

STAGE 2 of a LANDSCAPE ASSESSMENT

of

OPTIONS for FLOOD RISK MANAGEMENT

in the

CUCKMERE ESTUARY, EAST SUSSEX

for

EAST SUSSEX COUNTY COUNCIL

on behalf of the

CUCKMERE COASTAL CHANGE PATHFINDER PROJECT

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1. Introduction

- 1.1 David Huskisson Associates (DHA) is a firm of Chartered Landscape Architects, established in 1987 and registered since then with the Landscape Institute.
- 1.2 DHA has been a member of the Institute of Environmental Management and Assessment since 1992. The practice is Quality Assured to BS ISO 9001:2008. The directors are all Chartered Members of the Landscape Institute.
- 1.3 The practice has undertaken a range of landscape and visual assessment work for many clients including public bodies, private companies and individuals.
- 1.4 For this project, DHA are retained by East Sussex County Council on behalf of the Cuckmere Coastal Change Pathfinder Project.
- 1.5 The study area is essentially focused on the valley of the Cuckmere River between Exceat on the A259 in the north and the river's mouth in the south, where it punctuates the well known South Downs chalk cliffs between the Seven Sisters and Beachy Head to the east and Seaford Head to the west.

Scope of Report

- 1.6 The following objective was set out in the East Sussex County Council (ESCC) brief:
- “To extend the existing landscape assessment [Jacobs Babbie - March 2006, the “Babbie Report” (BR 2006)](1) to include an assessment of the impact and significance of the Coastguard Cottages and the sea defence works associated with them in the landscape.”*
- 1.7 The brief required the provision of:
- “A baseline assessment of the landscape and visual significance of the Coastguard Cottages and the Cable House... [and] the area of artificially reinforced cliff sea defence wall.*
- The character assessment should take into account the cultural significance of the cottages and the Cable House.*

To identify and assess the likely effects on the landscape character and visual amenity of the valley of various additional options to those identified in the Strategic Environmental Assessment (SEA) (2) (carried out by the Environment Agency in 2006) and assessed in the Landscape and Visual Impact Assessment [LVIA] (BR 2006). These options have been identified by the Cuckmere Community Forum and will be agreed with all stakeholders.”

- 1.8 The updated baseline required in the first part of the brief was reported in the Landscape Baseline Statement (3).
- 1.9 The second part of the brief tentatively set out three flood risk options to be assessed in Stage 2, i.e. in this report, but as indicated above, subject to their confirmation and alteration by the Cuckmere Pathfinder Community Forum.
- 1.10 The BR should be referred to for the general assumptions and caveats relevant to the earlier work carried out and should be used as appropriate where the baseline has not materially altered since the BR's preparation. Cross references to the BR are given as, for example, BR 3.1.6.
- 1.11 The BR study now has been augmented and updated by the recent work undertaken for East Sussex County Council by Capita Symonds(4).
- 1.12 The BR was commissioned by the Environment Agency (EA). The effects on the landscape were assessed against the strategic objectives identified in the Cuckmere Estuary Project SEA: Scoping Report, dated August 2005 (2). For Landscape and Visual Effects the strategic objective was:

“to maintain and enhance the landscape character in keeping with natural processes and the Sussex Downs AONB and Heritage Coast.”

- 1.13 The Landscape Baseline Statement required that the character assessment should take into account the cultural significance of the Coastguard Cottages and the Cable House. A separate heritage asset plan (5) has been prepared by Oxford Archaeology (OA) and relevant findings of that study informed the Landscape Baseline Statement and this assessment.
- 1.14 The findings of the OA study concluded that:

- the overall historic landscape is considered to be of National Importance;
- the historic building resource, including the upstanding military structures, is considered to be of National Importance, and that;
- whilst the true archaeological potential is unknown, based on current knowledge and including the paleo-archaeological resource, the archaeological resource is considered to be of National Importance.

1.15 The Landscape Baseline Statement considered that the Coastguard Cottages and probably the Cable House should be considered as being of high landscape sensitivity.

1.16 The BR assessment was “high level”, i.e., it was not based on detailed engineering plans or ecological evaluation, rather it was based on a broad appreciation of the range of landscape and visual issues considered likely to occur.

1.17 As noted above, Capita Symonds have been retained to undertake extensive modelling of the various options and to prepare information on the likely sequencing of ecological changes arising. This information has further informed this assessment.

1.18 The study area for this assessment was defined as part of the Landscape Baseline Statement and is shown on **Figure 1**. This shows the visual envelope within which visual changes arising from any of the options is considered likely to be discernible. It extends north of the A259 although no physical changes north of the road corridor are proposed.

1.19 Where not contained in the BR or in the Capita Symonds study, the opinions and information provided in this report are on the basis of DHA using reasonable skill and care in the preparation of the same and no explicit warranty is provided as to their accuracy. No independent verification of any of the documents or information supplied to DHA has been made.

2. The Options

2.1 The Cuckmere Pathfinder Community Forum identified the following options for further consideration:

- Option A: Partial breach managed realignment (EA Option 3a)
- Option B: Full breach managed realignment (EA option 3b)
- Option C: Engineered reactivation of meanders & meandering creeks
- Option D: Maintain the existing defences (EA Option 2a)
- Option E: Sustain the existing defences (EA Option 2b)
- Option F: Sustain the existing defences

2.2 Out of the above options, Options C and F were not considered in the BR because they were not proposed options at the time and have come out of later consultation with the community.

2.3 In addition, a further proposal known as the West Beach Revetment was identified by the Cuckmere Pathfinder Community Forum. However, this is not an option to be compared with those listed above as the Forum notes that *"it entails no commitment to any particular option for the Cuckmere Estuary as a whole and does not pre-empt the discussion about options"*. The West Beach Revetment is not considered in this report.

2.4 For the purposes of this high level assessment the options have been grouped according to the broadly similar outcomes which are predicted from the engineers' modelling. These groupings are outlined below, adopting the variant likely to have the most changes as the main scheme to be assessed:

- **Option B** Full breach managed realignment with comments on **Option A** Partial breach.
- **Option C** Engineered reactivation of meanders & meandering creeks.
- **Option E** Sustain by 600mm the existing defences (EA Option 2b) with comments on **Option F**, Sustain by 300mm and **Option D** Maintain the existing defences (EA Option 2a).

2.5 The above Options are compared with the Baseline (Do nothing) i.e., the current situation of the Environment Agency (EA) withdrawing maintenance of the defences from April 2011 but continuing to clear the river mouth for either 15 years or until the river becomes self regulating. The beach and the river mouth are assumed to remain in their current positions and form.

3. Landscape Character and Landscape Features

- 3.1 The BR records that the Cuckmere Estuary lies within the South Downs Regional Character Area. (NCA 125). It states the landscape value is high in a national context because of its (then) Area of Outstanding Natural Beauty (AONB) and Heritage Coast status and notes that the area attracts visitors from a wide area.
- 3.2 The major change identified in the Landscape Baseline Statement was the confirmation of the designation of the South Downs as a National Park.
- 3.3 This change in designation does not mean that the value, quality or protection of the landscape alters as is made clear in Planning Policy Statement 7 (PPS7), Sustainable Development in Rural Areas(6). Paragraph 21 states that;

“Nationally designated areas comprising National Parks, The Broads, the New Forest Heritage Area and Areas of Outstanding Natural Beauty, have been confirmed by the Government as having the highest status of protection in relation to landscape and scenic beauty. The conservation of the natural beauty of the landscape and countryside should therefore be given great weight in planning policies and development control decisions in these areas”.

- 3.4 Consideration as to landscape value is addressed subsequently.

Landscape Character Areas

- 3.5 Reference should be made to the BR, the Landscape Baseline Statement, the South Downs Integrated Landscape Character Assessment (7) and to the East Sussex Landscape Character Assessment (8).
- 3.6 The South Downs Integrated Landscape Character Assessment identifies four landscape character types and four landscape character areas in the study area.

Landscape Type A: Open Downland: The study area lies in Character Area A1: Ouse to Eastbourne Open Downs, this character area being the high downland on both sides of the valley.

Landscape Type F: Major river floodplains: The study area lies in Character Area F1: Cuckmere Floodplain.

Landscape Type G: Major valley sides: The study area lies in Character Area G1: Cuckmere Valley Sides, this character area lying on both sides of the floodplain and extending up the valley sides to the downland character area.

Landscape Type R: Shoreline: The study area lies in Character Area R1: Seaford to Beachy Head.

- 3.7 The BR divided the study area into three distinct landscape character areas at a local level. These and their relationship to the character areas in the South Downs Integrated Landscape Character Assessment are shown below in **Table 1**.

Table 1 Landscape Character Areas

| BR Landscape Character Areas | South Downs Integrated Landscape Character Assessment Areas |
|-------------------------------------|--------------------------------------------------------------------|
| LCA 1 Cuckmere River Valley Floor | F1: Cuckmere Floodplains |
| LCA 2 Downland | A1: Ouse to Eastbourne Open Downs |
| | G1: Cuckmere Valley Sides |
| LCA 3 Coastal Strip | R1: Seaford to Beachy Head |

- 3.8 The South Downs characterisation is to be preferred for its somewhat finer grained analysis and those character areas have been used in this assessment. The areas are shown on **Figure 2**.
- 3.9 East Sussex Landscape Character Assessment shows the core of the study area lying in Area 22: Lower Cuckmere Valley.

Landscape Features

- 3.10 The text prefacing BR Table 4.1 is important to a full understanding of the thrust of the BR assessment. It states that:
- “features associated with a natural self-sustaining floodplain are considered to be of greater importance. Although many of the established introduced features in the landscape may be attractive in their own right they are given a lower value as they are not considered inherent landscape characteristics in an estuarine landscape.” (Our emphasis)*
- 3.11 Having regard to the thrust of the BR, specifically the EA’s SEA strategic landscape objective and the value rankings adopted in the BR, it is considered that the BR undervalued the landscape significance of the identified man made landscape features at Cuckmere Haven.

3.12 In the BR the following Landscape Features were considered and given the sensitivities set out below.

Table 2 Landscape Features

| BR Feature | BR sensitivity value | Value adopted in this assessment |
|---------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cuckmere Channel | Low | For the purposes of this high level assessment, all these features are considered to have High sensitivity. BR Table 2.5 defines high sensitivity as “ <i>distinctive landscape feature of particular importance susceptible to relatively small changes</i> ”. It is however acknowledged that a fuller, more detailed assessment would rank certain elements lower than others (i.e., improved grassland) but when considered in the round, the value of the whole is more than the sum of the individual parts. |
| Remnant meanders | High | |
| Hedgerows | Low | |
| Drainage ditches | Medium | |
| Creeks | High | |
| Ponds | Medium | |
| Flood Banks | Low | |
| Saltmarsh species | High | |
| Improved grassland | Low | |
| Footpaths | High | |
| <i>Additional Features not considered in the BR</i> | | |
| The Coastguard Cottages | N/A | |
| The Cable House | N/A | |
| Military relics | N/A | |
| Other Historic Landscape elements identified in the OA report | N/A | |

3.13 All these landscape features contribute to a greater or lesser extent to provide the unique sense of place and human scale and activity which contrasts with the dramatic large scale coastal scenery. They emphasise not only the strategic nature of the Haven but underscore the attritional nature of the location and man’s struggle with the river and the land won from it, all augmented by the ravages of the sea. The sometimes subtle contribution these features make to the overall landscape value of Cuckmere Haven as a whole should not be underestimated.

4. Assessment methodology

Identification of Effects

- 4.1 Effects on landscape character, value and visual amenity can arise from many causes, for example, perceived changes to:
- 4.1.1 the scale, grain and pattern of the landscape, for example by alien or engineered landform or out of context planting or changes to land cover;
 - 4.1.2 deterioration or erosion of the rural landscape by the urbanising effects of traffic, hard surfacing, structures and built development, lighting and signs and associated loss of tranquility;
 - 4.1.3 views or loss of views between surrounding locations and the scheme.
- 4.2 In this case, there will be changes arising from engineering works, (or absence of engineering works) that will in themselves give rise to landscape and visual effects. A consequence of the engineering works is likely to be a change in land cover, changes in vegetation and loss of and / or alterations to well known and much used rights of way from which the area is currently viewed and enjoyed, these changes being noted gradually over time. Thus there will be additional landscape and visual effects evolving after the completion of any particular engineering feature.
- 4.3 This time factor makes this assessment markedly different to the usual Landscape and Visual Impact Assessment which would normally consider landscape and visual issues under the headings of “construction effects”, “effects at Day 1 (winter)” and “effects at Year 15” (when mitigation could be expected to be becoming effective).
- 4.4 Here the timescale is much longer and the individual timing of triggering events is uncertain. This “state of flux” is considered to be an insidious aspect of any of those proposals in which land is “given up to the sea” in that, until the changes have become established and are generally self sustaining, it is likely that the situation will be unfavourably compared to how it currently exists as there is an understandable reluctance to accept change in a well known feature, landscape or view.
- 4.5 The time frames adopted in the BR were 20 years, 50 years and 100 years. The Capita work has considered similar time frames of 2011 - 2030, 2031 - 2060 and 2061 - 2110.
- 4.6 Also, with the increasing time comes an increasing uncertainty over when the effects considered likely to occur will in fact occur. Other factors affecting the landscape and perception of it could also vary, for example, land management practices, either

resulting from the predicted changes or unrelated changes in the immediately adjacent area that affects perception of the landscape.

- 4.7 For the purposes of this assessment, any changes to land management practices or changes other than those directly attributable to the options being considered have been discounted. i.e., for the balance of the study area the status quo is considered to prevail.
- 4.8 The significance of landscape effects can be described as an evaluation of the value of the landscape against the magnitude of the effects that the proposal will have on that landscape.
- 4.9 Similarly, the significance of visual effects can be described as an evaluation of the sensitivity of the visual receptor against the magnitude of the changes in the view resulting from the proposal.
- 4.10 Both landscape and visual effects can be positive (beneficial) or negative (adverse) or neutral. This last ranking may occur where, for example, a visual change may be very discernible but still no better or worse than what it replaced having regard to the context of the view.

Assessment methodology

- 4.11 The assessment methodology adopted follows current guidance, in particular Guidelines for Landscape and Visual Impact Assessment (GLVIA)(9). It also broadly accords with the BR methodology.
- 4.12 The objective of the methodology is to set out a transparent assessment process, albeit one that inevitably still relies on experience and professional judgement. The historic landscape and the cultural heritage aspects are acknowledged and embedded in the baseline against which the assessment has been undertaken. However, consideration of the specific effects on these interests of acknowledged importance is understood to be the subject of a separate study that should be read in conjunction with this assessment.
- 4.13 The evaluation criteria and landscape and visual significance thresholds used for this assessment are set out in the following tables.

Table 3 sets out the Thresholds for Landscape Receptor Value (Page 11).

Table 4 sets out the Capacity of the Landscape to accept change (Page 12).

Table 5 sets out Thresholds for Landscape Magnitude of Change (Page 16).

Table 6 sets out Significance of Effects Thresholds for either landscape effects or visual effects (Page 17). Here the landscape receptor value or visual receptor sensitivity is correlated with the Magnitude of Change to give an effect ranking /range. Inevitably there is often a merging or overlap between rankings and / or the terms of the categorisation of effect.

Table 7A sets out a summary of landscape effects assessment of the base engineering (Page 31).

Table 7B sets out a summary of the predicted land cover changes all Epochs (Page 37). **Appendix 1** contains **Tables 7C - 7E** which are summaries of the predicted land cover changes for the three Epochs together with an assessment of the magnitude of change and significance of effect compared to the baseline for each epoch.

Table 8A sets out Visual Receptor Sensitivity (Page 38).

Table 8B sets out Thresholds for Visual Magnitude of Change (Page 39). **Appendix 2** contains **Tables 8C - 8E** which set out the visual effects for a range of viewpoints for the three epochs together with an assessment of the magnitude of change and significance of effect compared to the baseline for each epoch.

- 4.14 The sections that follow consider Landscape effects and Visual effects.
- 4.15 Landscape is considered in terms of its value, capacity and the anticipated magnitude of change on an option by option basis for the basic engineering of the options (for example the work to Cells A, B and C that are fundamental to some of options and the disposition of which are indicated diagrammatically on **Figure 2**). The magnitude of change, which takes account of the landscape capacity, is then correlated against the value to determine the threshold of effect.
- 4.16 A separate consideration is made with regard to the change in land cover, again on an option by option basis. This part of the assessment is based on the report provided by Capita Symonds (4).
- 4.17 The visual effects are considered on an option by option basis in terms of receptor sensitivity, receptor location and magnitude of scale.

5. Landscape value, capacity, magnitude of change and significance of effects

Landscape Value

5.1 The thresholds adopted for landscape value are set out in the following table.

TABLE 3 *Thresholds- Landscape Receptor Value*

| LANDSCAPE / TOWNSCAPE RECEPTOR VALUE | RANK |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| EG: Highly important components or particularly distinctive or unique, positive character, quality and rarity with no or limited potential for substitution. Likely to be very susceptible to small changes. Parts of National Parks / AONB's and some Conservation Areas and settings of some Listed Buildings. Very few detracting features. Landscape components may be nationally rare whilst locally abundant or locally rare but nationally abundant. Landscape condition likely to be good. | Exceptional Value ↓ |
| EG: important components or particularly distinctive positive character and may be susceptible to relatively small changes. Usually all National Parks / AONB's and some areas with County / District notations and some Conservation Areas and settings of some Listed Buildings. Probably limited minor detracting features. Landscape components may be nationally rare whilst locally abundant or locally rare but nationally abundant. Landscape condition likely to be fair to good. | High Value ↓ |
| EG: an area of moderately positive characteristics and possibly reasonably tolerant of changes, occasionally parts of AONB's, Conservation Areas and settings of some Listed Buildings, usually County / District notations, and with few detracting features. Landscape components not rare either nationally or locally. Landscape condition likely to be fair. | Medium (Good) Value ↓ |
| EG: A relatively unimportant area, weak landscape structure or character, the nature of which is potentially tolerant of substantial change and probably has frequent detracting features. Landscape components common nationally and locally. Landscape condition likely to be fair to poor. | Low (Ordinary) Value ↓ |
| EG: A degraded landscape structure, characteristic landscape patterns and combinations of landform and landcover are masked by land use. Landscape components common nationally and locally. Landscape condition likely to be poor. | Poor Value* |

(* Poor value has been excluded from Table 5)

5.2 The scenic qualities of the area are well known. They include the iconic and dramatic Seven Sisters white chalk cliffs to the east and Seaford Head to the west, backed by the rolling whaleback South Downs chalkland, all contrasting with the more intimate appeal of the Cuckmere river meanders in the valley floor. These features, all very largely unspoilt by significant landscape or visual detractors, with the rich cultural heritage of the area, combine to form a landscape that epitomises one of the defining landscapes of Britain.

- 5.3 It is considered that the landscape value of the area should be regarded as exceptional, this applying equally to the component character areas. The Haven should be regarded as one of the jewels of the South Downs National Park. This ranking is further underpinned by the findings of the heritage asset baseline study that concluded that the historic landscape is of National Significance.
- 5.4 It is considered that no part of the Study Area is of Low or Poor Value but that, if considered in isolation, the A259 corridor, the immediate confines of the Golden Galleon Public House and the parking associated with the Country Park could be considered to erode value locally but not to such an extent as to detract from the overall intrinsic appeal of the area and its ranking as being a landscape of exceptional value.

Landscape Capacity

- 5.5 The degree to which a particular landscape can accommodate change will vary with a range of attributes including the pattern, scale and value of the landscape, visual enclosure / openness, location of visual receptors and the scope or appropriateness of mitigation. Capacity informs the magnitude of landscape change assessment.
- 5.6 The capacity has been considered against the evaluation criteria set out in **Table 4**.

TABLE 4 Capacity of the Landscape to Accept Change

| Evaluation Criteria | Capacity |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| A landscape, including topographic form, that would be unlikely to tolerate the change(s) envisaged which would be out of scale and out of character. Effective, in character, mitigation would be difficult to achieve, would be unlikely to enhance. Often highly valued or sometimes of exceptional value. | Low |
| A landscape, including topographic form, that would be reasonably tolerant of the change(s) envisaged which themselves would not be wholly out of character and effective, in character, mitigation would be possible, but results may take time to be effective and could give rise to an element of enhancement. Usually moderately valued. | Medium |
| A landscape, including topographic form, that would be likely to be tolerant of the change(s) envisaged which would be in scale and character and, if required, effective, in character, mitigation would be readily achievable and might enhance. Often of ordinary value. | High |

- 5.7 In general terms, for the Baseline and Options A, B and C, the capacity is considered in relation to the potential change from floodplain pasture land (and country park access land) to estuary / intertidal saltmarsh. Estuaries by their very nature are places of transition between land and sea. For these options, the change might be considered to be merely reversion in whole or part to the “natural” situation, discounting the cultural interest.
- 5.8 For Options D, E and F the capacity has to be considered in relation to the retention of the flood plain pasture land by means of raised flood banks.
- 5.9 The above scenarios involve physical change to all of the landscape character areas in the study area other than for the Ouse to Eastbourne Open Downs Character area. Thus the Cuckmere Floodplains, the Seaford to Beachy Head shoreline and the Cuckmere Valley Sides character areas are considered below.

Cuckmere Floodplains character area

- 5.10 As will be seen from the above table, it is commonly the case that a landscape with a high capacity is frequently of lower value. In this instance however, whilst the value of the Cuckmere floodplain character area is exceptional, its form is directly derived from its earlier natural landscape / geo-morphological state of estuary / saltmarsh / mudflats. In landscape capacity terms the seemingly fundamental change back to estuary / saltmarsh could be readily assimilated, thus the capacity for this scenario (i.e, the Baseline) would be considered to be **High**.
- 5.11 However, in the case of Option B, (Full Breach) both the BR at 6.6.1 and the Capita Options appraisal (March 2011) (4) make it clear there would be concomitant engineering works which intrinsically run counter to the landscape form. These include a large closing bank to the north of Cell A to protect the canoe barn, parking area and the A259, the extension of banks at the south to close Cell A and the excavation in the valley floor by Cell C to increase flood capacity to stabilize the system during neap tides. As noted below Option A (Partial Breach) would only have the smaller closing bank at the southern end of Cell A, albeit on a different alignment relative to Foxhole Valley.
- 5.12 For Option C (Engineered Reactivation), whilst both flood banks would be removed and there would be no northern closing bank in Cell A as described for Option B, the A259 corridor is proposed to be very substantially modified, counter to the grain of the character area.

- 5.13 For these reasons, the landscape capacity of the Cuckmere floodplain landscape character area in respect of Options B and C is considered to be only **Medium**.
- 5.14 This contrasts with the capacity consideration of Option A (Partial Breach) in which the significant earthwork of the northern closing bank to Cell A of Option B or the work to the A259 on Option C, would not be required thus leaving the north easterly area of the flood plain unaltered. There would be some minor raising works to the eastern flood wall and to achieve the northern bank to Cell C and there would be a 140m long concrete wall 1.1m high at the Golden Galleon car park, but the works would be significantly reduced from Options B or C such that the capacity for Option A is considered to be **Medium / High**.
- 5.15 In terms of Option E (Sustain by 600mm), there would again be engineering works, albeit by comparison with Options A, B and C, less substantial in terms of height, but of greater spatial extent, although this is offset to some degree by the fact that the works would be associated with the existing banks rather than introducing new ones. Option E would also require stone or concrete revetments in places vulnerable to erosion and concrete walls or sheet piling to support the second phase of bank raising. Given the modest height increment of 600mm and allowing for the additional width of the floodbanks, a relatively contained additional footprint, and that the works can be regarded as reinforcing the existing pattern, the capacity of the Cuckmere Floodplain to accept Option E is **Medium**, Option F is **Medium / High** and Option D is **High**.

The Seaford to Beachy Head character area

- 5.16 The Seaford to Beachy Head shoreline is also an area of exceptional value and despite its name, in the context of the beach at Cuckmere Haven, it is a small character area, isolated at high tide by the flanking cliffs to east and west.
- 5.17 Option B (Full Breach) is described in the BR at 6.6.3. It does not envisage any significant engineering works at the river mouth. According to the Capita Options appraisal (March 2011) the training walls would no longer be maintained and will be left to deteriorate over time and consequently the river mouth will begin to follow a more natural course. The landscape capacity of the coastal strip character area is therefore considered to be **High** for Options A and B and the Baseline.
- 5.18 Option C (Engineered Reactivation) is not addressed in the BR. The Capita Options appraisal of March 2011 confirms that there would be no intervention, as described for Options A and B above. Thus the capacity of the coastal strip character area is also considered to be **High** for Option C.

5.19 Option E (Sustain by 600mm) is described in the BR at 6.3.1 and 6.4.1. In the shoreline character area, significant engineering works are described as being required including the replacement of the training walls with much larger structures using steel and concrete rather than timber. However, in the Capita Options appraisal (March 2011) the training groynes at the river mouth and the timber groynes on the West beach would be maintained as at present and would need replacing in the long term. Thus on the basis of this more recent work the capacity of the coastal strip character area is considered to be **Medium /High** for Option E.

5.20 The Options F, Sustain by 300mm and D, Maintain the existing defences, are assumed to include the same engineering inputs as identified in the Capita work for Option E, thus the capacity of the landscape is also ranked as **Medium / High**.

The Cuckmere Valley sides character area

5.21 As for the other character areas, these two areas on either side of the valley are considered to be of exceptional value.

5.22 For the purposes of this assessment it has been assumed that other than for Option D E and F, the Baseline and all the other Options will involve some relocation of rights of way.

5.23 For the Baseline and Option B (Full Breach), this will involve the relocation of public rights of way which are currently located either side of the valley on the floodplain or at the toe of the valley side slope onto the flank of the valley. Forming reasonably level tracks along the side long ground will necessarily disrupt the flow of the landform. Without very careful detailed design and slope slackening, (which takes more land) it will be unlikely that the side slopes can readily assimilate the localised re-grading in a natural manner in many locations. Some disruption to the landform would also be caused by the “marrying in” of the new earthworks of Cell A. Thus the capacity of the Cuckmere Valley sides character areas is considered to be **Medium** for the Baseline and Option B. The Option A (Partial Breach) would have less length of public rights of way to be realigned on the eastern valley flank and thus the capacity for this sub option has been ranked as **Medium/High**.

5.24 Similar considerations apply to Option C (Engineered Reactivation) as described for Option B in terms of the routing of the rights of way but further issues probably arise having regard to reconciling the raised road corridor with the valley side slopes. Thus the capacity of the Cuckmere Valley sides character area is considered to be **Low** for Option C.

5.25 For Options D, E and F no works, save a very localised rerouting on Option D to the west of Cell B, are proposed thus the capacity of the Character Area can be regarded as **High**. However over time periodic inundation may mean that paths are locally rerouted giving rise to some of the issues set out above, thus the capacity will reduce.

Magnitude of change and significance of effects

5.26 The typical evaluation criteria thresholds adopted for the assessment of magnitude of change are set out in **Table 5**.

TABLE 5 *Landscape Magnitude of Change – Thresholds*

Note: “Adverse” and “Beneficial” only applies to the assessment of the Base Engineering considered in Section 5 and not the land cover assessment in Section 6.

| MAGNITUDE OF CHANGE | RANKING |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| EG: Total loss or major alteration to key elements / features characteristics of the existing baseline landscape and /or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape. | High “Adverse” ↓ |
| EG: Partial loss of or alteration to one or more key elements / features / characteristics of the existing baseline landscape and /or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape. | Medium “Adverse” ↓ |
| EG: Minor loss of or alteration to one or more key elements / features / characteristics of the existing baseline landscape and /or introduction of element(s) that may not be uncharacteristic when set within the attributes of the receiving landscape. | Low “Adverse” ↓ |
| EG: Very minor loss of or alteration to one or more key elements / features / characteristics of the existing baseline landscape and /or introduction of elements that are not uncharacteristic with the surrounding landscape. | Negligible/ Minimal No change ↓ |
| EG: Minor introduction or alteration of one or more key elements / features / characteristics of the existing baseline landscape and /or introduction or removal of element(s) that are not uncharacteristic with the surrounding landscape. | Low “Beneficial” ↓ |
| EG: Moderate introduction or alteration of one or more key elements / features / characteristics of the existing baseline landscape and /or introduction or removal of element(s) that are not uncharacteristic with the surrounding landscape. | Medium “Beneficial” ↓ |
| EG: Substantial introduction or major alteration of one or more key elements / features / characteristics of the baseline i.e. predevelopment landscape and /or introduction or removal of element(s) that are not uncharacteristic with the surrounding landscape. | High “Beneficial” |

5.27 The evaluation criteria are most appropriate for undertaking assessments when there is a clearly defined “Day 1” on which the assessment can be based. For this project, this approach can be applied to the options in terms of the completion of the identified engineering elements, such as for example raising the A259 as proposed under Option C.

TABLE 6 *Significance of Effects Thresholds – Landscape or Visual Receptors*

| | Landscape Value or Visual Sensitivity | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------|-------------------------------|--------------------------------|
| Magnitude of Change | Low | Medium | High | Exceptional |
| High | Moderate Effect | Moderate / Substantial Effect | Substantial Effect | Very Substantial Effect |
| Medium | Slight / Moderate Effect | Moderate Effect | Moderate / Substantial Effect | Substantial Effect |
| Low | Minimal / Slight Effect | Slight Effect | Moderate Effect | Moderate / Substantial Effect |
| Minimal Change | No Effect | No / Minimal Effect | Minimal / Slight Effect | Slight / Moderate Effect |
| No Change | No Effect | No Effect | No Effect | No Effect |
| <p>The above matrix should only be regarded as an indicative guide to likely rankings of effect, based on the current variable level of detail available for each option and should be used in conjunction with the following descriptions.</p> | | | | |
| <ul style="list-style-type: none"> • Very Substantial effect – usually where the proposal would cause an overwhelmingly disproportionate deterioration or (unlikely) improvement in landscape value or appearance but could also be neutral. <u>Where adverse, it will usually be a determining issue in its own right unless outweighed by very special circumstances.</u> • Substantial effect – usually where the proposal would cause a very significant deterioration or improvement in landscape value or appearance but could also be neutral. <u>Where adverse, it could be a determining issue in its own right unless outweighed by other material considerations.</u> • Moderate effect – usually where the proposal would cause a noticeable and clear deterioration or improvement in landscape value or appearance but could also be neutral. <u>Where adverse, it could be a determining issue especially where combined with other similar rankings.</u> • Slight effect – usually where the proposal would cause a perceptible but small deterioration or improvement in landscape value or appearance. <u>Unlikely to be a determining issue unless combined with many other similar rankings.</u> • Minimal effect – usually where the proposal would cause a barely perceptible deterioration or improvement in landscape value or appearance. | | | | |

- 5.28 However, the other landscape changes in the valley floor in terms of land cover will generally be progressive over an imprecise time line and, whilst the change may be fundamental, it may only rank at any particular time as a minor effect. Conversely the changes envisaged on Options A, B and C would cause a notable change in a relatively short timescale. Furthermore an extreme weather event could change the predicted outcomes.
- 5.29 Thus the assessment of landscape effects has been considered in two parts (ignoring the temporary but substantial construction effects arising during the actual carrying out of any engineering work).
- 5.30 First is an assessment of the Base Engineering at a theoretical “Day 1”. This is set out in **Section 6** on an option by option basis where the magnitude of change is correlated to the value to determine the significance of effect from **Table 6**. It has attributed whether the effect is considered to be averse or beneficial in accordance with **Table 5**.
- 5.31 Second is an assessment of the evolving / changing land cover of the valley floor over the time and a summary assessment of its effect compared to the evolving Baseline in the same epoch. This is set out in **Section 7** on an option by option basis where the magnitude of change is correlated to the value to determine the significance of effect from **Table 6**. It has not ranked the effect as either averse or beneficial. This is because the existing and predicted baseline land cover are considered to be equally appropriate and in landscape character given the estuarine context of the valley.
- 5.32 The significance of effects thresholds shown in **Table 6** has been adopted.

6 Landscape Assessment of the Base Engineering

Baseline (Do Nothing) (Base engineering)

6.1 The Baseline (Do Nothing) is the scenario against which the other options can be compared and contrasted. As the baseline will also evolve and change over time, each option is compared against the baseline from the same epoch. The main aspects involve:

- The current situation is that the EA withdraw maintenance of the defences from April 2011 but continue to clear the river mouth for either 15 years or until the river becomes self regulating.
- The beach and the river mouth are assumed to remain largely in their current positions and form although the river mouth may widen and, once the raining walls have deteriorated, the river mouth will almost certainly become more mobile.
- Diversions of rights of way are likely to be required over time.

Cuckmere Floodplains character area

6.2 There would be no engineering works. The character area would remain very much in its present form in the short and medium term, with only some of the mudbank creeks in Cell B becoming more regularly water filled over time together with some minor changes in extent of the saltmarsh along the river channel. This will be dependent upon breaches occurring in the river flood banks, the water will inundate the lower areas and constricted drainage will encourage sediment build up thus raising levels.

6.3 Tidal Inundation will become more frequent over time and more of the floodbank will erode away. Cell A will start to be regularly inundated where the meanders will continue to widen and silt up and will become far less prominent if not imperceptible. The canoe barn would be isolated from the remaining section of meander.

6.4 Other than at the northern end of Cell A, the balance of the floodplain including Foxhole Valley would become saltmarsh in the longer term with significant mud banks flanking the river and extending west into the central part of Cell B.

6.5 Diversion or stopping up of public rights of way should be anticipated from an early stage as the river bank routes could be breached at any time. Although not currently

envisaged as part of the Baseline, in the medium to longer term the paths at the outer edges of the floodplain would also be likely to need to be rerouted to higher ground.

- 6.6 On the basis that there would be no engineering works, there would be no change in this character area. From Table 6, this gives rises to a ranking of **No effect** in terms of the significance of effect.

The Seaford to Beachy Head character area

- 6.7 On the basis that the river mouth stays in its present form or until it is self regulating, there would be no change in this character area. From Table 6, this gives rises to a ranking of **No effect** in terms of the significance of effect.

The Cuckmere Valley sides character area

- 6.8 The changes in the baseline over time would affect this character area on both sides of the valley if the rerouting of footpaths is undertaken. It has been assumed that the same treatment would in fact apply for the Baseline as proposed for the other options that are predicted to have an outcome similar to the Baseline, otherwise there would be an imbalance in the assessment.

- 6.9 The magnitude of change will be influenced by the alignments selected and by the care taken in the detailed design and implementation of the earthworks to set the routes seemingly in as “natural” a location as possible. Rerouting on valley sides will give rise to potential impacts on cultural heritage features assessed as being of high or very high significance. In some instances it will be desirable to have the routes closely aligned to the edge of the areas of inundation and this may require the use of geo-textile reinforcing or gabions. Such types of construction give rise to various effects which cannot be assessed with any degree of certainty at the moment.

- 6.10 Linked to this will be the need to ensure that disabled access is maintained to the eastern beach. This is currently achieved via the level track following part of the old mineral tramway. This requirement may impose constraints in terms of the vertical alignment that can be adopted. Materials for surfacing the routes will also need careful consideration. There will be fewer paths with a consequential higher level of usage.

- 6.11 For the Baseline, the magnitude of change has been ranked as minimal adverse. By reference to Table 6 it is considered that the effect would be **Slight / Moderate adverse** on this character area.

Options A and B (Base engineering)

6.12 Option B (Full Breach) is described first as it involves more extensive engineering than Option A. The main aspects are:

- The creation of a major new embankment running across the floodplain from approximately 30m south of Exceat Bridge to the eastern valley side about 100m SE of the Visitor Centre forming the northern end of flood Cell A, preventing tidal water from reaching the A259;
- The admission of tidal water into Cells A, B & C by way of restricted breach points in the embankments leaving the balance of the embankments intact;
- The breach point for Cell A would be at the southern end of the canoe lake, admitting water into the meanders and flanking floodplain;
- A second new bank would be created to separate Cells A and C, allowing inundation of the Foxhole valley;
- An area at the western edge of Cell C will be excavated to create a reservoir that will enlarge the Cuckmere's tidal compartment and help to increase flow at the river mouth on a falling neap tide. It is envisaged by the EA that the river mouth would maintain itself in its present position in the short term, but will almost certainly become more mobile once the training walls have broken down;
- The purpose of this scheme is to encourage saltmarsh development in cells A, B & C and allow siltation, this will keep the land level building up at the same rate as the rising sea level;
- Diversions of valley-side rights of way would be necessary. Short footbridges could ensure continuing access along the two valley-centre rights of way.

6.13 In the case of Option A (Partial Breach), the main aspects involve:

- The admission of tidal water into Cells B & C through artificially created breaches in the existing embankments, which are otherwise to be left intact;
- An embankment 200m long would connect the current east bank of the river to the eastern valley side, to stop the tidal water that enters Cell C from flooding Cell A and give flood protection to the Foxhole valley
- A concrete flood wall 1.1 m high and 140m long would protect the Golden Galleon Car park;
- The existing east bank of the Cuckmere would be raised and strengthened twice – once at the start and once after 50 years;

- The area of the canoe barn and meanders and Cell A, would be left entirely unchanged, including the footpath access but elsewhere footpaths would be lost or diverted as for Option B.
- The impacts at the river mouth will be similar to option B.

Cuckmere Floodplains character area

- 6.14 The major engineering structure of Option B (Full breach) would be the closing bank, just south of the A259 and the canoe barn. It would be a significant landscape feature. It would run counter to the landform, truncating the valley in the sensitive location near the Country Park Centre at Exceat. It would also sever the meanders, one of the current defining features of the floodplain.
- 6.15 Capita's plan CS043802-EN-002 Rev A indicates the bank requires to be 2.2 - 2.9m high and with a level crest width of say 2.0m and side slopes 1 in 5 on both sides, this would result in a band width of about 25m over a length of about 600m. To mitigate the appearance of this artificial landform it would be desirable to construct the earthwork with slacker side slopes, at least on the south face, although this would extend the footprint area of disturbance, and forming it to a more sinuous alignment than indicated diagrammatically on the above plan. Planting could also be considered to mask the earthwork on its northern side but care would be needed to ensure that the planting did not appear to be out of context, thus drawing more attention to the feature.
- 6.16 A result of the meander being severed by the closing bank is that the part of the existing meander closest to the A259 would still be available for recreational use whilst the canoe barn would be safeguarded. The parking area would be partly shielded from views from the south.
- 6.17 The excavation of material adjacent to the main river channel would probably not be perceived as a particularly significant landscape effect as once completed it would fill and drain with the tide and thus be similar to other features in the flood plain. However, an important caveat to this comment is that the excavation could affect the archaeological interest and that its shape and profile should avoid too obviously an artificially engineered form.
- 6.18 A second bank would also be constructed on this option to separate Cells A and C and allowing inundation of the Foxhole valley with Cell C. This would be of a similar form and height to the existing river bank when seen from the landward side and of less significance than the closing bank.

- 6.19 The breaches through the river flood bank are indicated on Capita plan CS043802/Eng_OpB Rev 3. These would be significant locally and are of such lengths that the suggested bridging for footpaths continuity would appear to be unlikely for reasons of cost, maintenance and the anticipated continuing erosion.
- 6.20 Having regard to the Medium / High capacity of the landscape in relation to this Option and in accordance with Table 5, the magnitude of change arising from the engineering works on the Cuckmere Floodplain character area is considered to be medium adverse. Table 6 indicates that a medium magnitude of change on a landscape of exceptional value gives rise to a **Substantial** effect that would be **adverse**.
- 6.21 For the Option A (Partial Breach), the northern meander would not be severed as there would be no closing bank to Cell A with the other earthworks including flood bank raising on the eastern side being relatively localised. The second bank described for Option B separating Cells A and C would still be required but it would be on more south easterly alignment to protect Foxhole valley from inundation, linking it to Cell A.
- 6.22 The breaches through the river flood bank are indicated on Capita plan CS043802/Eng_OpA Rev 3. These would be significant locally and are of such lengths that the suggested bridging for footpaths continuity would appear to be unlikely although the route on the floodbank to Cell A would be retained. There would also be a concrete flood wall 1.1 m high along the river bank at the edge of the Golden Galleon car park.
- 6.23 The magnitude of change is considered to be low adverse which by reference to Table 6 gives rise to a **Moderate / Substantial** effect that would be **adverse**.

The Seaford to Beachy Head character area

- 6.24 For Options A and B the gradual deterioration of the timber training walls would represent a loss of elements that are not wholly uncharacteristic of the river mouth and foreshore. They are contained by the shingle banks and where exposed running out onto the foreshore appear similar to the adjacent timber groynes. However, their loss would allow a more natural river mouth to be formed which is considered beneficial and the river mouth would be self clearing. . The east beach might provide a source of material for re-nourishment (subject to access) whilst the west beach would potentially require beach nourishment, however it is assumed that all maintenance of the beach would cease. Considered against the entries in Table 5

and having regard to the high capacity, the magnitude of change is considered to be the same as for the baseline. On the basis that the river mouth stays in its present form or until it is self regulating, there would be no change in this character area. From Table 6, this gives rises to a ranking of **No effect** in terms of the significance of effect.

- 6.25 For Option A (Partial Breach), although effects on the function of the river mouth and the shingle banks are expected to be different, it is not considered that the ranking of effect would be altered from that described for Option B.

The Cuckmere Valley sides character area

- 6.26 For Option B (Full Breach) this character area would be affected on both sides of the valley by the routing of footpaths displaced by the inundation of the valley floor and the eventual loss of the floodbank footpaths (unless the breaches are to be bridged).
- 6.27 As discussed for the Baseline situation, the magnitude of change will be influenced by the footpath alignments selected and by the care taken in the detailed design, use of materials and implementation of the earthworks to set the routes in a seemingly as “natural” a location as possible.
- 6.28 The magnitude of change for Options A and B, having regard to the capacity of this character area, is considered to be minimal adverse. By reference to Table 6 this would result in a **Slight / Moderate** effect that will be **adverse**, albeit the effects will be relatively localised.

Option C (Base engineering)

6.29 For Option C (Engineered Reactivation), the main aspects involve the following:

- Raise the A259 causeway by 2m (to 5.7mOD)
- Revet the causeway's seaward slope.
- Raise the concrete road on the east side of the valley by 2.5m and continue it along the floodplain edge to the beach.
- Raise the middle section of the Vanguard Way by 2.5m (to 5-5.5m OD).
- Dredge the canoe lake down to current river bed level.
- Reconnect the meandering reach at upper and lower ends, re-establishing river flow round the meanders.
- Revet the outer bank of the river bend at Exceat Bridge.
- Backfill the 1846 cut using material from the embankments on each side.
- Excavate the floors of silted 'fossil' creeks and reconnect the creeks to the river.
- Create artificial creeks where the original creeks have been effaced.
- Raise selected areas between the creeks, creating subdued local relief where lower saltmarsh and upper saltmarsh can be generated.

Cuckmere Floodplains character area

6.30 The main engineering feature of this option is the work proposed to the A259. As noted in the consideration of capacity, raising the road by 2.0m would run across the grain of the character area reinforcing the split and disruption already caused in the natural north - south flow of the landscape of the valley floor by the present road. Raising traffic in the landscape in this way runs counter to best practice in a sensitive landscape, would be likely to have a significant adverse impact and thus would conflict with the objectives of the National Park.

6.31 Capita's plan CS043802-EN-002 Rev A indicates that the alignment might be built slightly asymmetrically to the south. Raising the embankment would remove the scrub trees and understorey on the southern embankment face that currently provides some screening of the road and traffic on the causeway. Whilst this could be replicated over time, it would further strengthen the division across the valley floor.

6.32 The southern face of the widened embankment would encroach into part of the meander to be reactivated and would need to be revetted.

- 6.33 The use of false cuttings to either side of the road to give screening could be a potential mitigation measure but only at the expense of widening the footprint and increasing the imposition of the earthwork across the valley, and would only give screening from low level views.
- 6.34 The new bridge over the Cuckmere would presumably carry two lanes thus traffic speeds may be expected to be higher. The implications of the asymmetrical alignment at the bridge are unclear.
- 6.35 The accesses to the Golden Galleon, tight to the bridge on the west side and to Litlington Road and the Country Park, both north and south of the road to the east of the valley would be significantly affected but again the implications are unclear.
- 6.36 The setting of the listed buildings at Exceat would be impaired and the medieval causeway followed by the A259 across the valley would be subsumed.
- 6.37 The revetting on the southern face of the raised road corridor would also be a significant and harsh feature although we note this is not indicated on Capita's plan.
- 6.38 The adverse effects of such an undertaking should not be underestimated.
- 6.39 Although this assessment does not consider construction effects, it is nevertheless appropriate to draw attention some of the issues this proposal raises.
- 6.40 An obvious difficulty of such a relatively significant change in vertical profile is of maintaining traffic flow although this may be allowed for by the asymmetrical alignment. There are no convenient or appropriate alternative routes. Should temporary diversions be needed, they would not be straightforward. Significant suitable fill would need to be found from outside the immediate area if dredged material from the meanders and flood banks is not suitable, thus increasing the cumulative effects of Option C.
- 6.41 In comparison to the work on the road corridor, the other earthworks in the main body of the valley floor, whilst notable and extensive, particularly the backfilling of the 1847 cut, the consequential removal of the flood banks and the excavation of the meanders, are in general scale and keeping with the intrinsic nature of the flood plain landscape. Discounting the loss of the historic interest of the cut, the removal of which does not seem to be fundamental to this option, such changes could be regarded as beneficial and are considered to be straightforward.

- 6.42 Having regard to the medium capacity of this character area and adopting a precautionary approach given the some of the uncertainties over the full implications of the road raising, the magnitude of change is considered to be high adverse. Table 6 shows that in a landscape of exceptional value this ranks as a very substantial adverse effect.

The Seaford to Beachy Head character area

- 6.43 The assumption for Option C is that impacts at the river mouth will be similar to the Baseline and Options A and B. On the basis that the river mouth stays in its present form or until it is self regulating, there would be no change in this character area. From Table 6, this gives rises to a ranking of **No effect** in terms of the significance of effect.

The Cuckmere Valley sides character area

- 6.44 For Option C (Engineered Reactivation), this character area would be affected on both sides of the valley by the routing of footpaths displaced by the inundation of the valley floor all as discussed for Option B, save that the footpaths on the flood banks would be removed as opposed to the possibility of the breaches in the banks in Options A and B being bridged.
- 6.45 Thus the same range of considerations applies as discussed for Option B in terms of the need for carefully detailed design, materials and choice of alignment.
- 6.46 Additionally it is considered that there would be effects on the valley sides character area as a consequence of the raising of the road across the flood plain. This would result from the need to achieve suitable horizontal and vertical alignments to tie the raised section of the road in with the existing route on the valley sides. This would occur in the vicinity of the Golden Galleon at the west and at Country Park at Exceat.
- 6.47 Because of the somewhat unclear implications of the works to the road a precautionary approach has again been adopted. Having regard to the capacity of this character area, the magnitude of change of Option C is considered to be medium adverse. By reference to Table 6 this would result in a **Substantial** effect that would be **adverse**.

Options D, E and F (Base engineering)

6.48 Option E (Sustain by 600mm) is described first as it involves more extensive engineering than Options F and D. Option E involves the following:

- The river floodbanks would be built up to accommodate the expected future sea level rise. Raising the height and increasing the bulk of the existing defences would counteract the increasing flood risk as sea level rises.
- River floodbanks would be made higher and wider being raised by 300mm at the beginning, with the addition of stone or concrete revetments in places vulnerable to erosion.
- In the medium term (20-50 years) the channel would be reinforced with concrete walls or sheet piling to support the second phase of bank-raising, a further 300mm to make 600mm in all, to meet the expected rise in sea level
- The training groynes at the river mouth and the groynes on the West Beach would be maintained as at present, in the long term the training walls at the river mouth will need to be replaced.
- Beach sediment would be regularly recycled from the river mouth to the West Beach to clear the mouth and re-nourish the West Beach.
- The landscape of the floodplain could be kept looking much the same as now, except that the meanders would gradually be lost through silting (though the silt could be dredged from them in order to ensure their survival).
- Confining the river between flood banks as sea level rises will lead to an increase in river volume and the erosion and destruction of the saltmarsh areas developing in the channel.

6.49 There are two other similar options, one, Option F, would raise the flood banks by 300mm and the other, Option D would maintain the existing defences. The main features of the Option F, Sustain by 300mm, are understood to be as below:

- a single raising of the flood banks by 300mm at the outset, to cater for predicted sea level rise during the next 50 years. The existing banks are seen as sound enough to accept being raised by 300mm, to cope with the raised water levels in 50 years' time as envisaged in current climate change predictions.
- To maintain a minimum crest width of 1.5m the banks would be widened locally: specifically, the short stretch of bank running along the southern edge of the old boating pool near the Golden Galleon.
- An impermeable core to the banks would need to be created (but it is not clear how that will be done).

- There would be some construction and maintenance difficulties, resulting from the narrowness of the bank crest. In spite of the narrowing of the bank crest, armouring will not be necessary, except where the main flow of the river is adjacent to the bank and where the width for flow is narrow, principally at the north end of the eastern bank.

6.50 The main features of Option D, Maintain the existing defences, are understood to be as below:

- The existing flood embankments along the river would be maintained at their present height by carrying on maintenance work as at present.
- Beach sediment would be regularly artificially recycled from the river mouth to the West Beach as at present to keep the river mouth clear of shingle and nourish the West Beach.
- Beach nourishment would be required in the future on the East Beach.
- The training walls, the river mouth and the groyne on the West Beach would be maintained as at present, although in the long term the training walls at the river mouth will need to be replaced.
- According to the EA, continuing maintenance as at present can only be short-term. As a result of climate change there will be increased numbers of storms and sea level will rise, so the risk of overtopping will increase; in time, even if maintained, the present defences will become inadequate to prevent flooding.

Cuckmere Floodplains character area

6.51 The first tranche of Option E (Sustain by 600mm) work would be to raise the floodbanks by 300 mm, increase the width of the bank top and reinforce certain areas with stone or concrete revetments. It is considered that this relatively modest scope of work would only be locally of note being a very minor alteration, and adverse. In the wider context of the floodplain character, it is likely to give rise to a negligible / minimal magnitude of change.

6.52 In a landscape of exceptional value Table 6 shows that this would rank as a **Slight / Moderate** effect that would be **adverse**. With further detail on the works and extent, this assessment could be more precisely defined.

6.53 The main engineering in this character area would be the second tranche of work to the flood banks which is anticipated to be in years 20 -50 and would involve sheet piling or concrete walls.

- 6.54 Whilst this represents a similar height increment to the first tranche, the use of concrete walls and / or sheet piling would result in a more obviously engineered and harsher landscape feature that would be likely to influence the wider character of the floodplain more than the initial capping and widening.
- 6.55 The magnitude of change arising from the second tranche is considered to be a partial loss or alteration to a key landscape feature thus it should be ranked as a medium magnitude of change that would be adverse. In a landscape of exceptional value, Table 6 shows that this would rank as a **Substantial** effect that would be **adverse**. Again, with further detail of the works, this assessment could be more precisely defined.
- 6.56 For Option F (Sustain by 300mm) it is considered that the effects would be in the same category as the first tranche of work under Option E, equating to a **Slight / Moderate** effect that would be **adverse**. With further detail of the works and extent, this assessment could be more precisely defined.
- 6.57 For Option D, Maintain the existing defences, there would be no significantly material change to the engineering, thus there would be **no effect**.

The Seaford to Beachy Head character area

- 6.58 As noted under the consideration of capacity and in the description given above, the Option E (Sustain by 600mm) works would continue to renourish the beach shingle and the timber training structures and groyne field would be renewed. Compared with the Baseline in which these training structure will deteriorate over time and disappear, in accordance with Table 5, this is considered to be a **minimal** change but one that would be **adverse**.
- 6.59 In accordance with Table 6, the significance of effect on this small character area resulting from this work equates to a slight /moderate adverse effect. However as the work would replicate what currently exists, it has been moderated and ranked as a **slight adverse effect**.
- 6.60 Assuming the same works are required under the two sub options, the effects would be as categorised above, i.e., **slight adverse effect**.

The Cuckmere Valley sides character area

- 6.61 For these Options, the need to reroute paths is assumed not to apply other than for the localised re alignment around the Cell B on Option D. However the valley floor and flood bank paths would be more frequently inundated. These options have been

ranked as No Change. Clearly, if the maintenance was stopped on Option D, the effects would be as predicted for the Baseline.

TABLE 7A Summary of Landscape Effects Assessment of Base Engineering

| Option | Value | Landscape Character Area | Capacity | Magnitude of Change | Significance of Effect at Day 1 | Notes |
|------------------------------------------------|--------------------|-------------------------------|----------------------|------------------------|--------------------------------------|---------------------------------------------------------------------------------------|
| Baseline Do Nothing | <i>Exceptional</i> | <i>Floodplain</i> | <i>High</i> | <i>No change</i> | <i>No effect</i> | <i>Effect results from changes to the valley sides by realignments of rights way</i> |
| | | <i>Seaford to Beachy Head</i> | <i>High</i> | <i>No change</i> | <i>No effect</i> | |
| | | <i>Valley sides</i> | <i>Medium</i> | <i>Minimal adverse</i> | <i>Slight / Moderate adverse</i> | |
| Option A Partial Breach | <i>Exceptional</i> | <i>Floodplain</i> | <i>Medium / High</i> | <i>Low adverse</i> | <i>Moderate/ Substantial adverse</i> | |
| | | <i>Seaford to Beachy Head</i> | <i>High</i> | <i>No Change</i> | <i>No Effect</i> | |
| | | <i>Valley sides</i> | <i>Medium / High</i> | <i>Minimal adverse</i> | <i>Slight / Moderate adverse</i> | |
| Option B Full Breach | <i>Exceptional</i> | <i>Floodplain</i> | <i>Medium</i> | <i>Medium adverse</i> | <i>Substantial adverse</i> | <i>Main effect results from the closing bank south of the Canoe Barn</i> |
| | | <i>Seaford to Beachy Head</i> | <i>High</i> | <i>No Change</i> | <i>No Effect</i> | |
| | | <i>Valley sides</i> | <i>Medium</i> | <i>Minimal adverse</i> | <i>Slight / Moderate adverse</i> | |
| Option C Engineered re-activation | <i>Exceptional</i> | <i>Floodplain</i> | <i>Medium</i> | <i>High adverse</i> | <i>Very substantial adverse</i> | <i>Most damaging Option due to raising the A259 otherwise broadly as for Option B</i> |
| | | <i>Seaford to Beachy Head</i> | <i>High</i> | <i>No Change</i> | <i>No Effect</i> | |
| | | <i>Valley sides</i> | <i>Low</i> | <i>Medium adverse</i> | <i>Substantial adverse</i> | |
| Option D Maintain the existing defences | <i>Exceptional</i> | <i>Floodplain</i> | <i>High</i> | <i>No effect</i> | <i>No effect</i> | <i>Assumed maintenance continued by others if stopped by EA.</i> |
| | | <i>Seaford to Beachy Head</i> | <i>Medium/ High</i> | <i>Minimal adverse</i> | <i>Slight adverse</i> | |
| | | <i>Valley sides</i> | <i>High</i> | <i>No effect</i> | <i>No effect</i> | |
| Option E Sustain by 600mm | <i>Exceptional</i> | <i>Floodplain</i> | <i>Medium</i> | <i>Low adverse</i> | <i>Substantial adverse*</i> | <i>*2nd tranche of raising assessed</i> |
| | | <i>Seaford to Beachy Head</i> | <i>Medium/ High</i> | <i>Minimal adverse</i> | <i>Slight adverse</i> | |
| | | <i>Valley sides</i> | <i>High</i> | <i>No effect</i> | <i>No effect</i> | |
| Option F Sustain by 300mm | <i>Exceptional</i> | <i>Floodplain</i> | <i>Medium/ High</i> | <i>Minimal adverse</i> | <i>Slight / Moderate Adverse*</i> | <i>*Assessed as the same as 1st tranche of raising for Option E</i> |
| | | <i>Seaford to Beachy Head</i> | <i>Medium/ High</i> | <i>Minimal adverse</i> | <i>Slight adverse</i> | |
| | | <i>Valley sides</i> | <i>High</i> | <i>No effect</i> | <i>No effect</i> | |

7 Assessment of land cover changes

- 7.1 Having considered the effects of the main engineering elements of the options, the assessment now reviews the effects of the predicted change in land cover.
- 7.2 In the context of this assessment, land cover refers to the surface of the land and includes grassland, water, beach, saltmarsh and mud and the changing proportions of each over time on an option by option basis.
- 7.3 Land cover also includes buildings and car parks, for example at the Canoe Barn near Exceat and at the Golden Galleon, but these are not referenced on the Capita mapping that has been used for the assessment. Similarly, the engineering elements considered in the previous part of the assessment, such as the main closing bank on Option B or the raising of the A259 causeway on Option C are not detailed or included in this part of the assessment.
- 7.4 The consideration of the land cover changes follows the work of Capita and assesses changes to the four component parts of the Cuckmere floodplain character area, the river channel and Cells A, B and C. A simple key diagram of these areas is shown in **Figure 2** and on each of **Figures 3, 4 and 5** which have been set out to show all the options compared with the baseline for each of the three epochs.
- 7.5 In this way a clear impression can be gained of the often subtle differences between options in any one epoch. However, it must be borne in mind that the three epochs cover a very significant time span. Thus, whether the differences between epochs for any particular option are either seemingly subtle or marked, they will only have evolved over many years and the assessment findings need to be viewed in this light. Save for the existing Baseline situation, no option can be considered to be truly representative of a “Day One” change.
- 7.6 As will be appreciated from the consideration of landscape capacity, the changes predicted for some of the options would return the valley floor to its historic geomorphological form. That change may be considered by some to be a negative or adverse landscape effect. Others will take the view that it is no more than a natural or semi natural process occurring that is not intrinsically unattractive and may indeed result in a highly attractive but different landscape. This could be despite there being associated impacts that may be objected to, such as loss of grazing, loss of or changes to rights of way, loss of the meanders and, of course, effects on the cultural heritage of the area.

- 7.7 However, what is certain is that the landscape that is so widely enjoyed and cherished today will change in any event. The predictions for the evolving Baseline (Do Nothing), against which the other options are considered, demonstrate this.
- 7.8 Similarly, it will be seen that by continuing to sustain the flood banks of the river, ultimately the meanders and the attractive subtleties of the floodplain landform will be lost (See Option E Sustain by 600mm, and Option F Sustain by 300mm) resulting in a less interesting, more uniform and somewhat sterile landscape, assuming no other intervention to remove silt is undertaken. Thus there is no practical scenario in which some currently attractive facet of the valley landscape will not be affected detrimentally or lost. Similar considerations will apply to the cultural heritage interests in the valley. Conversely, ecological interest is likely to be significantly enhanced, other than by Options D, E and F.
- 7.9 It will be seen by reference to the note at **Table 6** and at paragraph 5.31 that rankings of adverse or beneficial have not been applied in this land cover assessment. This is because the loss of one land cover or attribute is being replaced by another one that is considered to be intrinsically in character. The land cover assessment is summarised in **Table 7B** and the individual epoch tables are included at **Appendix 1** as **Tables 7C, D and E**.

2010-2030

- 7.10 The baseline and option predictions for this epoch are shown on **Figure 3** and the land cover changes described in **Table 7C** which also gives a ranking for the Magnitude of Change and the Significance of Effect based on **Tables 5 and 6**.
- 7.11 From these it will be seen that the baseline situation, i.e. as at present, would essentially be shared with Options D, E and F. The land cover is largely grassland with limited mud and saltmarsh along the river channel on the Baseline and Option D but with more mud in the river channel for Options E and F. Water remains in the meanders in Cell A and the lagoon in Cell C and mud in the small creeks and channels in Cell B.
- 7.12 The most significant differences in land cover would occur on Option C. The cut off river meanders in Cell A would be reactivated by excavating them down 3.0m to existing river bed levels to create a tidal river channel and the straight cut of the existing river channel would be backfilled. This would reintroduce the tidal character of the river to Cell A by the main access into the Seven Sisters County Park. Other flood banks would be removed and former creeks opened up. Cell B to the west of the river and Foxhole Valley to the east would become an extensive area of mud flat

extending across the valley. Mud flats would also be developing in Cell C. These changes are considered to rank as high, giving rise to a **very substantial effect**.

- 7.13 This can be contrasted with Options A and B in which Cell B would be well on the way to developing as a saltmarsh which would also have started to establish in Foxhole Valley on Option B. On this option there would also be a large area of mud flat associated with the deepening in Cell C. These changes have been ranked as medium giving rise to a **substantial effect**.

2031-2060

- 7.14 The baseline and option predictions for this epoch are shown on **Figure 4** and the land cover changes described in **Table 7 D**.
- 7.15 By reference to these it will be seen that the Baseline situation for this epoch would be little changed in overall terms from the original Baseline, the changes being the gradual evolution from muddy creeks in Cell B to water filled creeks with only a small incursion of saltmarsh likely to occur at the northern edge of Cell B at the fringes of a mud bank.
- 7.16 The extensive saltmarsh established in Cell B in the earlier epoch for Options A and B would remain, and saltmarsh would be well established in Cell C on these options.
- 7.17 Foxhole valley would remain as grassland for all options other than Option B, where it would remain as saltmarsh, and Option C, where it would be mud flats.
- 7.18 The river meanders would be mud lined in lieu of water filled on Option A, Option E and Option F.
- 7.19 Option C would not have changed so dramatically as it did in the first epoch with the area of mud flats being broadly similar. The river meanders would have migrated cutting off the Canoe Barn and car park from the Country Park access and areas of saltmarsh would now be establishing in Cell B. All the grassland would have gone from Cell C which would be largely mud flat with some saltmarsh and the existing lagoon would still be water filled. However, by comparison with the Baseline, the land cover changes on Option C are still considered to be more significant than those that are predicted to have occurred on other options in this epoch. Thus they have again been ranked as high change resulting in **very substantial effect**.

- 7.20 The baseline and option predictions for this epoch are shown on **Figure 5** and the land cover changes described in **Table 7E**.
- 7.21 From these it will be seen that the Baseline situation for this epoch would be substantially changed. The saltmarsh in the river channel would have been lost to mud flat, Cell A would have developed into saltmarsh at its southern end and the river meanders would have largely disappeared. Foxhole valley would also have developed into saltmarsh. Cell B would have developed into saltmarsh with a central mud bank dividing it, each portion of saltmarsh to north and south being further characterised by narrow dendritic mud creeks and gullies. North of the lagoon, Cell C would also have developed into saltmarsh.
- 7.22 This overall pattern of land cover in the Baseline would be broadly similar at this stage to that predicted for Options A, B and C. The principal differences are predicted to be that in Cell A, Option A would remain as grassland with grass filled meanders and with grassland also remaining in Foxhole valley, whilst, for Option C, the saltmarsh would be the most extensive of any option, reaching the northern extremity of Cell A at the Canoe Barn and car park. On this option Cell A would also still be distinguished by the reactivated river meanders and that the lagoon in Cell C would have silted up to form a mud bank.
- 7.23 For Options D, E and F, Cells A, B and C are predicted to be generally retained as grassland but with no water filled or mud channels, save for the northern half of Cell B on Option D which would have developed into a large area of mud bank with the southern portion of grassland permeated by muddy creeks and hollows. The southern part of the river channel Option D would be lined with saltmarsh and mud banks. This contrasts with the absence of saltmarsh on Option E and Option F, which would both have a seemingly wider, water filled, river channel.
- 7.24 Foxhole valley would remain as grassland for Options D, E, and F and, as noted above, for Option A.
- 7.25 The river meanders would be lost or reduced other than for Option C and Option D.
- 7.26 Option E and Option F result to all intents and purposes in an identical land cover outcome. The river channel would be wider at its southern end and the Cells A, B and C would have lost their water or mud lined features. This can be contrasted with Option D in which the river channel is predicted to have both mud bank and

saltmarsh, The meanders in Cell A remain water filled and a large part of Cell B would have developed into mud flat.

Land Cover Summary

- 7.27 The significance of effects assessments from the three epochs above have been incorporated into a summary effects table, **Table 7B**.
- 7.28 For clarity, the effects assessed as significant have been highlighted in red.
- 7.29 This shows that the most notable changes in land cover throughout the three epochs occur on Option C, the effects during the first epoch being particularly notable and resulting from a large part of the floodplain having developed into an area of intertidal mud flats.
- 7.30 The table indicates that there would be little difference in the third epoch between the Baseline and Option B which most closely correlates with the Baseline land cover at that time. Options C and A would be only slightly different. In Cell A, Option A would remain grassland but with no meanders and Option C, in which the meanders would be have tidal flow river and with more extensive mud flat in Cell C.
- 7.31 This table also shows that there would be some substantial effects in the last epoch arising on Options E and F. However, it must be remembered that for these Options, this comparison is made against the changed baseline predicted for that epoch. In actual fact, of all the options, these would be the least changed in land cover terms when compared to the existing baseline, albeit they would still have lost landscape features that are highly valued in the existing baseline landscape.

TABLE 7B Summary of Significance of Effect of Land Cover changes over Epochs

| | | Significance of Effect of land cover changes over Epochs Refer to Appendix 1 Tables 7C - E | | |
|-----------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Option | Element | Current Baseline land cover Figure 3 | Baseline land cover 2031-2060 Figure 4 | Baseline land cover 2061-2110 Figure 5 |
| Baseline Do Nothing | River channel | No effect | No effect | No effect |
| | Cell A | No effect | No effect | No effect |
| | Cell B | No effect | No effect | No effect |
| | Cell C | No effect | No effect | No effect |
| | | Compared to Baseline 2010-2030 | Compared to 2031-2060 Baseline | Compared to 2061-2110 Baseline |
| Option A Partial Breach | River channel | Slight effect | Slight effect | Slight effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | Substantial effect | Moderate effect | No effect |
| | Cell C | No effect | Moderate effect | No effect |
| Option B Full Breach | River channel | Slight effect | Moderate effect | Slight effect |
| | Cell A | Slight effect | Moderate effect | No effect |
| | Cell B | Substantial effect | Moderate effect | No effect |
| | Cell C | Moderate effect | Moderate effect | No effect |
| Option C Engineered React-ivation | River channel and Cell A | Very Substantial effect | Very Substantial effect | Moderate effect |
| | Cell B | Very Substantial effect | Very Substantial effect | No effect |
| | Cell C | Very Substantial effect | Very Substantial effect | Slight effect |
| Option D Maintain existing defences | River channel | No effect | No effect | Moderate effect |
| | Cell A | No effect | Slight effect | Moderate effect |
| | Cell B | No effect | Slight effect | Moderate effect |
| | Cell C | No effect | Slight effect | Moderate effect |
| Option E Raise by 600mm | River channel | Slight effect | Moderate effect | Moderate effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | No effect | Slight effect | Substantial effect |
| | Cell C | No effect | Slight effect | Moderate effect |
| Option F Raise by 300mm | River channel | Slight effect | Moderate effect | Substantial effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | No effect | Slight effect | Substantial effect |
| | Cell C | No effect | Slight effect | Moderate effect |

8. Visual Effects

8.1 The visual effects assessment over the three epochs has adopted the visual receptor sensitivities shown in **Table 8**. Examples of typical receptor sensitivities are recorded in the left hand column and the specific ones used for the assessment are shown in the right hand column.

TABLE 8A *Visual Receptor Sensitivity*

| TYPICAL VISUAL RECEPTOR SENSITIVITY | RANGE of RANKING | RECEPTOR SENSITIVITY ADOPTED IN ASSESSMENT |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EG: some residential properties and most rural public rights of way in National Parks, Areas of Outstanding Natural Beauty, Conservation Areas and other sensitive locations, views from moving vehicles, all where view can be considered to be a primary feature / main aspect. | Exceptional ↓ High | Exceptional - Receptors on cliff tops to either side of Cuckmere valley, the beach / foreshore and to viewpoint at High and Over. High - Pedestrians and equestrians on rural rights of way, permissive routes etc., Seven Sisters Country Park visitors and recreational and educational users, those on CROW open access land or on rural lanes in the National Park. Residents in isolated rural dwellings. |
| EG: some residential properties, recreational facilities, some rural and semi rural public rights of way, views from commercial premises or from moving vehicles, all where view is occasional / glimpsed / secondary feature. | ↓ Medium | Medium - Pedestrians and equestrians on suburban /rural fringe rights of way and on A259 corridor and including visitors at Golden Galleon Public House. Residents in dwellings sited to take advantage of views but which are set in settlement or settlement edge locations. |
| EG: places of work, most suburban/ urban residential properties, some rural and most urban public rights of way, views from moving vehicles, where view is glimpsed / infrequent or adjacent features already detract or largely obscure. | ↓ Low | Low - Pedestrians and equestrians on roads other than rural lanes. Vehicle Travellers. Generally, residents in settlements. Agricultural workers. |

8.2 In addition to the receptor sensitivity, the magnitude of change is also of relevance as well as the number of viewers exposed to the views.

8.3 Typical thresholds are set out below in **Table 8B**.

TABLE 8B *Thresholds- Visual Magnitude of Change*

| RANKING | MAGNITUDE OF CHANGE (Day 1 excluding proposed mitigation) |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High | EG: the majority of viewers affected / major change(s) in open direct close view or notable change in more distant view. Could neutral, adverse or beneficial. |
| ↕ Medium | EG: many viewers affected / moderate change(s) in view, could be some fragmentation of view or sequence of views. Could be neutral, adverse or beneficial. |
| ↕ Low | EG: few viewers affected / minor change(s) in view or very small changes in wide scale /panoramic view or oblique / fragmented views etc. Could be neutral, adverse or beneficial. |
| ↕ Minimal | EG: few viewers affected / change(s) in view barely discernible. Could be neutral adverse or beneficial,- but usually neutral. |

8.4 The main viewpoints identified in the original BR report are considered together with the more distant viewpoint to the north at High and Over, this being in recognition that the visual envelope extends north of the A259 at Exceat Bridge. No other viewpoints to the north have been considered although it should be noted that Option C would be seen from valley floor locations north of the A259.

8.5 Most receptor sensitivity has been ranked as being high. However, the ranking of exceptional has been given to receptors at the viewpoint at High and Over, from which a large sweep of countryside in which the Cuckmere Valley is an important component can be viewed, as well as receptors on the sea cliffs and foreshore at the river mouth.

8.6 In terms of the views from the beaches or from the sea, the recent work by Capita indicates that for the Baseline, the training walls will deteriorate over time and the river mouth will widen and become more mobile, a scenario that will be shared by Options A, B and C. The visual effects for these options have thus been ranked as no effect. For Options D, E and F, the training walls are to be replaced over time thus the appearance of the river mouth will remain essentially in its current state. In the first epoch, all options have been ranked as no effect, the replacement work on Options D, E and F having been assumed to take place in the second epoch.

8.7 As for the land cover assessment, the options are considered grouped for each epoch. Again, it must be born in mind that other than for the engineering elements and the immediate consequential effects of tidal inundation that will be noted initially, most obviously in Cell B on Options A, B and C, the visual changes being assessed

will generally not happen quickly. Thus the effects indicated in the tables should be judged as a simplified comparative snap shot rather than being representative of the effects that will actually occur at any time and for this reason should be regarded as indicative only.

- 8.8 Also, personal preferences for landscape views will have a bearing on an individual's perception. Any change to a well known attractive view is likely to be considered by most observers to be detrimental, despite the change being intrinsically in character and appropriate in terms of the landscape context of the view. The second approach has been adopted in this assessment although it is acknowledged that some aspects of the changes will be detrimental, for example as increasingly saline conditions result in vegetation dying off.
- 8.9 Despite this, over time it is considered that there would be an overall visual balance in favour of proposals that evolve towards a "natural" outcome over those that seek to limit change because, as noted in the previous section, the valley will change in any event. The consequential effects of any changes will also need to be considered in terms of the cultural heritage, ecological and other interests before arriving at an overall conclusion as to the environmental advantages and disadvantages of any particular proposal.

2010-2030

- 8.10 The baseline and option predictions for this epoch are shown on **Figure 3** and the visual Magnitude of Change and the Significance of Effect based on **Tables 5** and **6** are ranked for each viewpoint and set out in **Appendix 2** at **Table 8C**.
- 8.11 In this first epoch the most obvious changes will be those arising from the major engineering works, i.e. the closing bank at the north of Cell A and the new lagoon area on Option B, and the works to the A259 and the river channel and meanders on Option C. Overall these visual changes would be adverse and could only be mitigated to varying degrees over time by careful design and as the landscape evolves.
- 8.12 The more minor banking variations relating to Foxhole Valley on Options A and B together with the breaches in the flood walls on these options would be visually notable and adverse but at a more local scale.
- 8.13 For Option C, the engineering works will physically remove existing rights of way along the floodbanks and disrupt the permissive route on the eastern flood plain.
- 8.14 For Options A and B, these views will also be lost as the balance of the floodbank paths are eroded, unless bridges are provided to cross the breaches. This is

considered to be unlikely and impractical as the banks will continue to erode and the bridges will need continuous replacement. These visual effects (loss of views) are considered to be adverse and could not be mitigated. The tidal inundation into Cell B on Options A and B these options would be a notable early visual change that would probably be regarded in the immediate short term as adverse for many viewpoints but by the end of the epoch is more likely to be regarded as neutral if not beneficial as it will have become more “natural” in its functioning and appearance. For Option C, the effects of inundation would be even more marked and would take longer to be accepted as beneficial.

- 8.15 The engineering changes for Options D, E and F in this epoch are none or minimal. It is considered that the visual effects of the 300mm raising and localised widening on Options E and F, whilst clearly discernible from the affected floodbank paths, can for all intents and purposes be discounted as a determining visual issue. Similarly the southern end of the river channel is predicted to have increased mud banks in lieu of the Baseline saltmarsh but, visually, this is a minor change contained within the river channel.
- 8.16 The other visual changes will arise from the engineering works. The most notable will again be on Option C which, whilst it would have removed the floodbank viewpoints, adversely affecting the range of views available, would have opened up the low level views across the floor of the valley and would have reactivated the meanders. This is considered to give rise to a visual benefit. However, whilst the raising the A259 is considered to be a benefit for users of the road, it would give rise to very significant adverse effects from many other viewpoints.
- 8.17 For Options A, B and C, the more common inundations in Cell B will start to have a visual effect with standing water noted more frequently. This will give rise to consequential changes towards more saline tolerant vegetation from the existing “green” grass pasture land, and areas of saltmarsh are predicted to have established on Options A and B.
- 8.18 For Option C the change in Cell B and C will most obvious with a large expanse of mud flats predicted, accompanied by regular inundation. Whilst this change it is not considered to be out of character in an estuarine landscape, the change would be so extensive and abrupt compared to the subtleties of many of the other changes that it has been regarded as generally giving rise to **substantial adverse effects** in this epoch for many viewpoints.
- 8.19 In terms of other adverse visual effects in this early epoch, these are considered to result directly from the engineering works. Overall, it is considered that Option C

would give rise to significantly more and greater adverse visual effects than other options. This results from the intrusive work to the A259 corridor, the harm of which would only be offset to some degree by the potential beneficial removal of the floodbanks and reactivation of the meanders. This would be followed by Option B which has the significant northern earthwork in Cell A and the excavation in Cell C which could be a harsh feature when exposed at low tide. The breaches in the floodbanks in Options A and B and the closing banks to Foxhole Valley would be notable but not of such visual significance as the other engineering works.

2031-2060

- 8.20 The baseline and option predictions for this epoch are shown on **Figure 4** and the visual Magnitude of Change and the Significance of Effect based on Tables 5 and 6 are ranked for each viewpoint and set out in **Table 8D**.
- 8.21 In this epoch the most obvious changes will arise from the continuing development of saltmarsh in Cell B but also in Cell C for Options A and B. On Option C the mud banks will have extended further into Cell C whilst in Cell B, the earlier mud flats will be establishing with pockets of saltmarsh as the sediment builds up.
- 8.22 Visual effects will still be generally ranked as **substantial adverse effects** for elements of Option C but it has been assumed that some mitigation from planting on the raised A259 embankment would now be starting to be effective. However there would have been a significant but localised change on this option as the meanders are predicted to have cut off the Canoe Barn and car park. The other notable changes will be the presumed loss by abandonment of the floodbank footpaths for Option A and B and the increasing proneness of some of the lower lying permissive routes to be cut off by periodic inundation. This will further limit the visual enjoyment of the valley by recreational users and is considered to be an adverse visual effect. Water lying on the pasture land will be a more common feature.
- 8.23 In this epoch changes to the river meanders for Options A, E and F will be noted as they silt up and become less distinct. However, this reduction in visual interest would be likely to be offset by the new features developing elsewhere in terms of the salt marsh, creeks and mud flats.
- 8.24 The second tranche of bank raising and associated strengthening envisaged under Option B will occur during this period. This is considered to be visually adverse although it would be of much less visual significance than the major works undertaken in the first epoch.

2061-2110

- 8.25 The baseline and option predictions for this epoch are shown on **Figure 5** and the visual Magnitude of Change and the Significance of Effect based on Tables 5 and 6 are ranked for each viewpoint and set out in **Table 8E**.
- 8.26 In this epoch Option A, B and C are predicted to have developed to a landscape that overall would be very similar to the Baseline predicted for this epoch.
- 8.27 There would be minor differences in the spread of saltmarsh in Cell A, with Option A being predicted to be all grassland with no relic meanders. The Baseline and Option B would be essentially identical other than for the closing bank, whilst on Option C the river remains reactivated though the cell. Also, on Option C the existing lagoon in Cell C is predicted to have become a mud flat. The effectiveness of any mitigation planting on the south face of the raised road embankment may be compromised by saline intrusion.
- 8.28 Whilst there are a range of minor differences, overall relatively little distinguishes the predicted outcome visually, save for the differences arising from the base engineering which would remain most intrusive on Option C.
- 8.29 By contrast, Options E and F and to a lesser extent Option D would superficially appear similar to the current situation but much of the subtlety and thus attractiveness of the valley floor is predicted to have been lost by the relic meanders and creeks silting up. It is considered that this would be an adverse visual effect compared to both the present day situation and also to the long term predicted Baseline outcome.

9 Summary and Conclusions

- 9.1 This report considers various options for flood risk management of the Cuckmere River and follows on from the Landscape Baseline Statement. This earlier statement was prepared to update the landscape baseline information from an older report dating back to 2006 prepared by Jacobs Babbie (BR) for the Environment Agency (EA).
- 9.2 The main change to have occurred in the landscape planning context is the formal designation of the South Downs National Park, due to take full effect in April 2011. The National Park Authority will take over responsibility for planning decisions. As well as having a duty to conserve and enhance natural beauty, the National Park designation confers the additional purpose of fostering recreational use.
- 9.3 In addition to identifying the South Down National Park as an important change in the baseline of the area, the report also recorded the preparation of the South Downs Integrated Landscape Character Assessment as a relevant document. This report has a finer grained analysis of the component character areas within the study area and has been adopted in lieu of the characterisation in the BR work.
- 9.4 The Landscape Baseline Statement considered the landscape importance of the Coastguard Cottages and the Cable House and concluded that the former and probably the latter should be considered as having high landscape sensitivity.
- 9.5 This finding was supported by work undertaken by Oxford Archaeology who concluded that:
- the overall historic landscape is considered to be of National Importance;
 - the historic building resource, including the upstanding military structures, is considered to be of National Importance, and that;
 - whilst the true archaeological potential is unknown, based on current knowledge and including the paleo-archaeological resource, the archaeological resource is considered to be of National Importance.
- 9.6 The options considered in this assessment report were identified by the Cuckmere Pathfinder Community Forum. They are:

Option A: Partial breach managed realignment (EA Option 3a)
Option B: Full breach managed realignment (EA option 3b)
Option C: Engineered reactivation of meanders & meandering creeks
Option D: Maintain the existing defences (EA Option 2a)
Option E: Sustain the existing defences (EA Option 2b)
Option F: Sustain the existing defences

- 9.7 Options C and F were not considered in the BR and have come out of later consultation with the community.
- 9.8 The assessment compares the Options with the Baseline (Do nothing) i.e., the current situation of the Environment Agency withdrawing maintenance of the defences from April 2011 but continuing to clear the river mouth for either 15 years or until the river becomes self regulating. The beach and the river mouth are assumed to remain in their current positions and form.
- 9.9 In addition to the early work in the BR, Capita Symonds have undertaken extensive modelling of the Baseline and the Options and their report, "Cuckmere Estuary Option Impact Study Options Analysis Report March 2011", has informed this assessment.
- 9.10 For assessment purposes the Options were grouped adopting the variant likely to have the most changes as the main scheme to be assessed:
- **Option B** Full breach managed realignment with comments on **Option A** Partial breach.
 - **Option C** Engineered reactivation of meanders & meandering creeks.
 - **Option E** Sustain by 600mm the existing defences (EA Option 2b) with comments on **Option F**, Sustain by 300mm and **Option D** Maintain the existing defences (EA Option 2a).
- 9.11 The assessment does not consider the effects of the options on cultural significance other than by acknowledging it is of National Interest. A separate cultural heritage assessment is being prepared. This assessment has solely sought to consider the landscape and visual changes whilst acknowledging that any change, even as envisaged by the "sustain and maintain" options, will result in some features of interest being lost.
- 9.12 The assessment methodology is set out in a series of Tables and considers first Landscape Value and Landscape Capacity.
- 9.13 In terms of the Landscape Value, the scenic qualities of the area are well known, including the iconic and dramatic Seven Sisters white chalk cliffs to the east and Seaford Head to the west. These are backed by the rolling whaleback South Downs

chalkland and all of them contrast with the more intimate appeal of the Cuckmere river meanders in the valley floor. The area is largely unspoilt by significant landscape or visual detractors and together with the rich cultural heritage of the area combine to form a landscape that epitomises one of the defining landscapes of Britain.

- 9.14 If considered in isolation, the A259 corridor, the immediate confines of the Golden Galleon Public House and the Country Park parking could be considered to erode value locally but not to such an extent as to detract from the overall intrinsic appeal of the area. It is considered that the Landscape Value should be regarded as exceptional, this applying equally to the component character areas.
- 9.15 Landscape Capacity is the degree to which a particular landscape can accommodate change. It varies with a range of attributes including the pattern, scale and value of the landscape, visual enclosure / openness, location of visual receptors and the scope or appropriateness of mitigation. It has been considered on a character area basis.
- 9.16 By their very nature estuaries are places of transition between land and sea. The Baseline prediction is that the existing landscape would revert over time to become an intertidal zone of saltmarsh and mud flat i.e. what it was before land was won from the sea. Thus the Landscape Capacity for the predicted Baseline is regarded as high for the Cuckmere Floodplain character area, discounting the cultural interest. However, assuming that public rights of way would eventually be rerouted, there would be some capacity issues arising on the Valley Sides character area.
- 9.17 The Landscape Capacity for the options has been considered in the same way, by reference to their intrinsic engineering elements. This shows that the Landscape Capacity is least for Option C. This is because of the works to the A259 corridor.
- 9.18 The assessment then compares the landscape effects arising from the Baseline with the engineering effects for each Option on each character area by considering Magnitude of Change and Significance of Effect from the defined criteria set out in the methodology. The findings are summarised on Table 7A which is also reproduced below.
- 9.19 Adopting a precautionary approach with regard to some of the implications of raising the A259, it is considered that Option C would give rise to a **very substantial adverse effect** in the Cuckmere Floodplain character area and a **substantial adverse effect** in the Cuckmere Valley Sides character area. These effects largely result from the work envisaged to the A259 corridor, rather than the extensive work to the remove the flood banks and open up the meanders.

9.20 Option B is considered to give rise to a **substantial adverse effect** on the Cuckmere Floodplain character area resulting in the main from the northern closing bank in Cell A, the deepening of the channel near Cell C. It would have a **slight / moderate** adverse effect on the Cuckmere Valley Sides character area resulting from path relocations.

TABLE 7A Summary of Landscape Effects Assessment of Base Engineering

| Option | Value | Landscape Character Area | Capacity | Magnitude of Change | Significance of Effect at Day 1 | Notes |
|------------------------------------------------|-------------|--------------------------|-----------------|---------------------|----------------------------------|--------------------------------------------------------------------------------|
| Baseline Do Nothing | Exceptional | Floodplain | High | No change | No effect | Effect results from changes to the valley sides by realignments of rights way |
| | | Seaford to Beachy Head | High | No change | No effect | |
| | | Valley sides | Medium | Minimal adverse | Slight / Moderate adverse | |
| Option A Partial Breach | Exceptional | Floodplain | Medium / High | Low adverse | Moderate/ Substantial adverse | |
| | | Seaford to Beachy Head | High | No change | No effect | |
| | | Valley sides | Medium / High | Minimal adverse | Slight / Moderate adverse | |
| Option B Full Breach | Exceptional | Floodplain | Medium | Medium adverse | Substantial adverse | Main effect results from the closing bank south of the Canoe Barn |
| | | Seaford to Beachy Head | High | No change | No effect | |
| | | Valley sides | Medium | Minimal adverse | Slight / Moderate adverse | |
| Option C Engineered React-ivation | Exceptional | Floodplain | Medium | High adverse | Very substantial adverse | Most damaging Option due to raising the A259 otherwise broadly as for Option B |
| | | Seaford to Beachy Head | High | No change | No effect | |
| | | Valley sides | Low | Medium adverse | Substantial adverse | |
| Option D Maintain the existing defences | Exceptional | Floodplain | High | No effect | No effect | Assumed maintenance continued by others if stopped by EA. |
| | | Seaford to Beachy Head | Medium/ High | Minimal adverse | Slight adverse | |
| | | Valley sides | High | No effect | No effect | |
| Option E Sustain by 600mm | Exceptional | Floodplain | Medium | Low adverse | Substantial adverse* | *2 nd tranche of raising assessed |
| | | Seaford to Beachy Head | Medium/ High | Minimal adverse | Slight adverse | |
| | | Valley sides | High | No effect | No effect | |
| Option F Sustain by 300mm | Exceptional | Floodplain | Medium/ High | Minimal adverse | Slight /Moderate Adverse* | *Assessed as the same as 1 st tranche of raising for Option E |
| | | Seaford to Beachy Head | Medium/ High | Minimal adverse | Slight adverse | |
| | | Valley sides | High | No effect | No effect | |

9.21 Other Options would be less damaging in terms of the engineering input required. It will be noted that the Baseline has been ranked as having a **slight / moderate**

adverse effect on the Cuckmere Valley Sides character area as it has been assumed that the path relocations proposed for Options C and B would also apply in time.

9.22 The changes in land cover predicted in the work undertaken by Capita have also been considered and are summarised in Table 7B, which is also reproduced below. This table does not rank effects as either adverse or beneficial as, in landscape terms, the changes predicted to occur for the Baseline are considered to be appropriate given both the capacity of the landscape and its context.

TABLE 7B Summary of Significance of Effect of Land Cover changes over Epochs

| | | Significance of Effect of land cover changes over Epochs Refer to Appendix 1 Tables 7C - E | | |
|-----------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Option | Element | Current Baseline land cover Figure 3 | Baseline land cover 2031-2060 Figure 4 | Baseline land cover 2061-2110 Figure 5 |
| Baseline Do Nothing | River channel | No effect | No effect | No effect |
| | Cell A | No effect | No effect | No effect |
| | Cell B | No effect | No effect | No effect |
| | Cell C | No effect | No effect | No effect |
| | | Compared to Baseline 2010-2030 | Compared to 2031-2060 Baseline | Compared to 2061-2110 Baseline |
| Option A Partial Breach | River channel | Slight effect | Slight effect | Slight effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | Substantial effect | Moderate effect | No effect |
| | Cell C | No effect | Moderate effect | No effect |
| Option B Full Breach | River channel | Slight effect | Moderate effect | Slight effect |
| | Cell A | Slight effect | Moderate effect | No effect |
| | Cell B | Substantial effect | Moderate effect | No effect |
| | Cell C | Moderate effect | Moderate effect | No effect |
| Option C Engineered Reactivation | River channel and Cell A | Very Substantial effect | Very Substantial effect | Moderate effect |
| | Cell B | Very Substantial effect | Very Substantial effect | No effect |
| | Cell C | Very Substantial effect | Very Substantial effect | Slight effect |
| Option D Maintain existing defences | River channel | No effect | No effect | Moderate effect |
| | Cell A | No effect | Slight effect | Moderate effect |
| | Cell B | No effect | Slight effect | Moderate effect |
| | Cell C | No effect | Slight effect | Moderate effect |
| Option E Raise by 600mm | River channel | Slight effect | Moderate effect | Moderate effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | No effect | Slight effect | Substantial effect |
| | Cell C | No effect | Slight effect | Moderate effect |
| Option F Raise by 300mm | River channel | Slight effect | Moderate effect | Substantial effect |
| | Cell A | No effect | Moderate effect | Moderate effect |
| | Cell B | No effect | Slight effect | Substantial effect |
| | Cell C | No effect | Slight effect | Moderate effect |

9.23 This shows that the most notable changes in land cover throughout the three epochs occur on Option C, the effects during the first epoch being particularly extensive and resulting from a large part of the floodplain having developed into an area of intertidal mud flats.

- 9.24 The table indicates that there would be little difference in the third epoch between the Baseline and Option B which most closely correlates with the Baseline land cover at that time. Options C and A would be only slightly different. In Cell A, Option A would remain grassland but with no meanders and whilst on Option C, the meanders would be a distinguishing feature and there would be a more extensive mud flat in Cell C compared to the standing water in the Baseline and Options A and B.
- 9.25 This table also shows that there would be some substantial effects in the last epoch arising on Options E and F. However, it must be remembered that for these Options, this comparison is made against the changed baseline predicted for that epoch. In actual fact, of all the options, these would be the least changed in land cover terms when compared to the existing baseline, albeit they would still have lost landscape features that are highly valued in the existing baseline landscape.
- 9.26 The visual effects assessment has considered the effects of the options for each epoch for a range of viewpoints compared with the predicted baseline for that epoch. Receptor sensitivity has generally been regarded as high other than at Cliff End, Footpath 22 between South Barn the Haven and at High and Over which have all been ranked as exceptional. Road users on the A259 and visitors to the Golden Galleon Public House and car park have been ranked as having medium sensitivity.
- 9.27 In the first epoch the assessment indicates that Option C would give rise to the most **extensive adverse visual effects** for the largest number of viewpoints. This is a result both of the changes to the A259, which would be very prominent, and also the sudden and seemingly fundamental change in the land cover identified above. The scale and pace of change are such that the effect of what ultimately would be an appropriate land cover, has thus been regarded as adverse. This option would also remove the flood bank paths resulting in a loss of viewing opportunities, itself an adverse affect that could not be mitigated.
- 9.28 Option B would also give rise to **some adverse effects** but of a significantly lower magnitude than anticipated for Option C. On Option B the closing bank near the canoe barn, the deepening of the channel and the formation of the Foxhole valley bank and the breaches would all give rise to adverse visual effects that in this epoch are considered likely to rank equally with the effects arising from the inundation in Cell B.
- 9.29 Option A would have **less adverse visual effects** than Option B as a result of the reduced earthworks but the visual effects in Cell B would be similar and initially adverse.

- 9.30 Over the following two epochs, the Baseline evolves towards the land cover established earlier in Options C and B, and to a lesser extent in Option A, such that there is relatively little overall visual difference in land cover. However there would still be the remaining adverse effects arising from the initial engineering on these Options which could not be wholly mitigated.
- 9.31 There would be minor differences in the spread of saltmarsh in Cell A, with Option A being predicted to be all grassland with no relic meanders. The Baseline and Option B would be essentially identical other than for the closing bank, whilst on Option C the river is reactivated through the cell. Also, on Option C the existing lagoon in Cell C is predicted to have become a mud flat.
- 9.32 By contrast, Options E and F and to a lesser extent Option D would superficially appear similar to the current situation but much of the subtlety and thus attractiveness of the valley floor is predicted to have been lost by the relic meanders and creeks silting up. It is considered that this would be an **adverse visual effect** compared both to the present day situation and to the longer term predicted Baseline outcome.

Conclusion

- 9.33 In terms of ranking the Options relative to the outcome predicted for the Baseline, Option B correlates most closely, followed by Option A. Option B has a minor additional visual benefit in that the canoe barn car park and part of the former meander can be kept and screened from the main part of Cell A. However, the closing bank would itself remain an intrusive element. On Option A (and the Baseline) whilst the car park and canoe barn would be retained, there would be no meanders.
- 9.34 For precautionary reasons, it is considered that Option C should not be supported in its present form because of its anticipated significantly adverse landscape and visual effects resulting from the works envisaged for the A259, the implications of which need to be more fully investigated. The predicted loss or isolation of the canoe barn and car park is also a landscape disadvantage in the recreational context of the National Park. The particularly extensive early changes in land cover predicted for this Option, whilst ultimately similar to the outcome predicted for the Baseline, are likely to be regarded as more visually adverse in the interim period compared with the other options.
- 9.35 However, the reactivation of the river meanders is considered to be a benefit of Option C in the scheme in the longer term. The possibility of adopting the closing bank as proposed for Option B and diverting the river along the south side to reconnect to the south of the canoe barn could be considered, together with the

retention of the defunct cut channel the floodbanks being left to erode naturally overtime.

- 9.36 Options D, E and F are least favoured as the resultant landscape and visual quality is considered likely to be reduced both by comparison to what currently exists and also when considered against the landscape and visual appeal of the Baseline prediction. Option E has the benefit of maintaining the extent of the public rights of way network.
- 9.37 Overall, in landscape and visual terms the Baseline prediction at Epoch 2061 -2110 is to be slightly preferred over Option B because of the residual adverse effects of the closing bank.

GLOSSARY

[generally adopting the terms and definitions used in the Guidelines for Landscape and Visual Impact Assessment, Second Edition, 2002 by the Landscape Institute with the Institute of Environmental Management and Assessment and including the European Landscape Convention (ELC) definition of landscape.]

Analysis (landscape)

The process of breaking the landscape down into its component parts to understand how it is made up.

Assessment (landscape)

An umbrella term for description, classification and analysis of landscape.

Biodiversity

The concept of variety in all species of plants and animals through which nature finds its balance.

Classification

A process of sorting the landscape into different types using selected criteria but without attaching relative values to the different kinds of landscape.

Compensation

The measures taken to offset or compensate for residual adverse effects that cannot be mitigated, or for which mitigation cannot entirely eliminate adverse effects.

Cumulative effects

The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.

'Do nothing' situation

Continued change/evolution of landscape or of the environment in the absence of the proposed development.

Element

A component part of the landscape (for example, roads, hedges, woods).

Environmental Impact Assessment

The evaluation of the effects on the environment of particular development proposals.

Heritage

Historic or cultural associations

Indirect impacts

Impacts on the environment, which are not a direct result of the development but are often produced away from it or as a result of a complex pathway. Sometimes referred to as secondary impacts.

Land cover

Combination of land use and vegetation that cover the land surface.

Landform

Combination of slope and elevation that produce the shape and form of the land.

Landscape (ELC)

An area, as perceived by people, whose character is the result of the action and interaction of natural and /or human factors. (Council of Europe 2000)

Landscape (GLVIA)

Human perception of the land conditioned by knowledge and identity with a place.

Landscape capacity (or Landscape sensitivity)

The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of the change being proposed.

Landscape character

The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.

Landscape character type

A landscape type will have broadly similar patterns of geology, landform, soils, vegetation, land use, settlement and field pattern discernible in maps and field survey records.

Landscape effects

Change in the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive, negative or neutral.

Landscape evaluation

The process of attaching value (non-monetary) to a particular landscape, usually by the application of previously agreed criteria, including consultation and third party documents, for a particular purpose (for example designation or in the context of the assessment).

Landscape factor

A circumstance or influence contributing to the impression of a landscape (for example, scale, enclosure, elevation).

Landscape feature

A prominent eye-catching element, for example, wooded hilltop or church spire.

Landscape condition (or Landscape quality)

Based on judgements about the physical state of the landscape, and about its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.

Landscape resource

The combination of elements that contribute to landscape context, character and value.

Landscape value (or Landscape importance)

The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, because of its special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues.

Magnitude

A combination of the scale, extent and duration of an effect.

Methodology

The specific approach and techniques used for a given study.

Mitigation

Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse landscape and visual effects of a development project.

Perception (of landscape)

The psychology of seeing and possibly attaching value and / or meaning (to landscape).

Precautionary principle

Principle applied to err on the side of caution where significant environmental damage may occur, but where knowledge on the matter is incomplete or when the prediction of environmental effects is uncertain.

Receptor

Physical landscape resource, special interest or viewer group that will experience an effect.

Scenario

A picture of a possible future.

Scoping

The process of identifying the likely significant effects of a development on the environment.

Threshold

A specified level in grading effects, for example, of magnitude, sensitivity or significance.

Visual amenity

The value of a particular area or view in terms of what is seen.

Visual effect

Change in appearance of the landscape as a result of development. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction) or neutral.

Visual envelope Extent of potential visibility to or from a specific area or feature.

REFERENCES

- 1 Cuckmere Estuary Project, Landscape and Visual Impact Assessment prepared by Jacobs Babbie (revision AO2, March 2006) for the Environment Agency.
- 2 Cuckmere Estuary Project, Strategic Environmental Assessment Scoping Report for the Environment Agency. Babbie Brown and Root (August 2005).
- 3 Landscape Baseline Statement relating to Options Flood Risk Management in the Cuckmere Estuary by David Huskisson Associates, February 2011 for East Sussex County Council.
- 4 Cuckmere Estuary Option Impact Study, Options Analysis Report (Draft) March 2011 by Capita Symonds for East Sussex County Council.
- 5 Cuckmere Haven, Heritage Asset Plan, East Sussex, Draft for Consultation by Oxford Archaeology January 2011.
- 6 Planning Policy Statement 7: Sustainable Development in Rural Areas, 2004, The Stationary Office.
- 7 South Downs Integrated Landscape Character Assessment, Technical Report, prepared for the South Downs Joint Committee, in partnership with the Countryside Agency, English Heritage, Hampshire County Council, West Sussex County Council and East Hampshire District Council by Land Use Consultants, December 2005.
- 8 East Sussex County Landscape Assessment, 2010 (Area 22) by East Sussex County Council.
- 9 Guidelines for Landscape and Visual Impact Assessment (Second Edition, 2002) prepared by the Landscape Institute with the Institute of Environmental Management and Assessment.

APPENDIX 1

Magnitude of Change and Significance of Effect of Land Cover changes over Epochs

| | |
|-----------------|--------------------------|
| Table 7C | Epoch 2011 - 2030 |
| Table 7D | Epoch 2031 - 2060 |
| Table 7E | Epoch 2061 - 2110 |

| TABLE 7 C | | Epoch 2010-2030 | Read with Figure 3 | Magnitude of Change and Significance of Effect |
|-----------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------|
| Option | Element | Current land cover changes | | |
| Baseline Do Nothing | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south with some saltmarsh and increasing mudbanks. | | No change No effect |
| | Cell A | Grassland with sweeping meanders. A few small muddy hollows. Grassland in Foxhole valley. Infrequent overtopping quickly drains. | | No change No effect |
| | Cell B | Grassland pasture with some dendritic mud creeks and drainage ditches. Infrequent overtopping and slow draining giving upwarping. | | No change No effect |
| | Cell C | Grassland tending to become more salt tolerant. Lagoon with minor muddy drains. Inundation would occur at spring high tide or higher. | | No change No effect |
| | | Predicted land cover changes | | Compared to Baseline 2010-2030 |
| Option A Partial Breach | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south. Floodbank breaches into Cells B and C and some loss of saltmarsh. | | Negligible /Minimal change Slight effect |
| | Cell A | Remains grassland with sweeping meanders as for Baseline. | | No change No effect |
| | Cell B | Mainly developing saltmarsh other than in marginal strip on western side. Mud creeks now water filled. | | Medium change Substantial effect |
| | Cell C | As for Baseline. | | No change No effect |
| Option B Full Breach | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south as floodbanks erode and channel widens. Floodbank Breaches into Cells A, B and C and some loss of saltmarsh to grassland. | | Negligible /Minimal change Slight effect |
| | Cell A | Meander truncated by closing bank but grassland with balance of meanders largely remaining. Limited inundation. Tidal creek developing at breach. | | Negligible /Minimal change Slight effect |
| | Cell B | Mainly developing saltmarsh other than in marginal strip on western side as sediment builds up from slow drainage. Mud creeks now water filled. Saltmarsh inundated on MHWS tides. Tidal creeks developing at breaches. | | Medium change Substantial effect |
| | Cell C | Mud bank /new lagoon in area of extraction for use in new flood bank. Cell inundated on MHWS tides. Tidal creeks developing at breaches. Foxhole Valley converting to saltmarsh. | | Low change Moderate effect |
| Option C Engineered Reactivation | River channel and Cell A | Straight cut backfilled with former floodbanks and meanders reactivated and depended. Meander migration will start. Removal of floodbanks in south results in wider, less well defined channel and more extensive mud banks. Grassland remains but tending to more saline species. Southern end of Cell A inundated at MHWS tides. | | High change Very Substantial effect |
| | Cell B | Changed to extensive mud banks, little or no saltmarsh. | | High change Very Substantial effect |
| | Cell C | Mud banks developing including in Foxhole Valley. | | High change Very Substantial effect |
| Option D Maintain existing defences | River channel | Remains as for Baseline but it is assumed any overtopping damage would be repaired. | | No change No effect |
| | Cell A | Essentially remains as for Baseline. | | No change No effect |
| | Cell B | Essentially remains as for Baseline. | | No change No effect |
| | Cell C | Essentially remains as for Baseline. | | No change No effect |
| Option E Sustain by 600mm | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south. Saltmarsh replaced by mud banks. | | Negligible /Minimal change Slight effect |
| | Cell A | Remains grassland with sweeping meanders as for Baseline. No inundation. | | No change No effect |
| | Cell B | Remains grassland pasture with some dendritic mud creeks and drainage ditches as for Baseline. No inundation. | | No change No effect |
| | Cell C | Remains grassland and lagoon as for Baseline. No inundation. | | No change No effect |
| Option F Sustain by 300mm | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south. Saltmarsh replaced by mud banks as for OptionE. | | Negligible /Minimal change Slight effect |
| | Cell A | Remains grassland with sweeping meanders as for Baseline. No inundation. | | No change No effect |
| | Cell B | Remains grassland pasture with some dendritic mud creeks and drainage ditches as for Baseline. No inundation. | | No change No effect |
| | Cell C | Remains grassland and lagoon as for Baseline. No inundation. | | No change No effect |

| TABLE 7 D | | Epoch 2031-2060 | Read with Figure 4 | Magnitude of Change and Significance of Effect |
|-----------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------|
| Option | Element | Predicted land cover changes | | |
| Baseline Do Nothing | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south with some saltmarsh and mudbanks. | | No change No effect |
| | Cell A | Grassland with meanders gradually eroding. Mud hollows now water filled. Grassland remains in Foxhole Valley. Inundated at MHWS. | | No change No effect |
| | Cell B | Grassland pasture with but former dendritic mud creeks and drainage ditches now water filled and very minor encroachment of saltmarsh and inundation at northern end during normal tides building up sediment. | | No change No effect |
| | Cell C | Grassland and lagoon and former minor muddy ditches now water filled. Inundated at MHWS. | | No change No effect |
| | | Predicted land cover changes | | Compared to 2031-2060 Baseline |
| Option A Partial Breach | River channel | Less mud banks than Option B but more than Baseline. | | Negligible /Minimal change Slight effect |
| | Cell A | Remains grassland but meanders less prominent and mud and only inundated at high tide. Grassland remains in Foxhole Valley. Cell not inundated. | | Low change Moderate effect |
| | Cell B | Developing intertidal area of saltmarsh and mud banks. other than in marginal strip on western side. Mud creeks now water filled as for Option B. | | Low change Moderate effect |
| | Cell C | Saltmarsh to north east of lagoon. Cell inundated on MHWS tides. | | Low change Moderate effect |
| Option B Full Breach | River channel | Tidal channel retained in straight cut at northern end. More varied channel to south with increased mudbanks. | | Low change Moderate effect |
| | Cell A | Truncated meander largely remaining but about one third of cell now saltmarsh developing along tidal meander. Saltmarsh areas inundated on MHWS tides. | | Low change Moderate effect |
| | Cell B | Developing intertidal area of saltmarsh and mud banks other than in marginal strip on western side. Mud creeks now water filled. Cell inundated on MHWS tides. | | Low change Moderate effect |
| | Cell C | Mud bank area reduced and more extensive saltmarsh to north east of lagoon. Cell inundated on MHWS tides. Saltmarsh in Foxhole Valley. | | Low change Moderate effect |
| Option C Engineered Reactivation | River channel and Cell A | Migrating meanders have altered former course cutting off / removing Canoe Barn and Car park. Extensive mud flats with pockets of grassland. Broadly similar to first epoch prediction. | | High change Very Substantial effect |
| | Cell B | Largely extensive mud flats with pockets of grassland. Cell continues to act as intertidal zone, inundated at MHWS tide. | | High change Very Substantial effect |
| | Cell C | Largely extensive mud flats to north of lagoon with pockets of saltmarsh as cell develops into intertidal area. Foxhole Valley inundated at MHWS tide. | | High change Very Substantial effect |
| Option D Maintain existing defences | River channel | Essentially as for Baseline, some over topping into Cell B in MWHS. | | No change No effect |
| | Cell A | Essentially as for Baseline but minor mud flat at north of cell adjacent to river bank | | Negligible /Minimal change Slight effect |
| | Cell B | Essentially as for Options E and F but mud banks replace grassland at the north of the Cell resulting from inundation at MHWS tides. | | Negligible /Minimal change Slight effect |
| | Cell C | Essentially as for Baseline but minor muddy ditches remain. | | Negligible /Minimal change Slight effect |
| Option E Sustain by 600mm | River channel | Southern end of channel becomes wider and area of saltmarsh replaced by mud banks. | | Low change Moderate effect |
| | Cell A | As for Option A. | | Low change Moderate effect |
| | Cell B | Remains grassland pasture with some dendritic mud creeks and drainage ditches | | Negligible /Minimal change Slight effect |
| | Cell C | Essentially as for Baseline but minor muddy ditches remain. | | Negligible /Minimal change Slight effect |
| Option F Sustain by 300mm | River channel | As for Option E. | | Low change Moderate effect |
| | Cell A | As for Option E. | | Low change Moderate effect |
| | Cell B | Remains grassland pasture with some dendritic mud creeks and drainage ditches | | Negligible /Minimal change Slight effect |
| | Cell C | Essentially as for Baseline but minor muddy ditches remain. | | Negligible /Minimal change Slight effect |

| TABLE 7E | | Epoch 2061-2110 | Read with Figure 5 | Magnitude of Change and Significance of Effect |
|---------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------|
| Option | Element | Predicted land cover changes | | |
| Baseline Do Nothing | River channel | Tidal channel probably largely retained in straight cut at northern end. Floodbanks eroded in southern section where significant mud banks would have developed in lieu of saltmarsh and river wider. | | No change No effect |
| | Cell A | Grassland remains at northern end but southern portion has developed into saltmarsh. Meanders substantially reduced and barely visible but small tidal creeks form. Small hollows now grassland. Foxhole Valley would have developed into saltmarsh. Inundated on MHWS tide. | | No change No effect |
| | Cell B | Former grassland mainly converted to saltmarsh other than in marginal strip on western side. Central mud creeks and water filled channels. Inundated on MHWS tide. Cell forms part of intertidal system. | | No change No effect |
| | Cell C | Former grassland north of lagoon now developed into saltmarsh. Inundated on MHWS tide. | | No change No effect |
| | | Predicted land cover changes | | Compared to 2061-2110 Baseline |
| Option A Partial Breach | River channel | Similar to Baseline in terms of width of water filled channel but some flanking saltmarsh and less mud banks than baseline. | | Negligible /Minimal change Slight effect |
| | Cell A | Remains as grassland but meanders now also grassland and barely visible. Grassland remains in Foxhole Valley. Cell not inundated. | | Low change Moderate effect |
| | Cell B | Essentially similar to Baseline. | | No change No effect |
| | Cell C | Essentially similar to Baseline. | | No change No effect |
| Option B Full Breach | River channel | Essentially similar to Baseline but slightly less mud bank and wider river channel | | Negligible /Minimal change Slight effect |
| | Cell A | Essentially similar to Baseline. | | No change No effect |
| | Cell B | Essentially similar to Baseline. | | No change No effect |
| | Cell C | Essentially similar to Baseline. | | No change No effect |
| Option C Engineered Reactivation | River channel and Cell A | Essentially similar to Baseline but more saltmarsh and mud flats will have increased flanking reactivated meanders with minor mud bank along parts of former meanders. | | Low change Moderate effect |
| | Cell B | Essentially similar to Baseline. | | No change No effect |
| | Cell C | Saltmarsh to north of former lagoon which has silted up to form mud flats. | | Negligible /Minimal change Slight effect |
| Option D Maintain the existing defences | River channel | Remains similar to previous epoch, narrow water channel with saltmarsh and limited mud flats. | | Low change Moderate effect |
| | Cell A | Remains as grassland with waterfilled meanders. | | Low change Moderate effect |
| | Cell B | Northern half mudflat inundated at MHWS tides, southern half grassland with muddy dendritic creeks. | | Low change Moderate effect |
| | Cell C | Remains as grassland with waterfilled lagoon. | | Low change Moderate effect |
| Option E Raise by 600mm | River channel | Southern end of channel becomes wider and mud flats disappear. | | Low change Moderate effect |
| | Cell A | As for Option A | | Low change Moderate effect |
| | Cell B | Remains grassland pasture with dendritic creeks and drainage ditches now also grassland | | Medium change Substantial effect |
| | Cell C | As for Option D | | Low change Moderate effect |
| Option F Raise by 300mm | River channel | As for Option E. | | Medium change Substantial effect |
| | Cell A | As for Option E. | | Low change Moderate effect |
| | Cell B | As for Option E. | | Medium change Substantial effect |
| | Cell C | As for Option E. | | Low change Moderate effect |

APPENDIX 2

Magnitude of Change and Significance of Effect of Visual changes over Epochs

Table 8C Epoch 2011 - 2030

Table 8D Epoch 2031 - 2060

Table 8E Epoch 2061 - 2110

TABLE 8C Epoch 2010-2030 Magnitude of Change and Significance of Effect of Visual changes

Read with Figure 3 Effects neutral or beneficial unless ranked adverse

| Receptor and Sensitivity | Baseline 2010-2030 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coastguard Cottages High | No change No effect | Low change Moderate effect | Low change Moderate effect | Medium change Substantial effect | Minimal change Slight effect | Minimal change Slight effect | Minimal change Slight effect | *Only assumed to have been raised by 300mm in this epoch. View north. The developing saltmarsh in Cell B, Options A & B apparent but most notable would be mud flats on Option C |
| The Golden Galleon Public House and Exceat Bridge Medium | No change No effect | **Medium change Substantial adverse effect | Medium change Substantial adverse effect | *High change Substantial adverse effect | No change No effect | Low change Slight effect | Low change Slight effect | *Viewpoint at bridge would be raised by works to A259. Viewpoint includes PH car park. **Concrete wall at car park noted. |
| Seven Sisters Country Park Centre , car park and canoe barn High | No change No effect | High change Substantial adverse effect | Minimal change Slight effect | High change Substantial adverse effect | No change No effect | Minimal change Slight effect | Minimal change Slight effect | Limited changes noted from Park centre north of A259 other than for Option C. Effects concentrated on car park and canoe barn south of road. |
| Foxhole Farm and Campsite High | No change No effect | Low change Moderate effect | Low change Moderate effect Saltmarsh now noted. | High change Substantial adverse effect | No change No effect | No change No effect | No change No effect | Option A and B would give rise to local effects from new banking and mud flat formed on Option C. |
| Public Rights of Way | | | | | | | | |
| South Downs Way together with adjacent open access land in Country Park. Generally High but Exceptional at Cliff End | No change No effect | Low change Moderate effect | *Medium change Substantial adverse effect at Cliff End as result of excavation. Moderate /Substantial effect elsewhere. | **High change Substantial adverse effect At Cliff End there would be a benefit by the removal of cut channel but mud banks would be the main feature High change and Very Substantial Adverse Effect | No change No effect | Minimal change Slight effect | Minimal change Slight effect | *Northern closing bank, bank to separate Cell A from C and excavation in Cell C will be seen from various lengths of this footpath but shallow angle of view from Cliff End reduces visual change arising from excavation. ** Changes to A259 road very widely visible and adverse in north of area. Reactivation of meanders very prominent in Cell A. |

| Receptor and Sensitivity | Baseline 2010-2030 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment *Only assumed to have been raised by 300mm in this epoch. |
|-------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROW FP28-FP24b (Eastern Floodbank) PROW FP27a and FP 27c (Western Floodbank) High | No change No effect | Low change Moderate effect at bridged breaches or **High change Substantial adverse effect Footpaths Removed | Medium change Moderate / Substantial adverse effect at bridged breaches and Cell C or **High change Substantial adverse effect Footpaths Removed | **High change Substantial adverse effect Footpaths Removed | No change No effect | Minimal change Slight effect Changes noted at southern half of river channel | Minimal change Slight effect Changes noted at southern half of river channel | ** Footpaths removed for Option C and will be stopped up if breaches not bridged in the short term for Options A and B. |
| PROW FP26a (Vanguard Way) (Western valley side) High | No change No effect | Low change Moderate effect View over developing saltmarsh Footpath will need local realignment | Low change Moderate effect View over developing saltmarsh Footpath will need local realignment | Low change Moderate effect but locally High Change and Substantial adverse effect on approach to Exceat Bridge. | No change No effect | No change No effect | No change No effect | Most noticeable effect will be more open floodplain view on Option C due of removal of all banks and more frequent inundation in Cell B with consequential change to mud flat (saltmarsh vegetation on Options A and B). Locally adverse at Exceat on Option C. |
| PROW FP22 Exceptional | No change No effect | Minimal change Slight effect | Low change Moderate / Substantial effect | Medium change Substantial adverse effect | No change No effect | No change No effect | No change No effect | Important footpath linking South Hill Barn car park to Coastguard Cottages and the Haven but not all valley floor in view thus effects generally muted. |
| From East and West beaches Exceptional | No change No effect | No change No effect | No change No effect | No change No effect | No change No effect | No change No effect | No change No effect | All Options assumed as for Baseline in this epoch but beach re-nourishment continues on D,E and F. |
| Permissive routes on higher land at Chyngton Farm to west of valley High | No change No effect | Low change Moderate effect | Low change Moderate effect | Medium change Substantial adverse effect | No change No effect | No change No effect | No change No effect | Generally overlooking views afforded across the valley. Mud flats on Option C will be clear change considered to be adverse. |

| Receptor and Sensitivity | Baseline 2010-2030 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment |
|-------------------------------------------------------------------|--------------------------------|-----------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permissive route on valley floor to east of valley High | <i>No change No effect</i> | <i>Low change Moderate effect</i> | <i>*High change Substantial adverse effect</i> | <i>**High change Substantial adverse effect Footpath Removed</i> | <i>No change No effect</i> | <i>Minimal change Slight effect</i> | <i>Minimal change Slight effect</i> | *Only assumed to have been raised by 300mm in this epoch. *Closing bank, bank at Cell A/C and excavation in Cell C will be obvious from various lengths of this footpath. ** Changes to A259 and reactivation of meanders very prominent in Cell A. Permissive path lost in places. |
| A259 Road Medium | <i>No change No effect</i> | <i>Low change Slight effect</i> | <i>Low change Slight effect</i> | <i>*High change Moderate / substantial effect</i> | <i>No change No effect</i> | <i>Minimal change No /Minimal effect</i> | <i>Minimal change No /Minimal effect</i> | *The A259 will be raised and for most of this epoch would allow open views both north and south along valley floor compared to the existing corridor which is quite well screened by planting. |
| Viewpoint at High and Over Exceptional | <i>No change No effect</i> | <i>Minimal change Slight effect</i> | <i>Minimal change Slight effect</i> | <i>Medium change Substantial adverse</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | The changes to the A259 on Option C as it crosses the valley floor will be seen in this more distant view although the planting on the northern face of the road embankment is assumed to be retained. The removal of the cut will be noted. |

TABLE 8D Epoch 2031-2060 Magnitude of Change and Significance of Effect of Visual changes

Read with Figure 4 Effects neutral or beneficial unless ranked adverse

| Receptor and Sensitivity | Baseline 2031 -2060 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coastguard Cottages High | No change No effect | Low change Moderate effect | Low change Moderate effect | Medium change Substantial effect | Minimal change Slight effect | Minimal change Slight effect | Minimal change Slight effect | *Assumed to have been raised by 2 nd 300mm in this epoch together with other work to banks. View north. |
| The Golden Galleon Public House and Exceat Bridge Medium | No change No effect | **Low change Slight adverse effect Meanders silting up | Low change Moderate adverse effect | *High change Substantial adverse effect | Minimal change Slight effect | Low change Slight effect Meanders silting up | Minimal change Slight effect Meanders silting up | *Viewpoint at bridge would be raised by works to A259. Viewpoint includes PH car park. Mud flats on Option C most notable but meanders disappearing on Options A,E and F. **Flood wall still intrusive on Option A |
| Seven Sisters Country Park Centre , car park and canoe barn High | No change No effect | High change Substantial adverse effect Meanders silting up | Minimal change Slight effect Some saltmarsh noted. | High change Substantial adverse effect Barn and Car Park isolated / lost | Minimal change Slight effect Minor silting up | High change Substantial adverse effect Meanders silting up | High change Substantial adverse effect Meanders silting up | Effects concentrated on car park and canoe barn south of road which would have been cut off by migrating meander on Option C and affected by siltation on Options A, E and F. |
| Foxhole Farm and Campsite High | No change No effect | Low change Moderate effect | Low change Moderate effect Saltmarsh developing | High change Substantial adverse effect | Minimal change Slight effect Minor silting up | Minimal change Slight effect Minor silting up | Minimal change Slight effect Minor silting up | Options A and B would give rise to local effects from new banking. |
| Public Rights of Way | | | | | | | | |
| South Downs Way together with adjacent open access land in Country Park. Generally High but Exceptional at Cliff End | No change No effect | Low change Moderate effect as meanders silt up Medium Change at Cliff End from saltmarsh development in Cell C resulting in Substantial effect | *Low change Moderate effect generally as saltmarsh vegetation changes character. Medium Change at Cliff End resulting in Substantial effect | **High change Substantial effect generally rising to Very Substantial effect at Cliff End | Minimal change Slight effect Very small increasing in mud flats noted | Minimal change Slight effect Meanders silting up | Minimal change Slight effect Meanders silting up | *Northern closing bank, bank to separate Cell A from C and excavation in Cell C will still be noticed from various lengths of this footpath but shallow angle of view from Cliff End reduces visual change. ** The extensive mud flats would be a significant and comparatively rapid change to the majority of the floodplain on Option C Changes to A259 road assumed to be screened to some degree |

| Receptor and Sensitivity | Baseline 2031 -2060 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment |
|-------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROW FP28-FP24b (Eastern Floodbank) PROW FP27a and FP 27c (Western Floodbank) High | No change No effect | Medium change Moderate /Substantial effect River channel appearance changed by erosion. Meanders silting up **High change Substantial adverse effect Footpaths Removed | Medium change Moderate /Substantial effect River channel appearance changed by erosion. Saltmarsh developing in Cell A **High change Substantial adverse effect Footpaths Removed | **High change Substantial adverse effect Footpaths Removed | Minimal change Slight effect Some developing mud flat. | Minimal change Slight effect Changes noted in southern half of river channel with developing mud flat. Meanders silting up | Minimal change Slight effect Changes noted in southern half of river channel with developing mud flat. Meanders silting up. | ** Assumed to have been raised by 2nd 300mm in this epoch together with other work to banks. ** Footpaths removed for Option C and will be stopped up if breaches not bridged in the medium term for Options A and B. |
| PROW FP26a (Vanguard Way) (Western valley side) High | No change No effect | Low change Moderate effect Footpath will need local realignment | Low change Moderate effect Footpath will need local realignment | Medium change Moderate / Substantial effect. | Minimal change Slight effect Mud flats noted in north of Cell B. Footpath may need local realignment | No change No effect | No change No effect | Most noticeable effect will still be the extensive mud flats and banks across the valley floor on Option C Baseline will require footpath realignment |
| PROW FP22 Exceptional | No change No effect | Minimal change Slight effect | Low change Moderate / Substantial effect | Medium change Substantial adverse effect | Minimal change Slight /Moderate effect | Minimal change Slight /Moderate effect | Minimal change Slight /Moderate effect | Important footpath linking South Hill Barn car park to Coastguard Cottages and the Haven but not all valley floor in view thus effects generally muted. |
| From East and West beaches Exceptional | No change No effect | No change No effect | No change No effect | No change No effect | Minimal change Slight / Moderate effect | Minimal change Slight / Moderate effect | Minimal change Slight / Moderate effect | Options A, B and C as for Baseline. Training structures assumed rebuilt as per existing for Options D,E and F. |
| Permissive routes on higher land at Chyngton Farm to west of valley High | No change No effect | Low change Moderate effect | Low change Moderate effect | Medium change Substantial adverse effect | Minimal change Slight effect | Minimal change Slight effect | Minimal change Slight effect | Generally overlooking views afforded across the valley. Mud flats on Option C will be still be the main change. |

| Receptor and Sensitivity | Baseline 2031 -2060 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm* | Option F Sustain by 300mm | Comment |
|-------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permissive route on valley floor to east of valley High | <i>No change No effect</i> | <i>*High change Substantial adverse effect Footpath Removed in south</i> | <i>*High change Substantial adverse effect Footpath Removed in south</i> | <i>**High change Substantial adverse effect Footpath Removed</i> | <i>Minimal change Slight effect</i> | <i>Minimal change Slight effect</i> | <i>Minimal change Slight effect</i> | *Assumed to have been raised by 2 nd 300mm in this epoch together with other work to banks. *Closing bank, bank to separate Cell A from C and excavation in Cell C still discernible . ** Changes to A259 road and reactivation of meanders notable in Cell A. Permissive route inundated in Cell C and assumed removed in south on Options A and B. |
| A259 Road Medium | <i>No change No effect</i> | <i>Low change Slight effect</i> | <i>Low change Slight effect</i> | <i>*High change Moderate substantial effect</i> | <i>Minimal change No / minimal effect</i> | <i>Low change Slight effect Meanders silted up</i> | <i>Low change Slight effect Meanders silted up</i> | *The A259 will be raised but assumed that planting on bank would be screening road so only glimpsed views or from where road is on open valley side. |
| Viewpoint at High and Over Exceptional | <i>No change No effect</i> | <i>Minimal change Slight effect</i> | <i>Minimal change Slight effect</i> | <i>Low change Moderate / Substantial adverse</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | The changes to the A259 on Option C it crosses the valley floor assumed screened by planting |

TABLE 8E Epoch 2061-2110 Magnitude of Change and Significance of Effect of Visual changes

Read with Figure 5 Effects neutral or beneficial unless ranked adverse

| Receptor and Sensitivity | Baseline 2061- 2110 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm | Option F Sustain by 300mm | Comment |
|----------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coastguard Cottages High | No change No effect | No change No effect | No change No effect | No change No effect | Low change Slight effect Mud flats and grassland in Cell B | Low change Moderate effect Cell B grassland | Low change Moderate effect Cell B grassland | View north from upper floor. Baseline and Options A, B and C very similar. |
| The Golden Galleon Public House and Exceat Bridge Medium | No change No effect | Minimal change Slight adverse effect | Minimal change Slight adverse effect | *Medium change Moderate/ Substantial adverse effect but changes to road still adverse for this location | Low change Slight effect | Low change Slight effect | Low change Slight effect | *Viewpoint at bridge would be raised by works to A259. Viewpoint includes PH car park. Baseline and Options A and B very similar in land cover but closing bank on Option B and wall on Option A still noted adverse differences. |
| Seven Sisters Country Park Centre , car park and canoe barn High | No change No effect | Medium change Moderate/ Substantial adverse effect Meanders and other features of floodplain lost | No change No effect | High change Substantial adverse effect Barn and Car Park isolated / lost | Medium change Moderate/ Substantial effect | Medium change Moderate/ Substantial adverse effect Meanders and other features of floodplain lost | Medium change Moderate/ Substantial adverse effect Meanders and other features of floodplain lost | Limited changes noted from Park centre north of A259 other than for Option C. Baseline and Options B and C similar but Option C car park and canoe barn cut off. Loss of meanders and more subtle features of floodplain considered visually adverse for Options A, E and F. |
| Foxhole Farm and Campsite High | No change No effect | Low change Slight effect | Minimal change Slight effect | Minimal change Slight effect | Low change Slight effect | Low change Slight effect | Low change Slight effect | Options A & B would still give rise to local effects from banking. Options A,D,E & F remain grassland. |
| Public Rights of Way | | | | | | | | |

| Receptor and Sensitivity | Baseline 2061- 2110 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm | Option F Sustain by 300mm | Comment |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| South Downs Way together with adjacent open access land in Country Park. Generally High but Exceptional at Cliff End | <i>No change No effect</i> | <i>Low change Slight effect</i> | <i>*No change No effect</i> | <i>**Low change Slight effect Lagoon in Cell C mudflat</i> | <i>Low change Slight effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | *Northern closing bank, bank to separate Cell A from C and excavation in Cell C will still be noticed from various lengths of this footpath but shallow angle of view from Cliff End reduces visual change. Loss of meanders and more subtle features of floodplain adverse on Options A, E and F. **A259 road assumed to be screened |
| PROW FP28-FP24b (Eastern Floodbank) PROW FP27a and FP 27c (Western Floodbank) High | <i>No change No effect</i> | <i>Low change Moderate effect but only over a short section of path remaining adjacent to Cell A.</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Low change Moderate effect</i> | <i>Medium change Moderate/ Substantial effect</i> | <i>Medium change Moderate/ Substantial effect</i> | Footpaths lost for Baseline and Option B. Removed earlier for Option C. Part remains to Cell A on Option A. Loss of meanders and more subtle features of floodplain and river channel noted on Options E and F but not adverse. Footpaths would still provide attractive routes. |
| PROW FP26a (Vanguard Way) (Western valley side) High | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Low change Moderate effect Footpath will need local realignment</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | Loss of meanders and more subtle features of floodplain considered adverse visual effect of Option E and F. |
| PROW FP22 Exceptional | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Low change Moderate /Substantial effect</i> | <i>Medium change Substantial adverse effect</i> | <i>Medium change Substantial adverse effect</i> | Important footpath linking South Hill Barn car park to Coastguard Cottages and the Haven but not all valley floor in view thus effects generally muted. |
| From East and West beaches Exceptional | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Minimal change Slight / Moderate effect</i> | <i>Minimal change Slight / Moderate effect</i> | <i>Minimal change Slight / Moderate effect</i> | Options A, B and C as for Baseline. Training structures assumed rebuilt as per existing for Options D,E and F. |
| Permissive routes on higher land at Chyngton Farm to west of valley High | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Low change Moderate effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | Generally overlooking views afforded across the valley. Loss of meanders and more subtle features of floodplain considered adverse visual effect of Option E and F. |

| Receptor and Sensitivity | Baseline 2061- 2110 | Option A Partial Breach | Option B Full Breach | Option C Engineered reactivation | Option D Maintain existing defences | Option E Sustain by 600mm | Option F Sustain by 300mm | Comment |
|-------------------------------------------------------------------|--------------------------------|-----------------------------------------|--------------------------------|--------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permissive route on valley floor to east of valley High | <i>No change No effect</i> | <i>Minimal change Slight effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Low change Moderate effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | <i>Medium change Moderate/ Substantial adverse effect</i> | Permissive route removed in Baseline, Option B and C and in south of Option A. Loss of meanders and more subtle features of floodplain considered adverse of Option E and F. |
| A259 Road Medium | <i>No change No effect</i> | <i>Low change Slight effect</i> | <i>No change No effect</i> | <i>*Low change Slight effect</i> | <i>Low change Slight effect</i> | <i>Low change Slight effect</i> | <i>Low change Slight effect</i> | *Assumed glimpsed views or from where road is on open valley side. |
| Viewpoint at High and Over Exceptional | <i>No change No effect</i> | <i>No change No effect</i> | <i>No change No effect</i> | <i>Minimal change Slight / Moderate effect</i> | <i>Minimal change Slight / Moderate effect</i> | <i>Minimal change Slight / Moderate effect</i> | <i>Minimal change Slight / Moderate effect</i> | The A259 on Option C assumed to be screened by planting. |