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West Beach Cafe Rope Walk Littlehampton

FLOOD RISK ASSESSMENT

Client: Brownfield Catering Ltd

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CONSULTING ENGINEERS

West Beach Cafe
Rope Walk, Littlehampton
Preliminary Flood Risk Assessment

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West Beach Cafe
Flood Risk Assessment

1.0 Introduction

- 1.1 The West Beach Café lies on the west side of the harbour mouth at Littlehampton. This Flood Risk Assessment has been prepared in support of a planning application for a change of use and some limited improvements to the existing building including toilets at the rear.
- 1.2 This report examines the flood risk to the existing building and its proposed new use.
- 1.3 The building is located adjacent to a public car park approached along a road known as Rope Walk

2.0 Topography (levels in M AOD)

- 2.1 In Appendix B is a Contour Plan produced using LIDAR data which shows that the café is located in an area where the levels are approximately 5.0 m AOD. The floor is substantially elevated above this with an approximate level of 5.50 m.
- 2.2 The café is approximately 80 m from the foreshore and sheltered by the high shingle dunes from the prevailing south-west winds.

3.0 Flood Risk

- 3.1 The site is threatened by flooding from the sea which is close by and fluvial flooding from the River Arun and a combination of the two events where the river becomes tide locked. A report prepared for the Environment Agency and Arun District Council in October 2010 forecast the following stillwater flood levels.

	2009	2109
200 year event (0.5% AEP)	4.14	5.18

Levels in metres AOD.

- 3.2 The future forecast is based on the projected 100 year life span of a residential property. My estimate for the 60 year life span of a commercial building based on the methodology in PPS25 is 4.63 in 2069.
- 3.3 The building itself is well above the 200 year stillwater flood level event after allowing for 60 years of possible climate change. There remains a danger from wave action but it is sheltered from the prevailing south west winds by high shingle banks with an elevation of 9 m or more. My conclusion is that the building will be safe from flooding for its projected lifespan.
- 3.4 The approach road to the café is at a lower level and is threatened by flooding from the high river levels in the River Arun and also by a possible breach or overtopping of the

beach defences to the south-west. The worst case scenario is that staff might be isolated in the building for a time whilst the road was impassable. This time would be limited because the flooding would only occur during high tide. The café is also a seasonal enterprise and can easily be closed when extreme weather is forecast.

- 3.5 A good early warning system is already in place based on a network of tide gauges along the south coast. Warnings are available in a variety of ways from the Environment Agency service called " **flood warnings direct**".

4.0 Discussion

- 4.1 The café is located about 80 m from the foreshore but is elevated above the highest predicted flood levels even where climate change is factored in, it is also well protected from wave action by high shingle banks. There is a small risk of building being cut off in an extreme flood event but events of this nature will be forecast well in advance and the café can be closed.
- 4.2 To safeguard employees a flood action plan should be prepared. This plan should include clear responsibilities for receiving flood warnings and taking any necessary action if an extreme event is forecast
- 4.3 The proposed new toilets are to be connected to mains drainage so there is no risk of pollution from this source. .

5.0 Conclusions

- 5.1 The building is not at risk of flooding but there is a low possibility of it becoming isolated if the approach road floods. To mitigate this risk I recommend that a flood action plan should be prepared which should include signing up to the flood warning system and identifying clear responsibilities for closing the premises and notifying staff if a severe event is forecast.

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APPENDIX A
EXTRACT FROM EA REPORT

2 BASELINE SCENARIO

Section 2.1 provides introductory information concerning the baseline criteria for the options review. Sections 2.2 to 2.8 provide a more detailed breakdown of the strategic baseline for each of the frontages considered within the Strategy.

2.1 Introduction

The baseline scenario assumes that defences are no longer maintained ('Do Nothing') and will fail over time. Once they have failed they will not be repaired. Under these conditions there will be no provision for flood or erosion protection for the remainder of the strategy period (100 years). This is the baseline against which all other options are compared. This appraisal has been undertaken on a frontage by frontage basis to ensure that a sufficient understanding of this scenario is developed. The frontages are easily identifiable by their current, discrete flood risk areas behind them. However, the floodplain behind the frontages is inter-connected such that, during the more extreme events, the flood extents overlap. The frequency of overlapping flood events will increase over time in response to sea level rise associated with climate change.

2.1.1 Climate Change

This strategy has adopted the latest guidance from Defra¹ in 2006 sea level could rise up to a metre by 2115. Revised scenarios were published by UKCIP in June 2009 and are currently being evaluated by Defra prior to release of updated guidance to operating authorities.

Table 2.1 summarises the potential impacts of climate change on the peak tidal water levels for different probability events in this area. Typically there will be an increase of approximately 1m in the sea levels between now and in the future (2109).

Table 2.1: Peak tidal levels under current and future scenarios at Bognor Regis and Felpham

Probability	Current (2009) (mAOD)	Future (2109) (mAOD)
100% AEP (1 in 1 year)	3.34	4.38
50% AEP (1 in 2 year)	3.54	4.58
20% AEP (1 in 5 year)	3.64	4.68
10% AEP (1 in 10 year)	3.74	4.78
4% AEP (1 in 25 year)	3.84	4.88
2% AEP	3.94	4.98

¹ Defra FCDPAG3 Economic Appraisal Supplementary Note to Operating Authorities – Climate Change Impacts, October 2006

Probability	Current (2009) (mAOD)	Future (2109) (mAOD)
(1 in 50 year)		
1% AEP (1 in 100 year)	4.04	5.08
0.5% AEP (1 in 200 year)	4.14	5.18

A detailed understanding of the coastal and tidal natural processes of Arun to Pagham frontage in the Baseline Scenario is critical to developing strategic options, and to assess scenarios to appropriately manage coastal erosion and coastal or fluvial flood risk. Key to this assessment is understanding how the beach and associated control structures respond to the principal coastal processes.

With the technical support from HR Wallingford, we reviewed the 2004 Strategy coastal process technical assessments. Two review reports, the Coastal Process Report and the Strengths and Weaknesses Report, have been prepared.

A third desk study, the Performance Review, was completed to assess the performance of the Elmer breakwater scheme constructed in 1992/3 and the Felpham groyne and recharge scheme of the mid 1990's.

From these studies we concluded that the previous coastal process and scheme performance information was suitable for use by the 2010 strategy options appraisal.

These reports are also appendices to the final strategy document.

2.1.2 Relationship between Strategy frontages and SMP units

The strategy frontages are managed in line with how the SMP2 has divided the coastline into Local Management and River Management Units (LMU and RMU). Scheme options considered by the Strategy refer to the assets within the LMU or RMU.

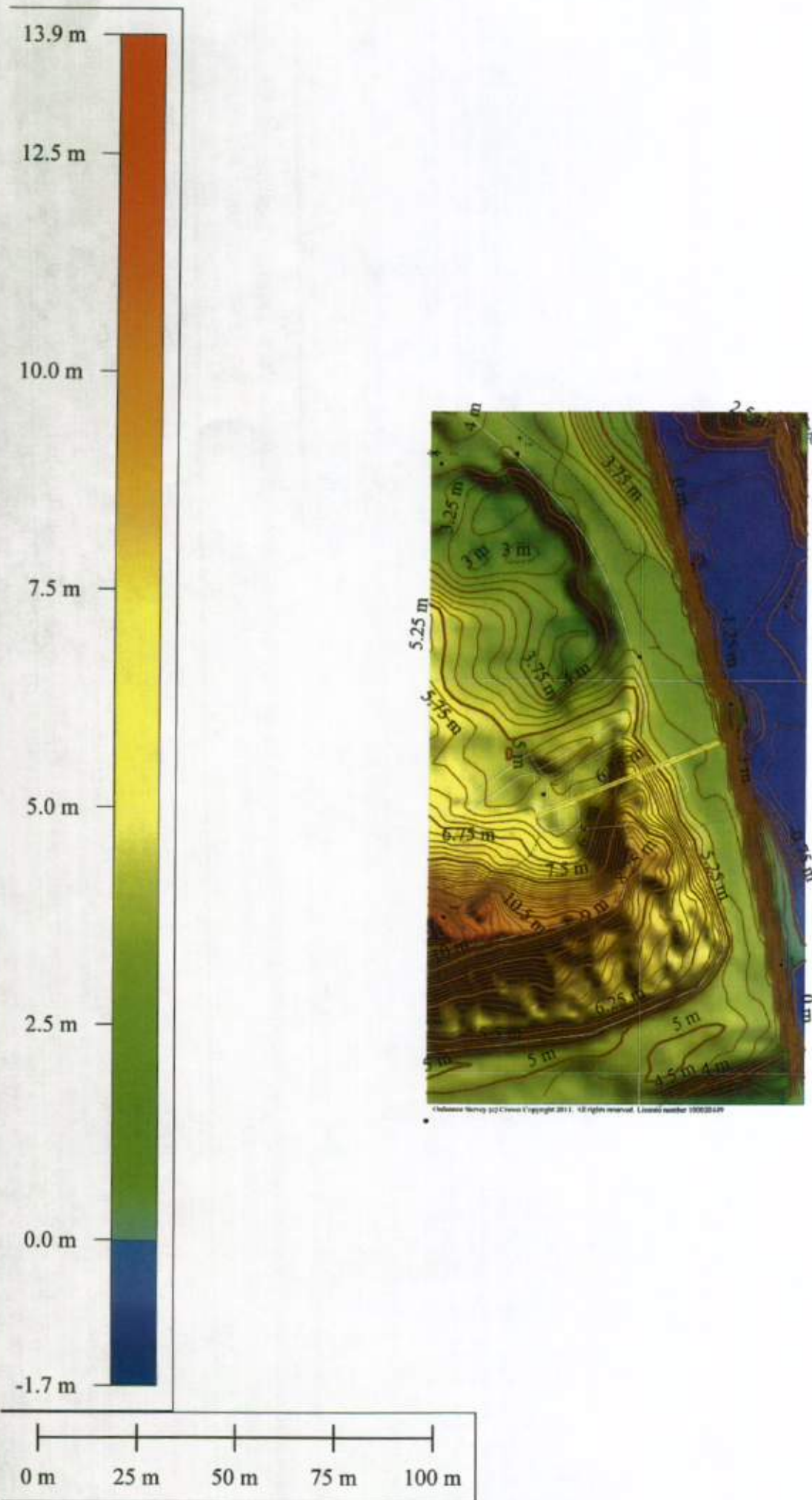
Table 2.2m and Figure 2.1 indicate how the 2010 strategy frontages align with the SMP RMU and LMU divisions. However, the frontages in the Strategy are allied to the flood cells identified and consequently LMU4 and LMU7 have been split between the relevant frontages.

Table 2.2: Strategy Frontage and SMP Referencing

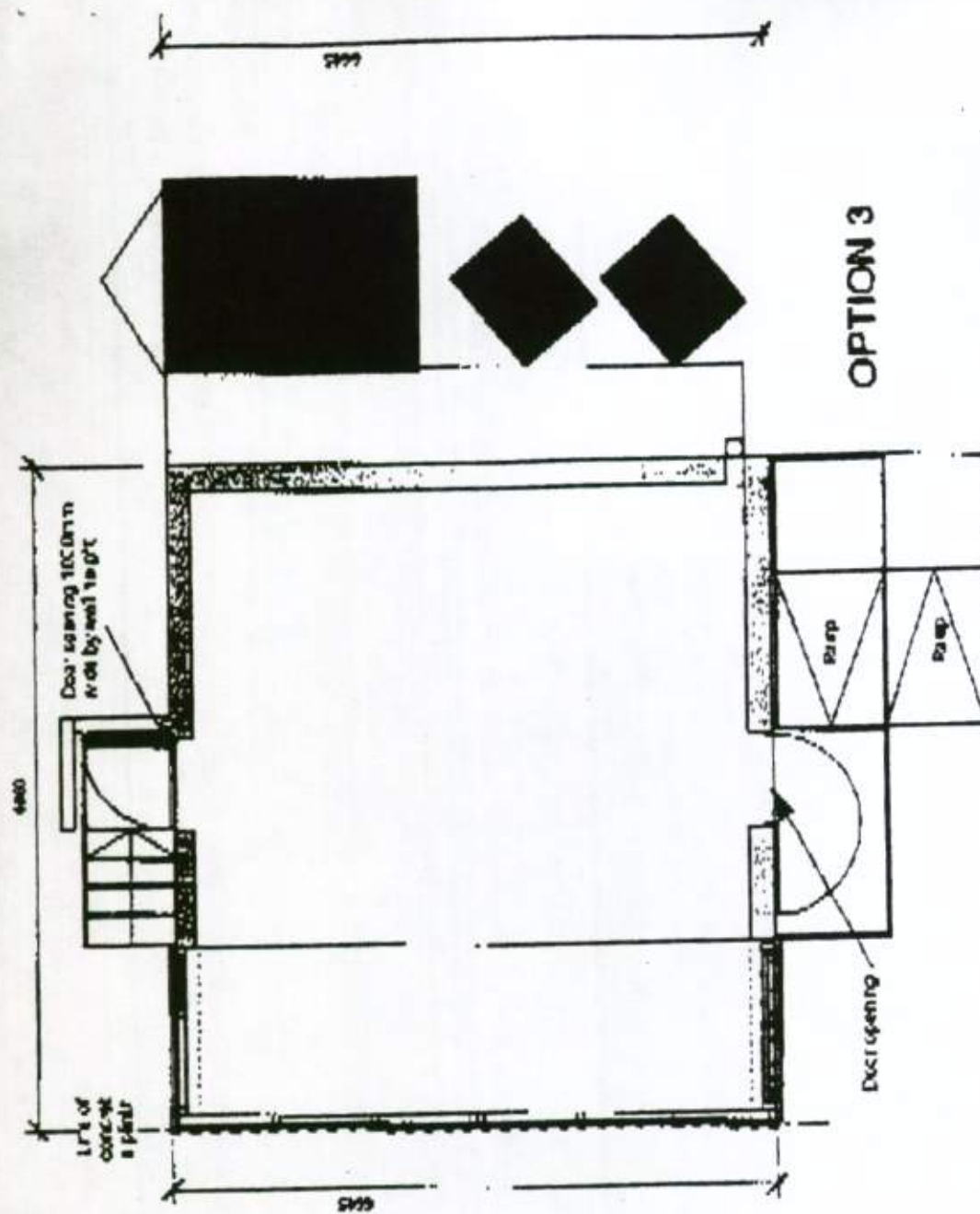
Strategy Frontage	SMP Local Management Unit within frontage
Climping & River Arun	RMU 3 – A259 to Ford Railway Bridge RMU 2 – Footbridge to A259 RMU 1 – Climping to Footbridge LMU 1 – Atherington and Climping
Elmer	LMU 2 – Elmer
Middleton	LMU 3 – Middleton LMU 4 – (Part) Middleton Ledge to Hannah's Groyne

APPENDIX B
LOCATION PLAN AND CONTOUR PLAN

WEST BEACH CAFE



APPENDIX C **PROPOSED DEVELOPMENT**



SKETCH