctuations.

**10.8** Alongside the south-East Regional Strategic Monitoring Programme visual and photographic inspections are made of the Fairlight Cove cliffline thereby recording the rate and scale of change.

## 11.RECOMMENDATIONS

### Planning Related

**11.1** Consideration was given to introducing an article 4 Direction at Fairlight Cove covering the whole of the Coastal Buffer Zone. However, it is not believed that a sufficiently robust case for its need can be set out bearing in mind that cliff face weathering, falls and small slides, together with groundwater flows, are the most significant risk factors. **However, it is recommended that a case be presented for the introduction of an article 4 Direction for an Outer Zone bordering the cliffline. Subject to the rate of coastal retreat the Outer Zone could roll back, as required, over time. It is recommended that, if introduced, the extent of land covered by the Article 4 direction could be reviewed at ten yearly intervals or as appropriate to the rate of cliff recession.**

### Other considerations

**11.2** It is recommended that guidance for homeowners should be prepared and circulated by the council to all Buffer Zone residents and other interested groups and organisations.

**11.5** With the assistance of homeowners, the Parish Council and the Fairlight Preservation Trust a survey be undertaken of current arrangements for disposal of surface water and roof water within the curtilages of just the Outer Zone properties to establish whether ingress to the water table can be reduced in any way.

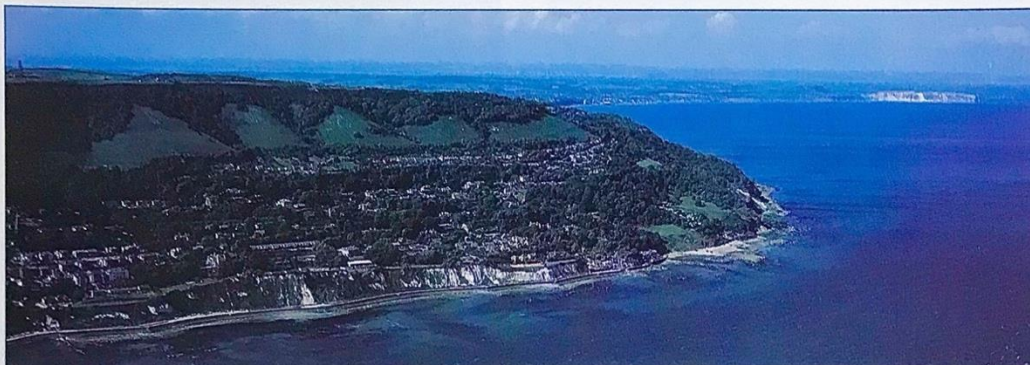
**11.6** Stability Reports should be shared between Development Management and Building control. Reports should be recorded and archived for future use.

Professor Robin McInnes OBE FICE FGS FRGS FRSA  
Coastal & Geotechnical Services

23rd July 2021

## APPENDIX 1

### ADVICE TO HOMEOWNERS – MANAGING GROUND INSTABILITY ON THE ISLE OF WIGHT



*Part of the Undercliff, IW*

The Centre for the Coastal Environment within the Isle of Wight Council is continuing to develop policies to manage and mitigate ground movement problems around the Island's coastline. This leaflet is intended to assist homeowners by providing advice on property maintenance and related issues.

Detailed geotechnical studies commissioned by the Council have shown that it may be possible to reduce the likelihood and impact of future ground movements in certain situations if a co-ordinated approach to ground instability management is adopted. A range of management techniques are being promoted by the Isle of Wight Council as part of a Ground Instability Management Strategy. The aims of the strategy are to :

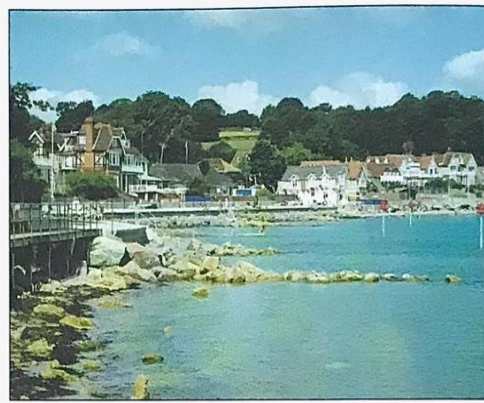
- **reduce the likelihood of future ground instability by seeking to reduce the impact of factors that cause ground movement;**
- **limit the impact of future movement through the adoption of appropriate planning and building controls**

The implementation of the strategy has required careful co-ordination, as it involves the whole community, including the Council, consultants, service industries, developers, insurers, lenders, property agents, builders, homeowners and the general public. A Management Committee of technical officers meets twice a year to enhance professional awareness of how the strategy is being implemented and to monitor its effectiveness.

The strategy involves a variety of approaches aimed at preventing or alleviating ground movements, preventing unsuitable development, monitoring ground movements and raising professional and public awareness. The Council has made special efforts to reduce the effects of erosion and water leakage (with Southern Water Services Ltd) in developed coastal areas through the upgrading or replacement of coastal defences and drainage works. Household development and service repairs do not always require planning permission but where they do the Council, as planning authority, now takes full account of ground instability matters. If you carry out work that does not require consent under Planning or Building Regulations please apply the advice contained in this leaflet. The Council has also made a significant investment in monitoring equipment at key coastal sites in order to measure the rates of ground movement and the relationship to rainfall.

The purpose of this leaflet is to advise homeowners of the ways in which you can help to try and minimise the likelihood and impact of potential ground movement problems on your property. Failure to do so may not only cause problems for yourself but may also affect your neighbours and contribute to a much wider problem in your area.

**For further information about this leaflet and fuller reports on ground behaviour and landslide management, please contact the Isle of Wight Centre for the Coastal Environment (tel: (01983) 855400), where a range of reports and maps may be viewed or purchased.**



The Council has undertaken technical studies as well as major coastal engineering projects aimed at reducing risks arising from coastal erosion and ground instability. *Cowes-Gurnard frontage (left), Southern part of Seagrove Bay, Seaview (right).*

## The Management of Slopes and Retaining Walls

One of the main attractions of the Isle of Wight is the varied relief of the coastal slopes which provide magnificent sea views from most areas. However, such locations are not without problems and steep slopes, by their very nature, can be unstable. Development over the last 150 years has exacerbated instability at some sites through the removal of vegetation, the excavation of slopes and to a lesser extent the placement of fill material. A number of slopes within built-up areas are supported by walls of varying age and condition. Many walls provide only a facing and were not built to a sufficient standard to adequately support the ground behind. A large number of past ground movement-related problems are known to have been caused by the localised instability of steep slopes and the failure of walls. Therefore, it is considered particularly important that slopes and walls are regularly inspected and maintained. You can help minimise the risk of slope instability and wall failure in the following ways :

- ❑ **If a wall within your property is leaning or cracked, seek professional advice from a Chartered Civil or Structural Engineer and carry out repairs. If you need further advice or are worried about a wall not within your property contact the Isle of Wight Council (tel : (01983) 823580). The collapse of walls can be very dangerous and you could be held responsible if you are the owner.**
- ❑ **Regularly inspect steep slopes and walls for signs of movement or damage and if you think there is a problem seek appropriate professional advice from a Chartered Civil Engineer or Consulting Geotechnical Engineer or contact the Isle of Wight Council (tel : (01983) 857220).**
- ❑ **Avoid excavating into steep slopes as this may lead to the failure of the slope and may affect any property situated above. If you are concerned about excavations on adjacent land seek professional advice (as above) or contact the Isle of Wight Council (tel : (01983) 823552).**
- ❑ **Avoid loading or tipping on and above steep slopes as this may lead to the failure of the slope and property below. If you are concerned about loading or tipping on adjacent land seek professional advice (as above) or contact the Isle of Wight Council (tel : (01983) 823552).**
- ❑ **Avoid the removal of trees and bushes from steep slopes, as in many cases vegetation acts to bind the soil and remove ground water through evapotranspiration, reducing the likelihood of shallow movements. If you are concerned about the removal of trees or vegetation from adjacent slopes seek professional advice or contact the Isle of Wight Council (tel : (01983) 823869).**

## The Control of Water

The control of water is considered one of the most important measures that can reduce the likelihood of ground instability. A number of water sources have been identified, which include natural water sources from :

- ❑ underground sources in the Chalk downs or from porous layers with clay formations
- ❑ rainwater falling directly onto the ground

and water originating from the mains supply through :

- leaking water pipes, sewers, swimming pools, etc
- water discharge from septic tank waste disposal units
- watering of gardens, etc

Natural water sources represent the volume of water that would have entered the area of ground instability even if development had not taken place. The public water supplies on the Island have traditionally been obtained from natural groundwater sources via a number of wells and springs. Increases in demand and the need to maintain continuity of supply has resulted in the requirement to supplement the local sources from the mainland.

#### **Artificially raised groundwater levels increase the risk of ground movement.**

It is important to control all water entering into the ground. Southern Water Services Ltd has made special efforts to identify and prevent leakage from water supply mains and has undertaken improvements to the Island's sewerage network. You too can help minimise the effects of water leakage in the following ways :

- If you suspect a leak in a water main or main sewerage pipe let Southern Water Services Ltd know immediately (tel : 0845 2780845).**
- If you suspect a leak in a swimming pool or pond repair it at once or contact the Isle of Wight Council (tel : (01983) 857220). Take special care in the emptying of swimming pools ensuring drainage to proper outlets and not directly into the ground.**
- Make sure all surface water outlets from your property are properly connected to the drains and that all drains are watertight.**
- Make sure your gutters and downpipes are not overflowing or leaking and use rainwater collected in water butts for watering gardens rather than mains water.**
- If you are not connected to mains drainage be sure that your septic tank or cesspool is adequately maintained and emptied regularly.**
- Landscape your property to prevent the ponding of water and ensure that ditches are kept clear; any work on or adjacent to a watercourse requires Environment Agency approval (tel : 0800 807060).**

Rain will naturally enter the ground but stormwater run-off from buildings and roads can be controlled and it would be beneficial to do so. Presently stormwater run-off is largely routed to soakaways in many parts of the Island. The only satisfactory alternative to soakaway systems is the routing of stormwater into sealed drains or established streams or watercourses. It is recommended, therefore, that :

- Where possible, surface water soakaways should be connected to sealed drains or into an established watercourse (but permission must be obtained first from Southern Water Services Ltd and from the Environment Agency). If you are aware of a problem of uncontrolled run-off near your property contact the Isle of Wight Council (tel : (01983) 857220).**

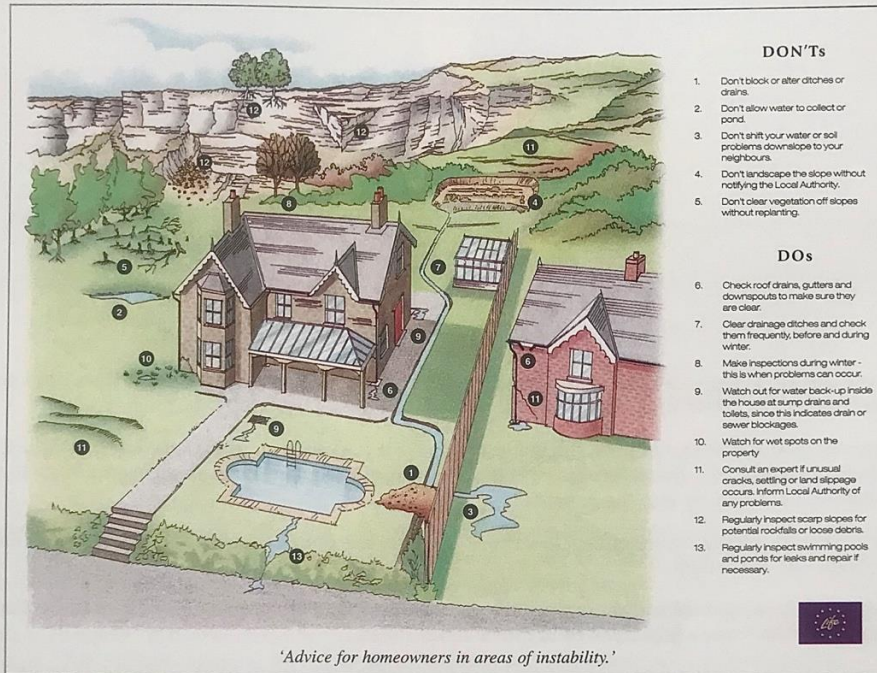
### **Maintenance and development of property**

In areas affected by ground instability or poor soil conditions, damage to property may not necessarily be a result of serious ground movement problems as a number of older properties were built with foundations and building styles unsuited to the ground conditions. Some properties were poorly built or have not been maintained adequately over the years. As a consequence the ground movement-related problems may appear to be more serious and less manageable than they should. In some cases damage appears to have worsened with time, as the cumulative effects of ground movement and inadequate maintenance become more apparent.

**The maintenance of property is considered to be of great importance as neglect can often lead to instability problems. The owners of property have an important role to ensure that buildings are properly maintained.**

**If you are proposing to carry out any building work you are advised to contact the Building Control section of the Isle of Wight Council (01983 823580) to obtain advice on suitable construction methods taking account of the ground conditions in your particular location.**

Much can be done to reduce the effects of ground instability. Repairs and precautionary measures can reduce maintenance costs and will prolong the life of the property and its value.



**DON'Ts**

1. Don't block or alter ditches or drains.
2. Don't allow water to collect or pond.
3. Don't shift your water or soil problems downslope to your neighbours.
4. Don't landscaped the slope without notifying the Local Authority.
5. Don't clear vegetation off slopes without replanting.

**DOs**

6. Check roof drains, gutters and downspouts to make sure they are clear.
7. Clear drainage ditches and check them frequently, before and during winter.
8. Make inspections during winter - this is when problems can occur.
9. Watch out for water back-up inside the house at sump drains and toilets, since this indicates drain or sewer blockages.
10. Watch for wet spots on the property.
11. Consult an expert if unusual cracks, settling or land slippage occurs. Inform Local Authority of any problems.
12. Regularly inspect steep slopes for potential rockfalls or loose debris.
13. Regularly inspect swimming pools and ponds for leaks and repair if necessary.

*'Advice for homeowners in areas of instability.'*

## Property Insurance

A major objective of the various coastal and geotechnical studies undertaken by the Isle of Wight Council has been to establish confidence in the area through an improved understanding of ground conditions and ground instability potential. The range of both technical and non-technical reports and maps that have been produced by the Council provide a basis for informed decision-making by insurers. The Association of British Insurers has contributed to the scientific studies and has been working closely with the Council for the last twelve years. Planning Guidance maps, which are contained in the various reports (see details below) provides a basis for assessing insurance risk. If you have difficulty obtaining insurance ask your Insurance Company if they have seen these reports. Leading insurance companies now accept that information provided by customers which can demonstrate a reduced level of risk may assist in obtaining cover or reducing premiums. More detailed large scale maps can be inspected at the Isle of Wight Coastal Visitors' Centre at Salisbury Gardens, Dudley Road, Ventnor, (tel : (01983) 855400), Isle of Wight Council Planning Offices, Seaclose Park, Newport (tel : (01983) 823552) and Cowes Library, Beckford Road, Cowes (tel : (01983) 293341).

**For further information and advice or to obtain copies of the reports 'The Undercliff of the Isle of Wight : A review of ground behaviour' (price £17 including large colour map) or 'Managing ground instability in Urban Areas' (price £20) or Cowes Ground Stability Study Report (price £60). Tel : (01983) 855400. Visit our website at : [www.coastalwight.gov.uk](http://www.coastalwight.gov.uk)**



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