

TECHNICAL NOTE

Appendix C – Infiltration Test Results

Our Ref: J14206

4 November 2019

A C Goatham & Son
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Ratcliffe Highways
Rochester
Kent
ME3 8QE

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Consultant Dr D Petley BSc PhD DIC MHIT FGS
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For the attention of Andy Hughes.

Dear Sirs,

Re: Borehole Permeability Testing at: Pump & Bloors Farm Development, Rainham, ME8 7AT
National Grid Reference: TQ 80899 67494
Geology: Head over Possible Thanet Formation over Seaford Chalk

1 Authority

Our authority for carrying out this work is contained in a signed Project Order Form from Helena Sullivan on behalf of A C Goatham & Son.

2 Background and Objectives

The object of the investigation was to drill 2 No. 200mm diameter boreholes, in the locations as determined by the Clients engineer, which extend approximately 10m into the underlying chalk and carry out borehole soakage testing at a range of depths within each of the boreholes. One of the borehole was to be installed with a 50mm groundwater monitoring well.

3 Scope

This letter report presents our exploratory hole logs and test results only. As with any site there may be differences in soil conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

Contamination issues are not considered in this report.

The findings and opinions conveyed via this Site Investigation Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are



reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The site investigation was conducted and this report has been prepared for the sole internal use and reliance of A C Goatham & Son and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

4 Geology

The British Geological Survey Map No. 272 indicates that the site geology consists of Head over possible Thanet Formation over Seaford Chalk.

Head

Head is a superficial deposit predominantly formed by solifluction processes during cold, periglacial periods in the Ice Ages. Shallow soils were frequently waterlogged during these periods and together with freeze/thaw cycles caused a gradual downward migration of shallow soils. Although the climate has since changed, poorly designed engineering works, or periods of adversely high rainfall may still reactivate the relic slip surfaces.

Head soils characteristically comprise sandy silty clay containing randomly oriented fragments of angular materials of local derivation. Stratification, if present, is generally poor and the upper and lower surfaces of the deposits are rarely horizontal.

Thanet Formation

The Thanet Formation is a Palaeocene deposit consisting of fine-grained pale yellow and grey mottled silty to very silty sand that can be clayey or glauconitic.

The boundary between the Thanet Formation and the underlying Chalk is very irregular and is marked by a bed of green-coated flints and glauconitic sand and clay (Bullhead Beds).

It is not uncommon to find sinkholes in the vicinity of the outcrop of the Thanet Formation particularly where there was a layer of overlying clay. In some areas, there are many old shafts that were dug in order to mine the underlying Chalk.

Seaford Chalk Formation

The Seaford Chalk Formation comprises a fairly homogeneous white chalk with regular and conspicuous flint bands. These flints are commonly laterally very continuous and traceable over large distances. Some of the flints can be very large. A few marl seams are present within the lower parts of the formation.

The White Chalk outcrop in particular is frequently highly fractured and highly permeable, and usually has good infiltration characteristics. On the other hand, Chalk Head, highly weathered Chalk and Chalk under a low permeability superficial cover may have very poor infiltration characteristics.

Chalk is slightly soluble in water and, while it has excellent bearing properties when unweathered, this solubility can lead to deep weathering and softening, and the upper layers of chalk often have an irregular boundary with overlying strata

The Chalk may be softened by solution to a depth of 5–15 metres and bearing capacities and engineering properties improve with depth. Where there is an outcrop of impermeable soil overlying the chalk there may be a dramatically increased solution effect due to concentrated surface water flow to the Chalk close to the outcrop boundary.

Solution features are common in the Chalk, and these can present significant difficulties to development on affected sites.

Man has also worked the chalk for flints, and for other purposes, for thousands of years and any signs of old workings should be carefully investigated.

5 General Site Description

The site was located to the north west of Pump Lane in Rainham, Gillingham. The site location is shown in Figure 1 attached.

The site area extended approximately 25ha and at the time of the investigation consisted apple orchards associated with Pump Farm.

6 Fieldwork

The site work was carried out on 28th October 2019, at which time the weather was dry with sunny spells. However, in the time leading up to the sitework there had been heavy rainfall.

The sitework comprised drilling 2 No. boreholes using a cable percussive rig. The boreholes were drilled in the locations as set out by the Clients engineer, to a depth of approximately 10m into the underlying chalk. The borehole locations are shown in Figure 2 attached.

Soakage testing was carried out in the chalk at a range of depths within each of the borehole. Each soakage test consisted a constant head test followed by a falling head test.

On completion of the boreholes, BH02 was installed with a 50mm diameter groundwater monitoring well comprising slotted pipe over the lowest 14m of the borehole, followed by plain pipe up to ground level. The perforated pipe was surrounded with pea shingle and the plain pipe surrounded with a bentonite seal. The installation was completed with a flush cover. BH01 was backfilled with arisings.

Details of the ground conditions encountered and the installation details are presented in the attached logs

7 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs, but in general comprised a covering of Topsoil/Made Ground over Chalk. A summary is given below.

Depth	Thickness	Soil Type	Description
GL to 0.5 (BH01 only)	0.5m	Topsoil	Brown, silty CLAY with rootlets
GL/0.5m to 0.6m/1.5m	0.6m to 1.0m	Made Ground	Dark brown/brown & brownish white, CLAY with gravel of chalk, brick, flint & sandstone.
0.6m/1.5m to 3.0m/6.5m	1.5m to 5.90m	Seaford Chalk	CHALK recovered as silty very gravelly CLAY or very clayey gravelly SILT with occasional flint cobbles.
3.0/6.5m to 11.0m/16.0m	8.0m+ to 9.50m+	Seaford Chalk	CHALK recovered as off-white, clayey very gravelly SILT with flint cobbles.

Please note cable percussive techniques destroy most of the structure of the chalk. Therefore, it is not usually possible to classify the chalk or log in any particular detail with this technique.

8 Groundwater Strikes

Water was struck in the exploratory holes as follows:

BH	Water Strikes
BH01	Wet soil from approximately 8.6m. Water struck at 9.5mbgl, rose to 9.25m after 30mins.
BH02	Wet soil from approximately 15mbgl. Water struck at 15.2m. Water at 15.16m on completion of installation.

Groundwater levels can vary considerably from season to season and year to year, often rising in wet or winter weather, and falling in periods of drought. As such, a high groundwater table may affect the storage capacity of soakaways. In addition, it should be noted that an unsaturated zone may be required between the base of soakaways and the groundwater table, by the Environment Agency.

A groundwater monitoring well was installed within BH02, as requested by the Clients engineer on the day of the investigation.

Subsequent groundwater monitoring visits are proposed to be carried out at the site.

9 Borehole Soakage Test Results

2 No. boreholes were drilled into the underlying chalk with 2-3 No. constant head soakage tests, followed by a falling head soakage test carried out within each borehole.

A summary of the results from the tests are shown in the tables below. The results of the falling head tests are appended.

Constant Head Soakage Results				
Position Number	Test Number	Depth of Borehole (mbgl)	Approximate soakage rate (l/min)	Comment
BH01	1	5.0	40	Head maintained at 2.0mbgl
	2	8.6	300	Head maintained at 2.0mbgl Soil becoming wet from 8.6m.
BH02	1	5	10	Head maintained at 2.0mbgl
	2	10	400	Head maintained at 2.0mbgl
	3	13	350	Head maintained at 2.0mbgl

Falling Head Soakage Results					
Position Number	Test Number	Depth of Borehole (mbgl)	Commencing test depth (mbgl)	Approximate soakage rate (l/m ² /min)	Approximate soakage rate BRE Units (m/sec)
BH01	1	5.0	2.75	5.62	9.37x10 ⁻⁵
	2	8.6	4.70	2.80	4.67x10 ⁻⁵
BH02	1	5	2.69	0.496	8.27x10 ⁻⁶
	2	10	4.40	25.91	4.23x10 ⁻⁴
	3	15	5.10	14.19	2.36x10 ⁻⁴

It should be noted that the soakage rates are likely to decrease over time.

The results should be inspected by a drainage engineer to design a suitable drainage system with appropriate storage capacity.

Any soakaway scheme will require the approval of the Environment Agency, Building Control and, where applicable, the adopting Highways Authority.

If you have any queries or we can be of further assistance, please do not hesitate to contact us

Yours faithfully,



Vicky Francis BSc MSc FGS

For and on behalf of

Southern Testing Laboratories Limited

DDI: 01342 333 145

Email: vfrancis@southerntesting.co.uk

Encs



NB: Contains Ordnance Survey Data © Crown Copyright and Database Right 2017

Site: Pump & Bloors Farm Development, Rainham, ME8 7AT

Date: 29 October 2019



Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twyden Barns, Brixworth Road, Creaton, Northampton NN6 8NN



STL: J14206

Fig No: 1

Site Location Plan
(not to scale)



NB: Positions of Boreholes are only indicative unless dimensioned. Base plan provided by Client.

Site: Pump Et Bloors Farm Development, Rainham, ME8 7AT

Date: 29 October 2019



Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Wigden Barns, Brixworth Road, Cratton, Northampton NN6 8NN




Site Investigation Plan
(Not to Scale)

STL: J14206


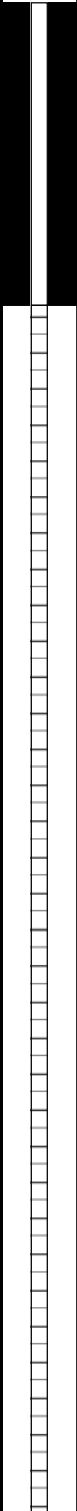
Fig No: 2




				Start - End Date		Project ID:		Hole Type:		BH01		
www.southernesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020				28/10/2019		J14206		CP		Sheet 1 of 2		
Project Name: Pump & Bloors Farm Development				Remarks:		Co-ordinates:		Level:		Logger:		
Location: Rainham, ME8 7AT				Wet soil from 8.6m. Water struck at approximately 9.5m, rose to 9.25m after 30mins.								
Client: A C Goatham & Son				Borehole collapsing on completion.								
Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description			
		Depth (m bgl)	Type	Results								
					(0.50)		0.50	Grass over brown, silty CLAY with rootlets. TOPSOIL				
					(1.00)		1.50	Brown & brownish white slightly gravelly CLAY. Gravel consists of chalk, flint and rare fine brick. MADE GROUND / REWORKED SOIL				
					(1.50)		3.00	CHALK recovered as pale brownish white, silty sandy very gravelly CLAY with rare flint cobbles. Gravel is fine to coarse, subangular, weak, off-white with black speckles.				
					(8.00)			CHALK recovered as off-white, clayey very gravelly SILT with occasional flint cobbles. Gravel is fine to coarse, angular to subangular, weak, white with black speckles.				
								5.0m... constant head followed by falling head soakage test carried out.				
								8.6m... soil becoming wet. constant head followed by falling head soakage test carried out.				

Hole Details		Casing Details		Waterstrike (m bgl)					Standing/Chiselling (m bgl)				
Depth (m bgl)	Dia. (mm)	Depth (m bgl)	Dia. (mm)	Date	Depth Strike	Depth Casing	Depth Sealed	Rose to:	Time (mins)	From	To	Time	Remarks
11.00	200			28-10-2019	9.50	1.50		9.25	30				

 <small>www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020</small>				Start - End Date			Project ID:		Hole Type:		BH01		
				28/10/2019			J14206		CP		Sheet 2 of 2		
Project Name: Pump & Bloors Farm Development				Remarks:		Co-ordinates:			Level:		Logger:		
											VF		
Location: Rainham, ME8 7AT				Wet soil from 8.6m. Water struck at approximately 9.5m, rose to 9.25m after 30mins. Borehole collapsing on completion.									
Client: A C Goatham & Son													
Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
		Depth (m bgl)	Type	Results									
							11.00	CHALK recovered as off-white, clayey very gravelly SILT with occasional flint cobbles. Gravel is fine to coarse, angular to subangular, weak, white with black speckles.					
								End of Borehole at 11.00m					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
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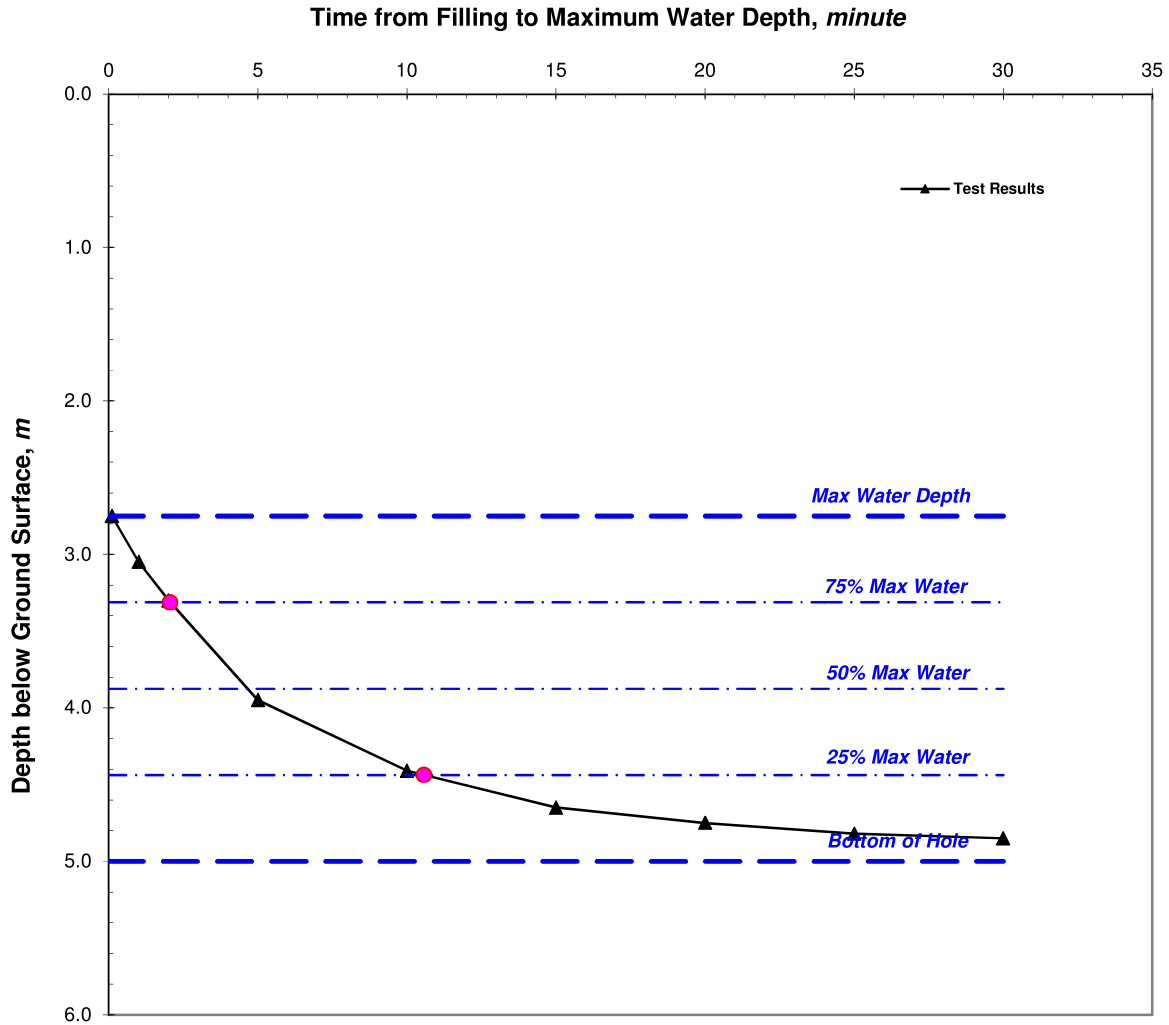
Hole Details		Casing Details		Waterstrike (m bgl)					Standing/Chiselling (m bgl)				
Depth (m bgl)	Dia. (mm)	Depth (m bgl)	Dia. (mm)	Date	Depth Strike	Depth Casing	Depth Sealed	Rose to:	Time (mins)	From	To	Time	Remarks
11.00	200			28-10-2019	9.50	1.50		9.25	30				

 <small>www.southernrtesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020</small>				Start - End Date		Project ID:		Hole Type:		BH02			
				28/10/2019		J14206		CP		Sheet 1 of 2			
Project Name: Pump & Bloors Farm Development				Remarks:		Co-ordinates:		Level:		Logger:			
Rainham, ME8 7AT				Wet soil from 15.0m. Water struck at 15.2m. At 15.16m on completion of installation.						VF			
A C Goatham & Son													
Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
		Depth (m bgl)	Type	Results									
					(0.60)		0.60	Dark brown, silty sandy CLAY with rootlets and gravel of fine to coarse brick, sandstone & chalk. Sand is fine. MADE GROUND CHALK recovered as pale brownish white, very clayey gravelly SILT with flint cobbles. Gravel is fine to coarse, angular to subangular, off-white with black speckles.					
					(5.90)			<i>5.0m... constant head followed by falling head soakage test carried out.</i>					
								6.50	CHALK recovered as off-white, clayey very gravelly SILT with flint cobbles. Gravel is fine to coarse, angular to subangular, weak, white with black speckles.				
Hole Details		Casing Details		Waterstrike (m bgl)					Standing/Chiselling (m bgl)				
Depth (m bgl)	Dia. (mm)	Depth (m bgl)	Dia. (mm)	Date	Depth Strike	Depth Casing	Depth Sealed	Rose to:	Time (mins)	From	To	Time	Remarks
16.00	200			28-11-2019	15.20	1.50		15.16	30				

 <small>www.southernstesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020</small>				Start - End Date		Project ID:		Hole Type:		BH02			
				28/10/2019		J14206		CP		Sheet 2 of 2			
Project Name: Pump & Bloors Farm Development				Remarks:		Co-ordinates:		Level:		Logger:			
Rainham, ME8 7AT				Wet soil from 15.0m. Water struck at 15.2m. At 15.16m on completion of installation.						VF			
Client: A C Goatham & Son													
Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
		Depth (m bgl)	Type	Results									
					(9.50)		16.00	CHALK recovered as off-white, clayey very gravelly SILT with flint cobbles. Gravel is fine to coarse, angular to subangular, weak, white with black speckles. <i>10.0m... constant head followed by falling head soakage test carried out.</i>					
								<i>13.0m... constant head followed by falling head soakage test carried out.</i>					
								<i>15.0m... soil becoming wet.</i>					
								End of Borehole at 16.00m					
Hole Details		Casing Details		Waterstrike (m bgl)					Standing/Chiselling (m bgl)				
Depth (m bgl)	Dia. (mm)	Depth (m bgl)	Dia. (mm)	Date	Depth Strike	Depth Casing	Depth Sealed	Rose to:	Time (mins)	From	To	Time	Remarks
16.00	200			28-11-2019	15.20	1.50		15.16	30				

Falling-Head Soakage Test

Test Hole No: BH01-1
Test No: Test No 1 (Initial)



Diameter of Borehole, m	0.200	Depth to Water at Start of Test, m	2.750
Depth to End of Borehole Casing, m	1.500	Max Water Dropdown during Test, m	2.100
Depth to Borehole Base, m	5.000	Total Soakage Test Time, min	30.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	0.738
Depth to Groundwater Surface, m		Discharge Rate, litre/min	4.151
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	5.62
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	9.37E-05

Comments:

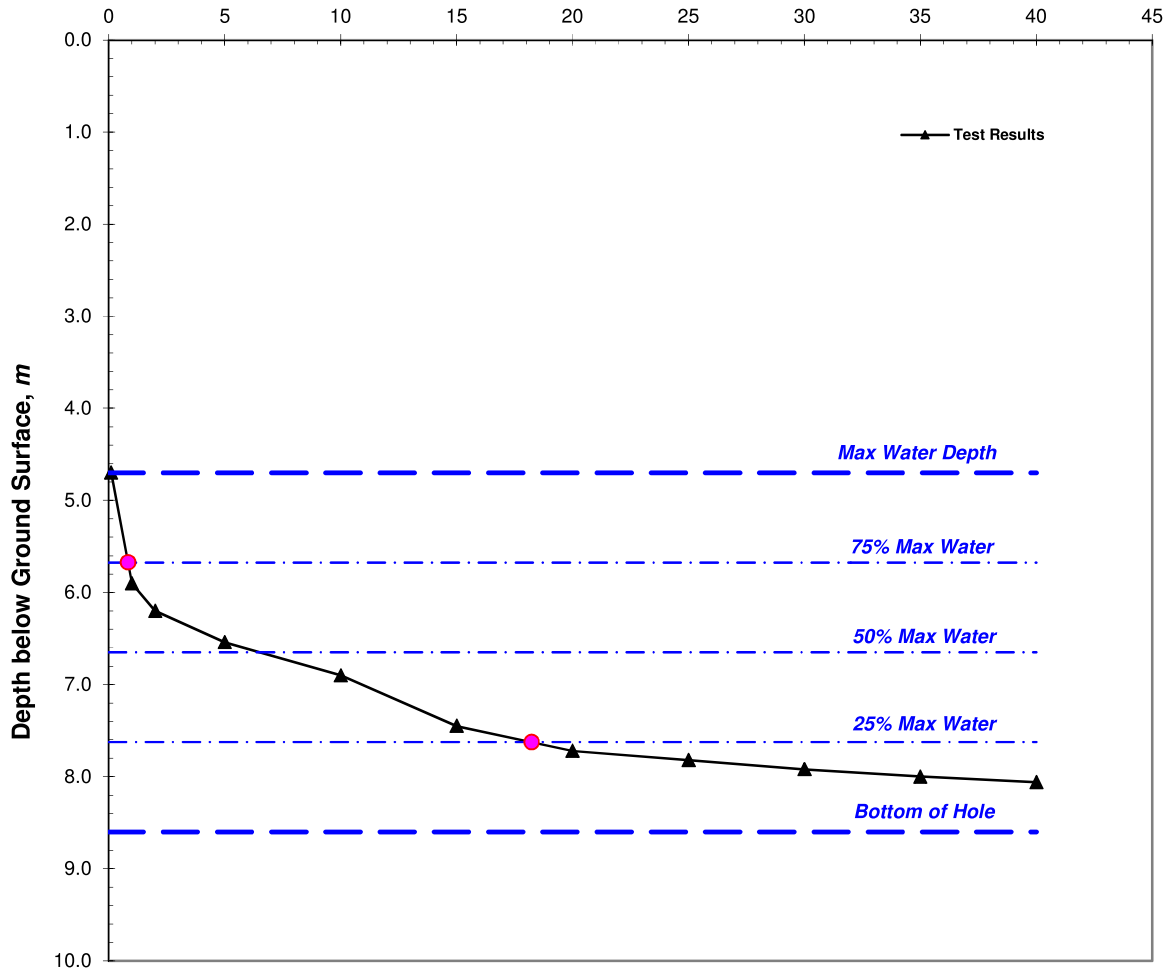
Pit was nearly emptied at finish of test.

Client: AC Goatham & Son	Job No: J14206	Test Date: 28/Oct/2019
Site: Pump & Bloors Farm Development	Tested By: AA/OS	Engineer: VF Fig. S1

Falling-Head Soakage Test

Test Hole No: BH01-2
Test No: Test No 1 (Initial)

Time from Filling to Maximum Water Depth, *minute*



Diameter of Borehole, m	0.200	Depth to Water at Start of Test, m	4.700
Depth to End of Borehole Casing, m	1.500	Max Water Dropdown during Test, m	3.360
Depth to Borehole Base, m	8.600	Total Soakage Test Time, min	40.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	1.257
Depth to Groundwater Surface, m		Discharge Rate, litre/min	3.519
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	2.80
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	4.67E-05

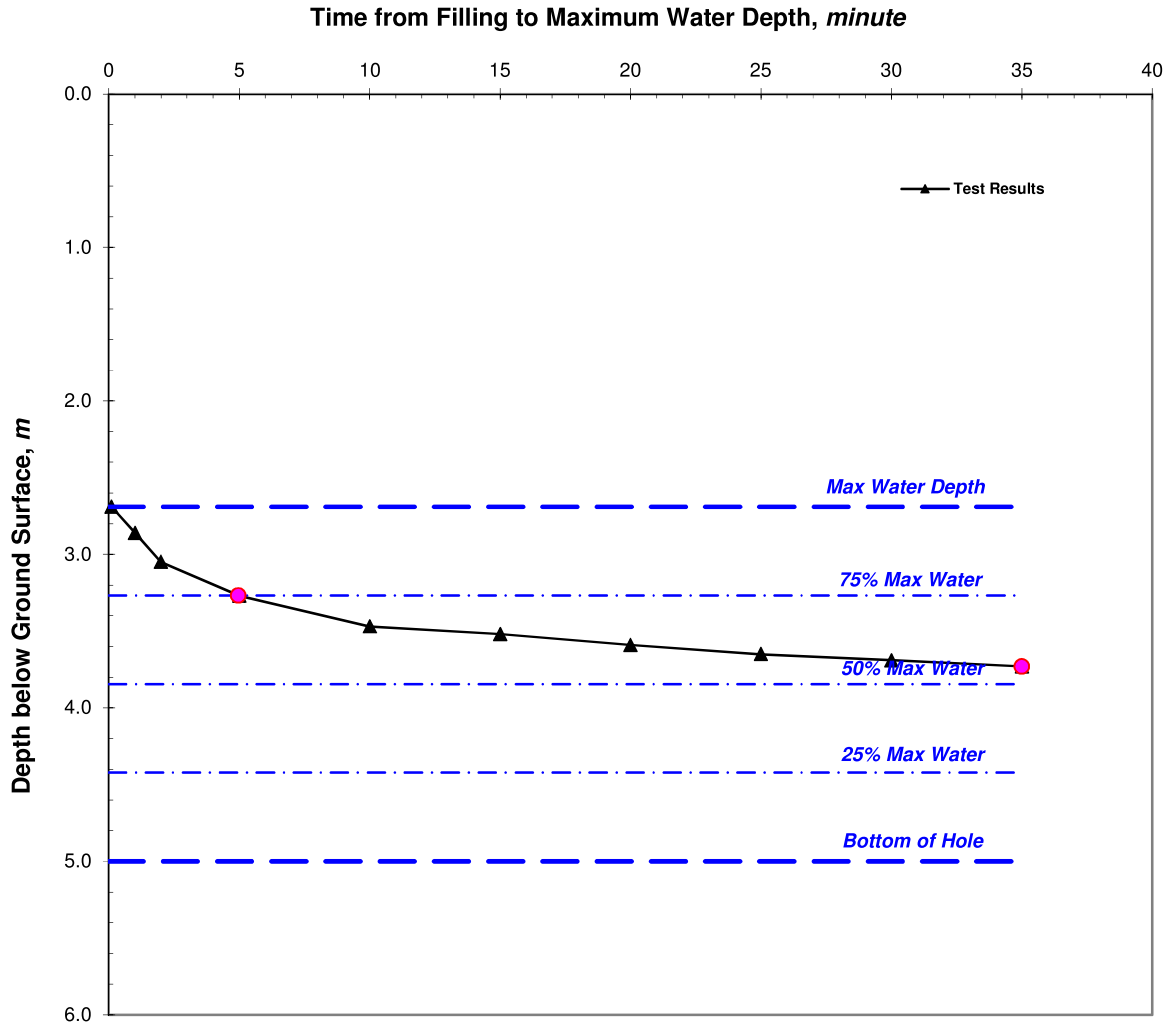
Comments:

Pit was nearly emptied at finish of test.

Client: AC Goatham & Son	Job No: J14206	Test Date: 28/Oct/2019
Site: Pump & Bloors Farm Development	Tested By: AA/OS	Engineer: VF Fig. S2

Falling-Head Soakage Test

Test Hole No: BH02-1
Test No: Test No 1 (Initial)



Diameter of Borehole, m	0.200	Depth to Water at Start of Test, m	2.690
Depth to End of Borehole Casing, m	1.500	Max Water Dropdown during Test, m	1.040
Depth to Borehole Base, m	5.000	Total Soakage Test Time, min	35.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	0.975
Depth to Groundwater Surface, m		Discharge Rate, litre/min	0.484
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	0.496
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	8.27E-06

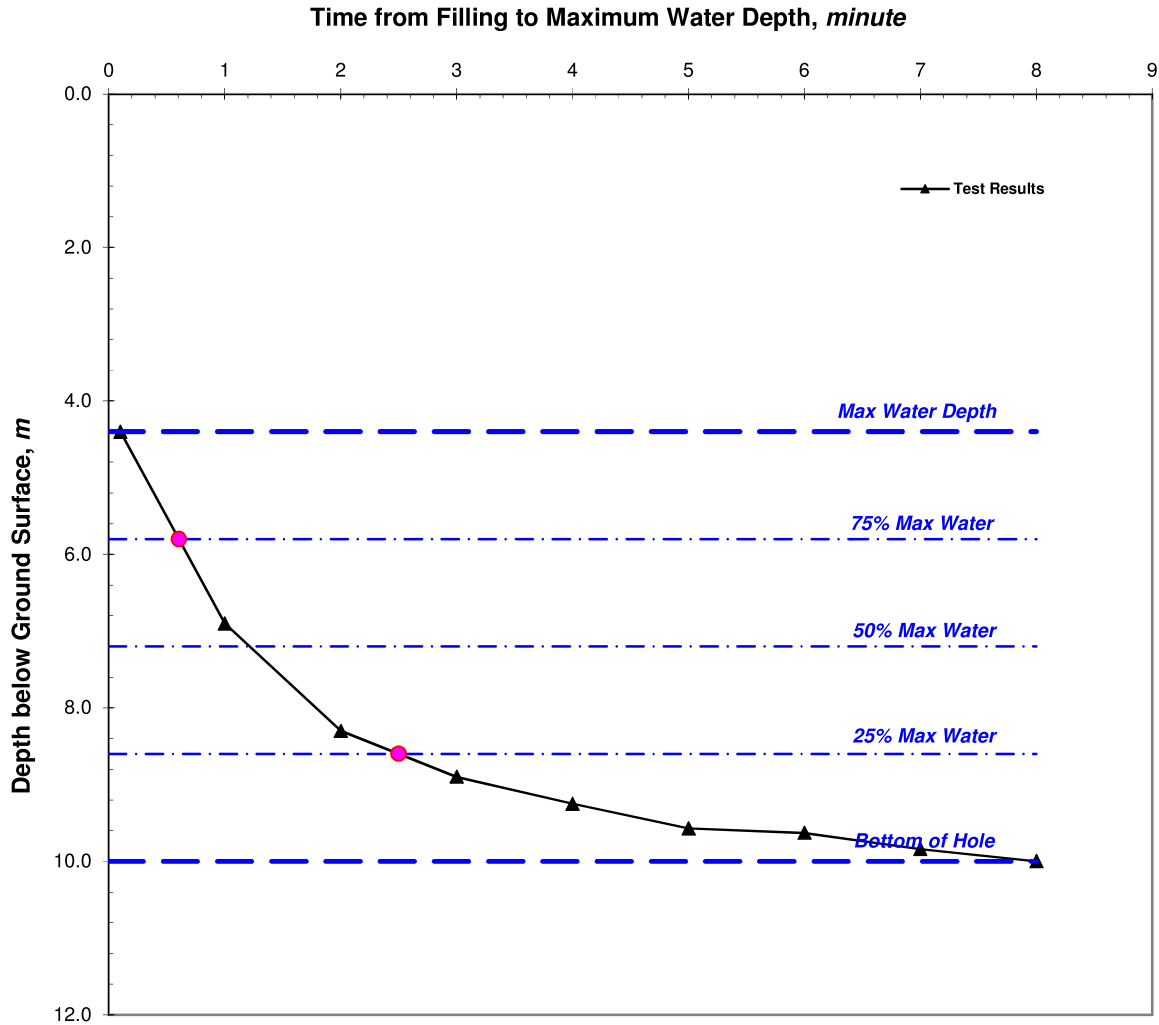
Comments:

*Water level fell to 75% -- 50% max water depth, calculations were based on actual fall of water level achieved.
Result not compliant with BRE365 requirement since water did not fall to 25% max water depth.*

Client: AC Goatham & Son	Job No: J14206	Test Date: 28/Oct/2019
Site: Pump & Bloors Farm Development	Tested By: AA/OS	Engineer: VF Fig. S3

Falling-Head Soakage Test

Test Hole No: BH02-2
Test No: Test No 1 (Initial)



Diameter of Borehole, m	0.200	Depth to Water at Start of Test, m	4.400
Depth to End of Borehole Casing, m	1.500	Max Water Dropdown during Test, m	5.600
Depth to Borehole Base, m	10.000	Total Soakage Test Time, min	8.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	1.791
Depth to Groundwater Surface, m		Discharge Rate, litre/min	46.395
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	25.91
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	4.32E-04

Comments:

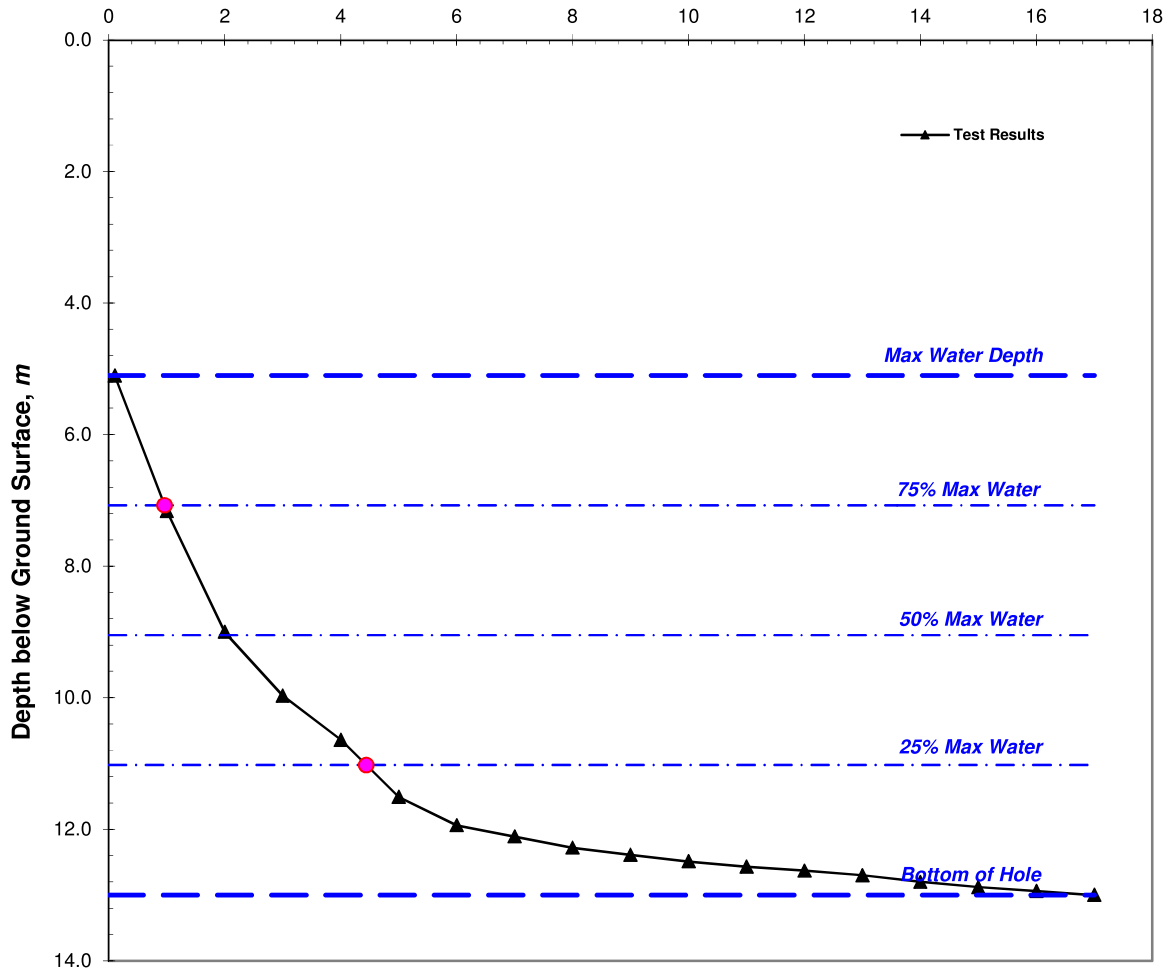
Pit was emptied at finish of test.

Client: AC Goatham & Son	Job No: J14206	Test Date: 28/Oct/2019
Site: Pump & Bloors Farm Development	Tested By: AA/OS	Engineer: VF Fig. S4

Falling-Head Soakage Test

Test Hole No: BH02-3
Test No: Test No 1 (Initial)

Time from Filling to Maximum Water Depth, *minute*



Diameter of Borehole, m	0.200	Depth to Water at Start of Test, m	5.100
Depth to End of Borehole Casing, m	1.500	Max Water Dropdown during Test, m	7.900
Depth to Borehole Base, m	13.000	Total Soakage Test Time, min	17.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	2.513
Depth to Groundwater Surface, m		Discharge Rate, litre/min	35.662
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	14.19
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	2.36E-04

Comments:

Pit was emptied at finish of test.

Client: AC Goatham & Son	Job No: J14206	Test Date: 28/Oct/2019
Site: Pump & Bloors Farm Development	Tested By: AA/OS	Engineer: VF Fig. S5

TECHNICAL NOTE

Appendix D – Drainage Calculations

PUMP AND BLOORS FARM
GREENFIELD RUNOFF RATE

Rural Runoff Calculator

W130 Drainage

ICP SUDS

ICP SUDS Input (F SR Method)

Return Period (Years) 100
 Area (ha) 1.000
 SAAR (mm) 598
 Soil 0.370
 Growth Curve (None)

Partly Urbanised Catchment (QURB)

Urban 0.000
 Region Region 7

Calculate

Results

GBAR rural (%) 2.4
 GBAR urban (%) 2.4

Return Period Flood

	Region	GBAR (%)	Q (100 yrs) (l/s)	Q (1 yrs) (l/s)	Q (50 yrs) (l/s)	Q (100 yrs) (l/s)
PH 124						
ICP SUDS	Region 1	2.4	5.0	2.0	4.5	5.0
	Region 2	2.4	6.3	2.1	4.5	6.3
ADAS 345	Region 3	2.4	5.0	2.1	4.2	5.0
FEH	Region 4	2.4	6.2	2.0	4.7	6.2
ReFH2	Region 5	2.4	8.5	2.1	5.8	8.5
	Region 6/Region 7	2.4	7.6	2.0	5.4	7.6
Greenfield Volume	Region 8	2.4	5.8	1.9	4.6	5.8
Greenfield Volume (ReFH2)	Region 9	2.4	5.2	2.1	4.2	5.2
	Region 10	2.4	5.0	2.1	4.1	5.0

OK Cancel Help

Enter SAAR between 0 and 3000000

CALCULATIONS

Soakaway Drainage Calculations

The soakaway drainage calculations have been carried out based on the infiltration rates estimated by Southern Testing Laboratories Ltd (see **Appendix C**) and in accordance with the guidance set out in the KCC's Soakaway Design Guide (2000). These test results indicate that the infiltration rate of the chalk layer is generally in excess of 1×10^{-5} m/s, which proves that infiltration is a suitable surface water drainage solution for the Site.

ESTIMATED INFILTRATION RATE OF 8.0m DEEP BORE SOAKAWAY BASED ON FIELD RESULTS OF BOREHOLE BH01								
Depth to Base of Liner (mBGL)	Increment of Discharge (mBGL)	Maximum Driving Head (m) (v)	Area of Exposed Chalk (m ²) (iv)	Unit Field Soakage Rate (l/m ² /min) (v)	Unit Design Soakage Rate (l/m ² /min) (vi)	Increments of Available Discharge (l/min)	Total available discharge (l/min)	Total available discharge (l/sec)
5	3.5 to 5	4.25	1.18	5.62	2.81	3.316	3.316	0.055
8	3.5 to 5	4.25	1.18	5.62	2.81	3.316	8.561	0.143
	5 to 8	6.50	2.36	4.45	2.22	5.245		
Notes	(i) It is assumed that Soakaway MHs will be 1.5m deep and that the non-perforated liner of the deep soakaway will penetrate 2.0m into the soakage medium							
	(ii) It is proposed that the deep bore soakaways are 0.25m in diameter (0.125m radius) and bottom of liner is 8.0m BGL (length within chalk layer limited to 6.5m)							
	(iii) It is proposed that the clearance between the bottom of the deep bore soakaway liner and the recorded ground water is 1.0m							
	(iv) This relate to the borehole diameter and not liner diameter ($1.18\text{m}^2 = 2 \times \pi \times 0.125\text{m} \times 1.5\text{m}$ increment) OR ($2.36\text{m}^2 = 2 \times \pi \times 0.125\text{m} \times 3\text{m}$ increment)							
	(v) The unit field soakage rates have been interpolated between two field increments to get the unit field soakage rate at the driving head							
	(vi) A safety factor of 2 has been considered to estimate the unit design soakage rate (Unit Design Soakage Rate = Unit Field Soakage Rate / 2)							
	(vii) It is assumed that the cover of the deep bore soakaway manholes will be open grating at allow ingress of surface water runoff into the manhole							

CALCULATIONS

ESTIMATED INFILTRATION RATE OF 14.0m DEEP BORE SOAKAWAY BASED ON FIELD RESULTS OF BOREHOLE BH02								
Depth to Base of Liner (mBGL)	Increment of Discharge (mBGL)	Maximum Driving Head (m) (v)	Area of Exposed Chalk (m ²) (iv)	Unit Field Soakage Rate (l/m ² /min) (v)	Unit Design Soakage Rate (l/m ² /min) (vi)	Increments of Available Discharge (l/min)	Total available discharge (l/min)	Total available discharge (l/sec)
5	3.5 to 5	4.25	1.18	0.49	0.25	0.289	0.289	0.005
8	3.5 to 5	4.25	1.18	0.49	0.25	0.289	9.871	0.165
	5 to 8	6.50	2.36	8.12	4.06	9.582		
11	3.5 to 5	4.25	1.18	0.49	0.25	0.289	37.446	0.624
	5 to 8	6.50	2.36	8.12	4.06	9.582		
	8 to 11	9.50	2.36	23.37	11.68	27.575		
14	3.5 to 5	4.25	1.18	0.49	0.25	0.289	61.105	1.018
	5 to 8	6.50	2.36	8.12	4.06	9.582		
	8 to 11	9.50	2.36	23.37	11.68	27.575		
	11 to 14	12.50	2.36	20.05	10.03	23.659		
Notes	(i) It is assumed that Soakaway MHs will be 1.5m deep and that the non-perforated liner of the deep soakaway will penetrate 2.0m into the soakage medium							
	(ii) It is proposed that the deep bore soakaways are 0.25m in diameter (0.125m radius) and bottom of liner is 14.0m BGL (length within chalk layer limited to 6.5m)							
	(iii) It is proposed that the clearance between the bottom of the deep bore soakaway liner and the recorded ground water is 1.0m							
	(iv) This relate to the borehole diameter and not liner diameter ($1.18\text{m}^2 = 2 \times \pi \times 0.125\text{m} \times 1.5\text{m}$ increment) OR ($2.36\text{m}^2 = 2 \times \pi \times 0.125\text{m} \times 3\text{m}$ increment)							
	(v) The unit field soakage rates have been interpolated between two field increments to get the unit field soakage rate at the driving head							
	(vi) A safety factor of 2 has been considered to estimate the unit design soakage rate (Unit Design Soakage Rate = Unit Field Soakage Rate / 2)							
	(vii) It is assumed that the cover of the deep bore soakaway manholes will be open grating at allow ingress of surface water runoff into the manhole							

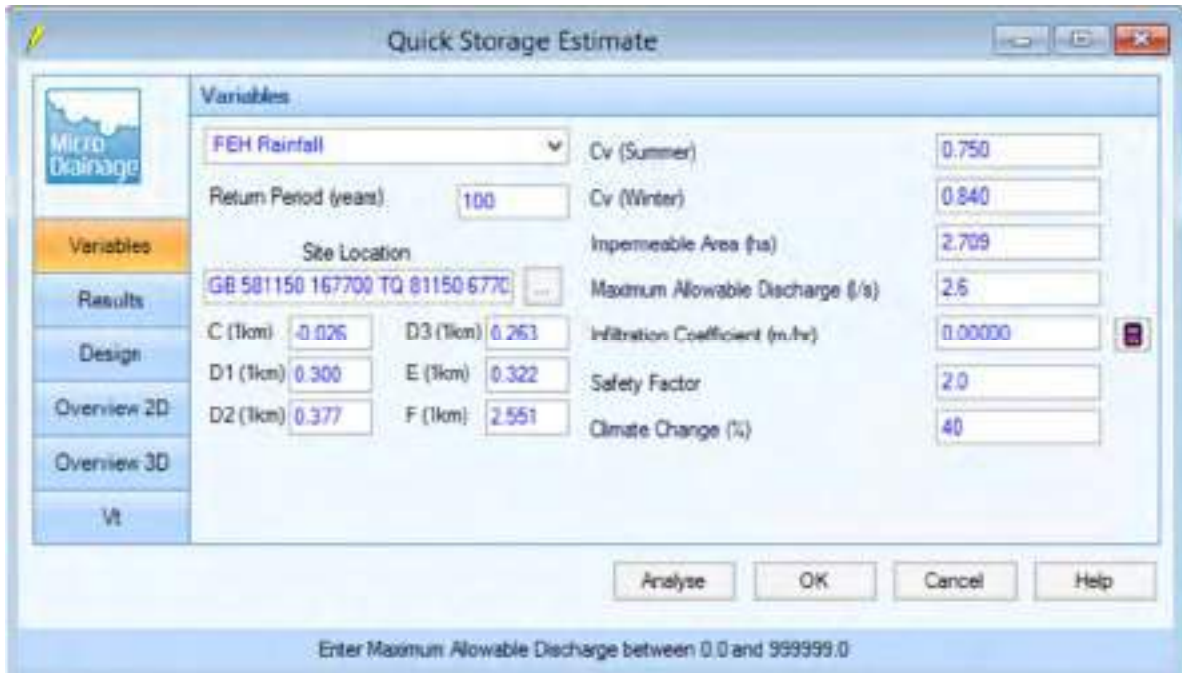
CALCULATIONS

Surface Water Attenuation Requirements

1 in 100 (1%) Annual Probability event plus 40% Climate Change Event

Catchment A1

Average Volume of Attenuation = 3588 + 4331 = 3960m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location Impermeable Area (ha) 2.709

GB 501150 167700 TQ 81150 6770 Maximum Allowable Discharge (l/s) 2.6

C (1km) 0.026 D3 (1km) 0.263 Infiltration Coefficient (m/hr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Analyze OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 3588 m³ and 4331 m³.

These values are estimates only and should not be used for design purposes.

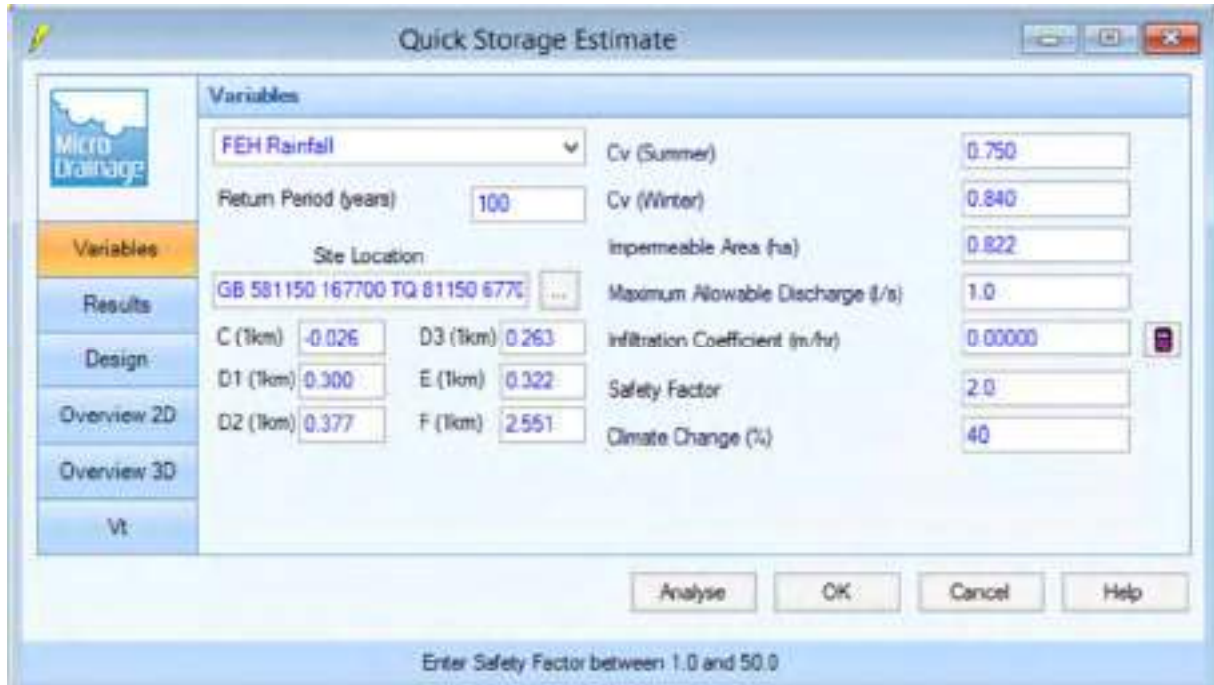
Analyze OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CALCULATIONS

Catchment A2

Average Volume of Attenuation = 1047 + 1277 = 1162m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall

Return Period (years) 100

Site Location GB 581150 167700 TQ 81150 6776

Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	0.822
Maximum Allowable Discharge (l/s)	1.0
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40

C (1km) -0.026 D3 (1km) 0.263
D1 (1km) 0.300 E (1km) 0.322
D2 (1km) 0.377 F (1km) 2.551

Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 1047 m³ and 1277 m³.

These values are estimates only and should not be used for design purposes.

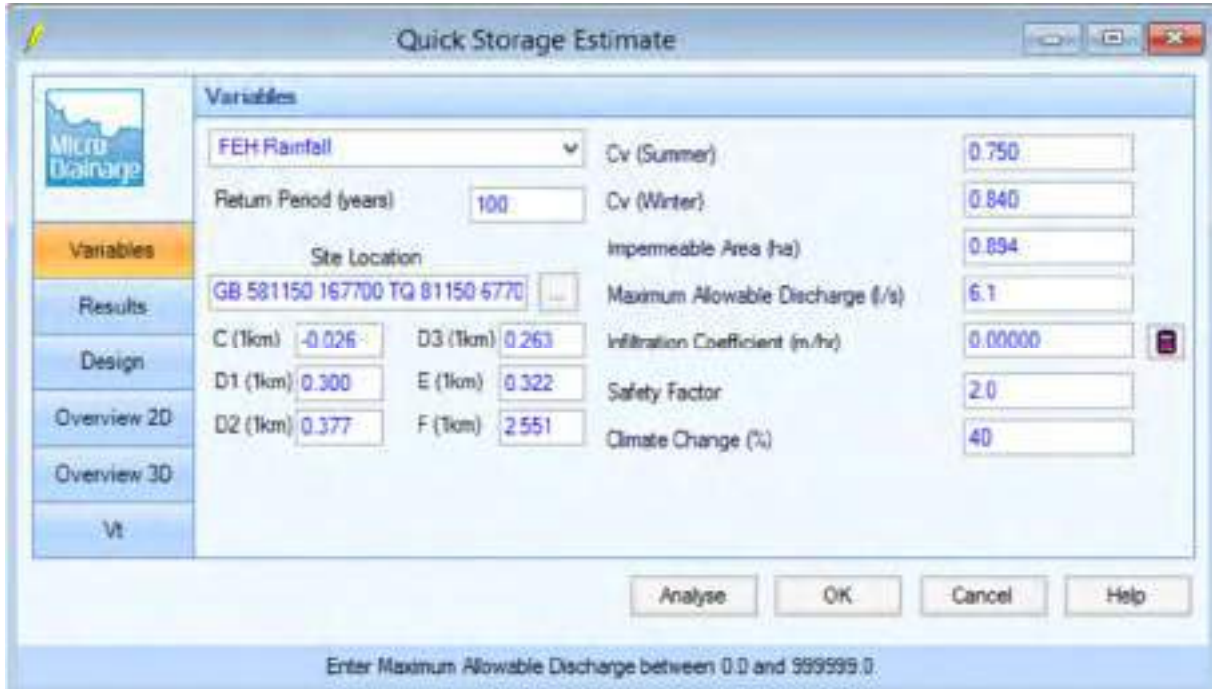
Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0

CALCULATIONS

Catchment B1(a)

Average Volume of Attenuation = 689 + 1014 = 851m³



Quick Storage Estimate

Variables

FEH Rainfall	Cv (Summer)	0.750	
Return Period (years)	Cv (Winter)	0.840	
100	Impermeable Area (ha)	0.094	
Site Location	Maximum Allowable Discharge (l/s)	6.1	
GB 581150 167700 TQ 81150 6770	Infiltration Coefficient (m/hr)	0.00000	
C (1km) -0.026	D3 (1km) 0.263	Safety Factor	2.0
D1 (1km) 0.300	E (1km) 0.322	Climate Change (%)	40
D2 (1km) 0.377	F (1km) 2.551		

Buttons: Analyse, OK, Cancel, Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



Quick Storage Estimate

Results

Global Variables require approximate storage of between 689 m³ and 1014 m³.

These values are estimates only and should not be used for design purposes.

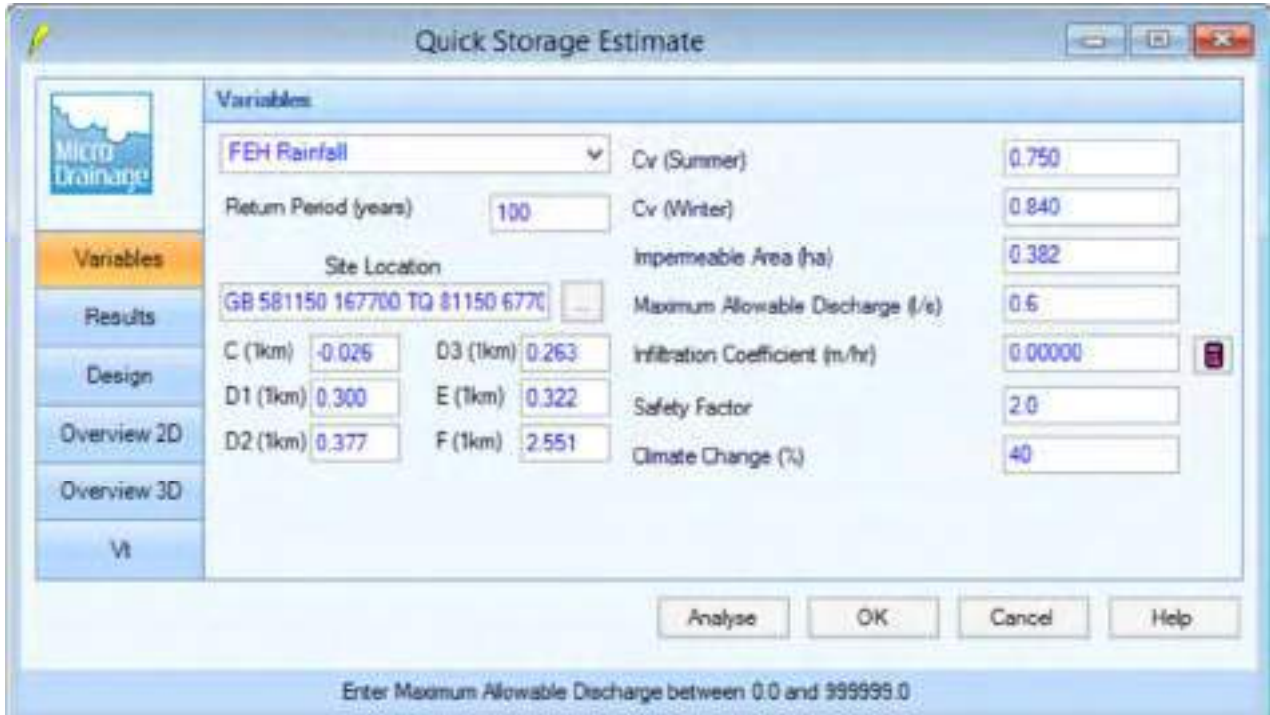
Buttons: Analyse, OK, Cancel, Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CALCULATIONS

Catchment B1(b)

Average Volume of Attenuation = 464 + 570 = 517m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location GB 581150 167700 TQ 81150 6770 Impermable Area (ha) 0.382

C (1km) -0.026 D3 (1km) 0.263 Maximum Allowable Discharge (l/s) 0.6

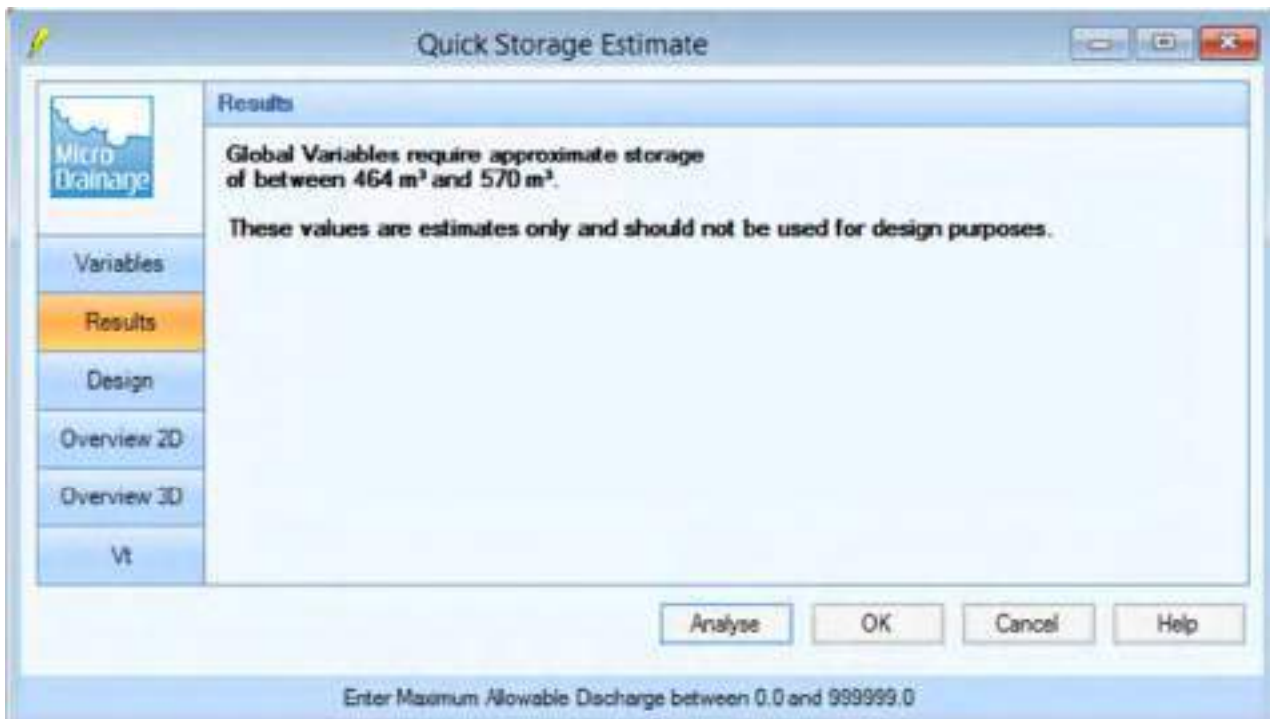
D1 (1km) 0.300 E (1km) 0.322 Infiltration Coefficient (m/hr) 0.00000

D2 (1km) 0.377 F (1km) 2.551 Safety Factor 2.0

Climate Change (%) 40

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 464 m³ and 570 m³.

These values are estimates only and should not be used for design purposes.

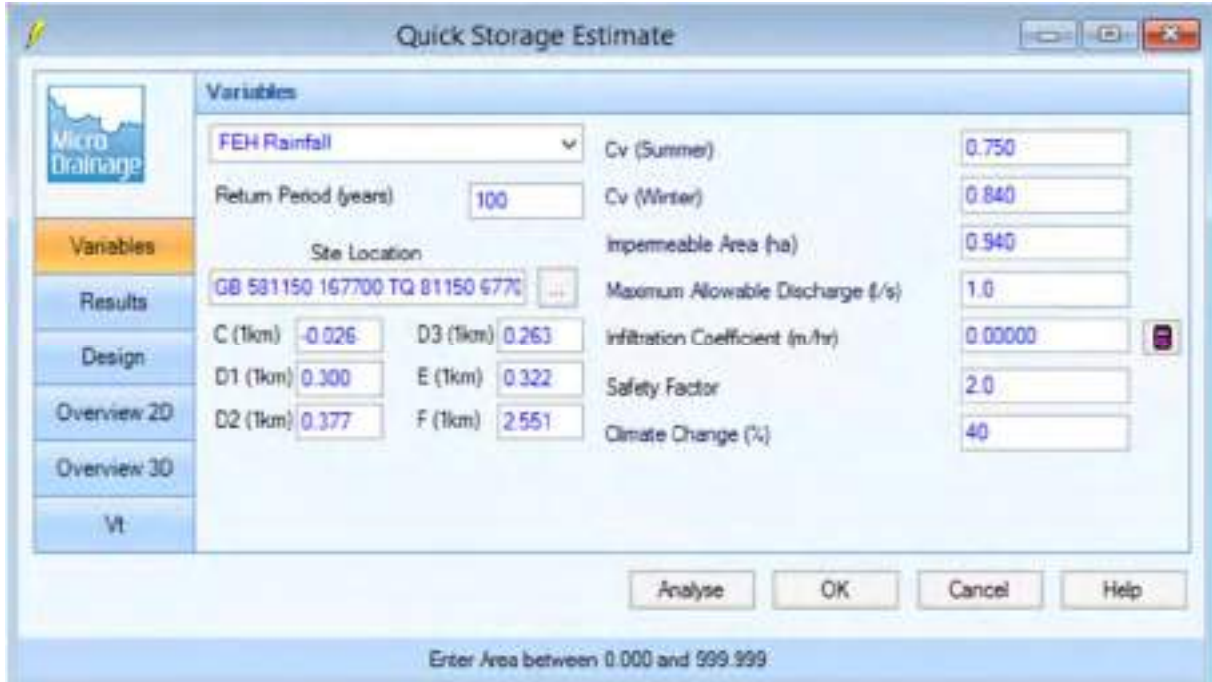
Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CALCULATIONS

Catchment B2

Average Volume of Attenuation = 1221 + 1486 = 1353m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown)

Return Period (years): 100

Site Location: GB 581150 167700 TQ 81150 6770

Cv (Summer): 0.750

Cv (Winter): 0.840

Impermeable Area (ha): 0.940

Maximum Allowable Discharge (l/s): 1.0

Infiltration Coefficient (m/hr): 0.00000

Safety Factor: 2.0

Climate Change (%): 40

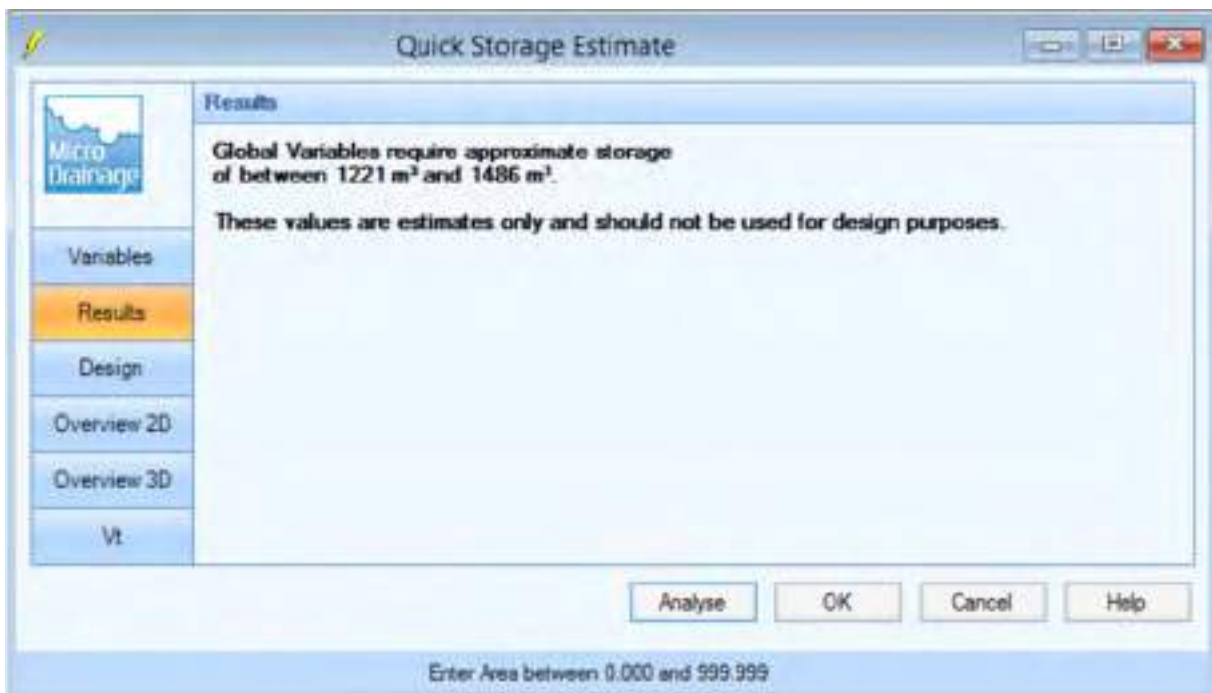
C (tkm): -0.026 D3 (tkm): 0.263

D1 (tkm): 0.300 E (tkm): 0.322

D2 (tkm): 0.377 F (tkm): 2.551

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 1221 m³ and 1486 m³.

These values are estimates only and should not be used for design purposes.

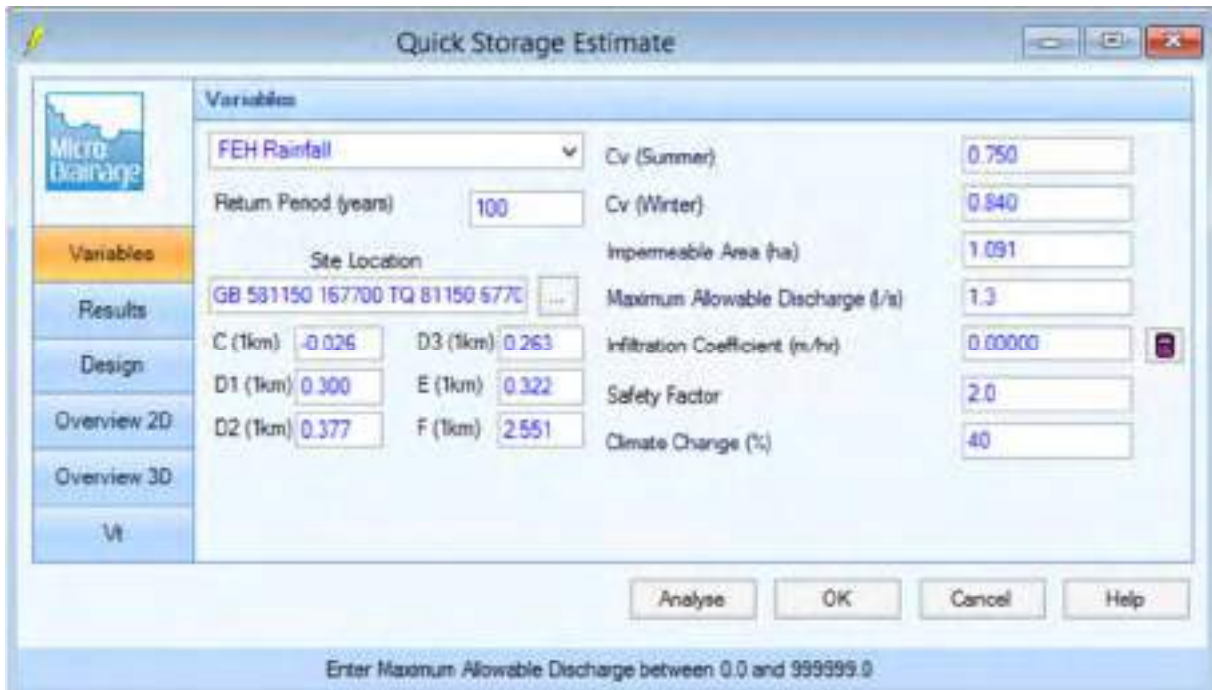
Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment B3 (incl. Care)

Average Volume of Attenuation = 1394 + 1700 = 1547m³



Quick Storage Estimate

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location: GB 581150 167700 TQ 81150 5770 ...

Impervious Area (ha) 1.091

Maximum Allowable Discharge (l/s) 1.3

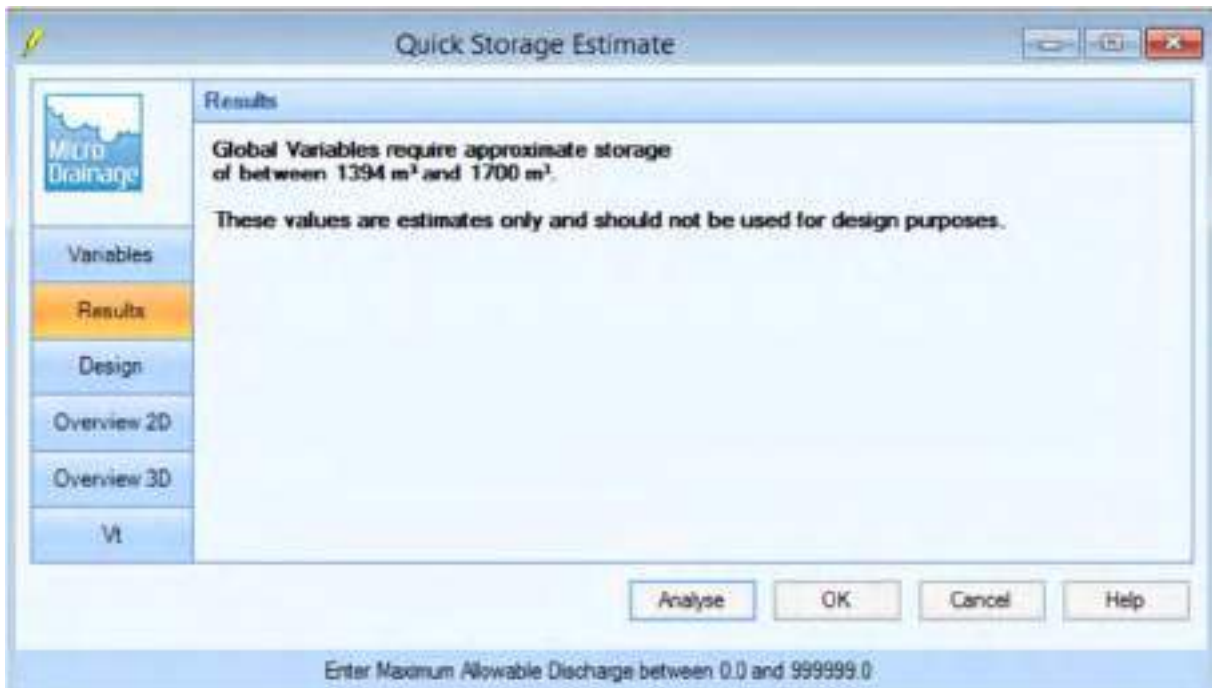
C (1km) 0.026 D3 (1km) 0.263 Infiltration Coefficient (m/hr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Buttons: Analyse, OK, Cancel, Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



Quick Storage Estimate

Results

Global Variables require approximate storage of between 1394 m³ and 1700 m³.

These values are estimates only and should not be used for design purposes.

Buttons: Analyse, OK, Cancel, Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CALCULATIONS

Catchment C (a)

Average Volume of Attenuation = 5087 + 7261 = 6174m³



Quick Storage Estimate

Variables

FEH Rainfall Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location Impermeable Area (ha) 5.746

GB 581150 167700 TQ 81150 6770 ... Maximum Allowable Discharge (l/s) 24.4

C (1km) -0.026 D3 (1km) 0.253 Infiltration Coefficient (m/hr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Analyse OK Cancel Help

Enter Climate Change between -100 and 600



Quick Storage Estimate

Results

Global Variables require approximate storage of between 5087 m³ and 7261 m³.

These values are estimates only and should not be used for design purposes.

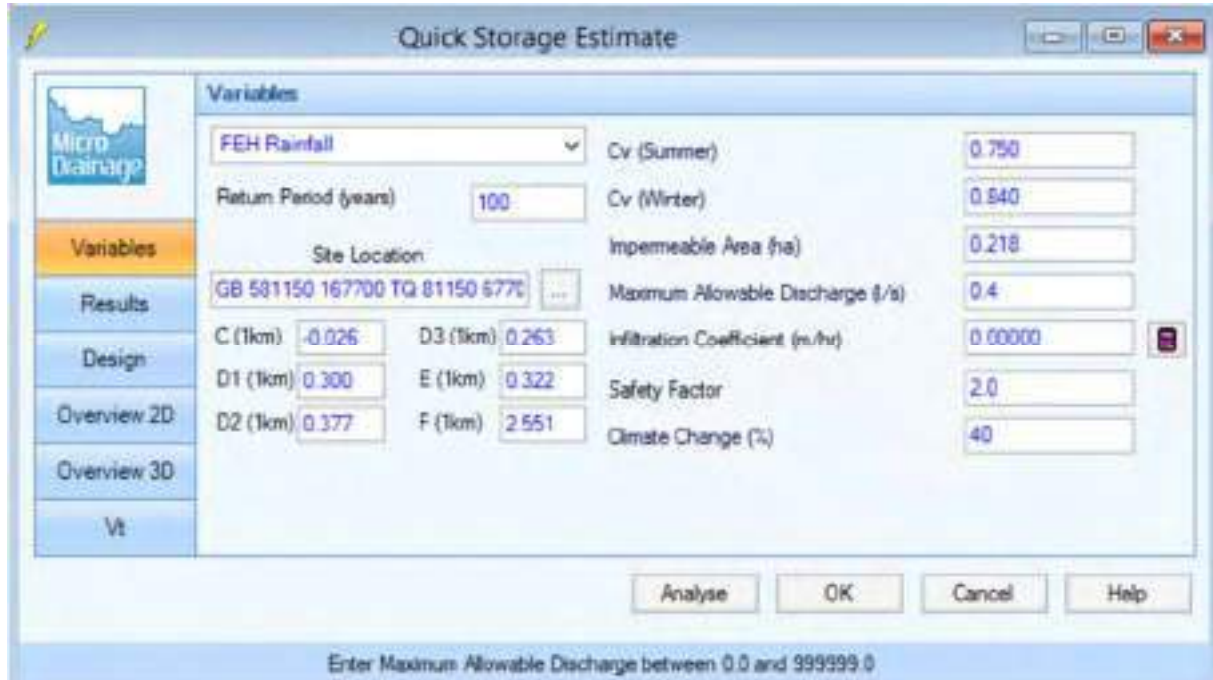
Analyse OK Cancel Help

Enter Climate Change between -100 and 600

CALCULATIONS

Catchment C (b)

Average Volume of Attenuation = 255 + 317 = 286m³



Quick Storage Estimate

Variables

FEH Rainfall Cv (Summer)

Return Period (years) Cv (Winter)

Site Location: GB 591150 167700 TQ 81150 6770 Impermeable Area (ha)

Maximum Allowable Discharge (l/s)

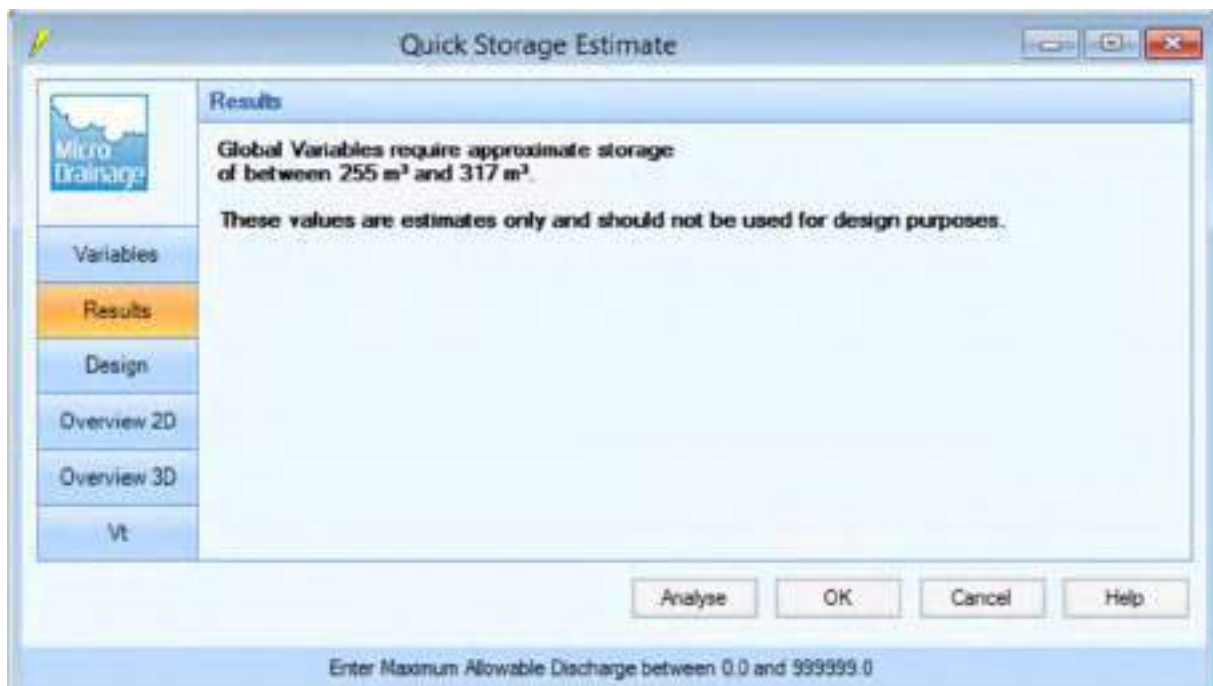
C (1km) D3 (1km) Infiltration Coefficient (m/hr)

D1 (1km) E (1km) Safety Factor

D2 (1km) F (1km) Climate Change (%)

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



Quick Storage Estimate

Results

Global Variables require approximate storage of between 255 m³ and 317 m³.

These values are estimates only and should not be used for design purposes.

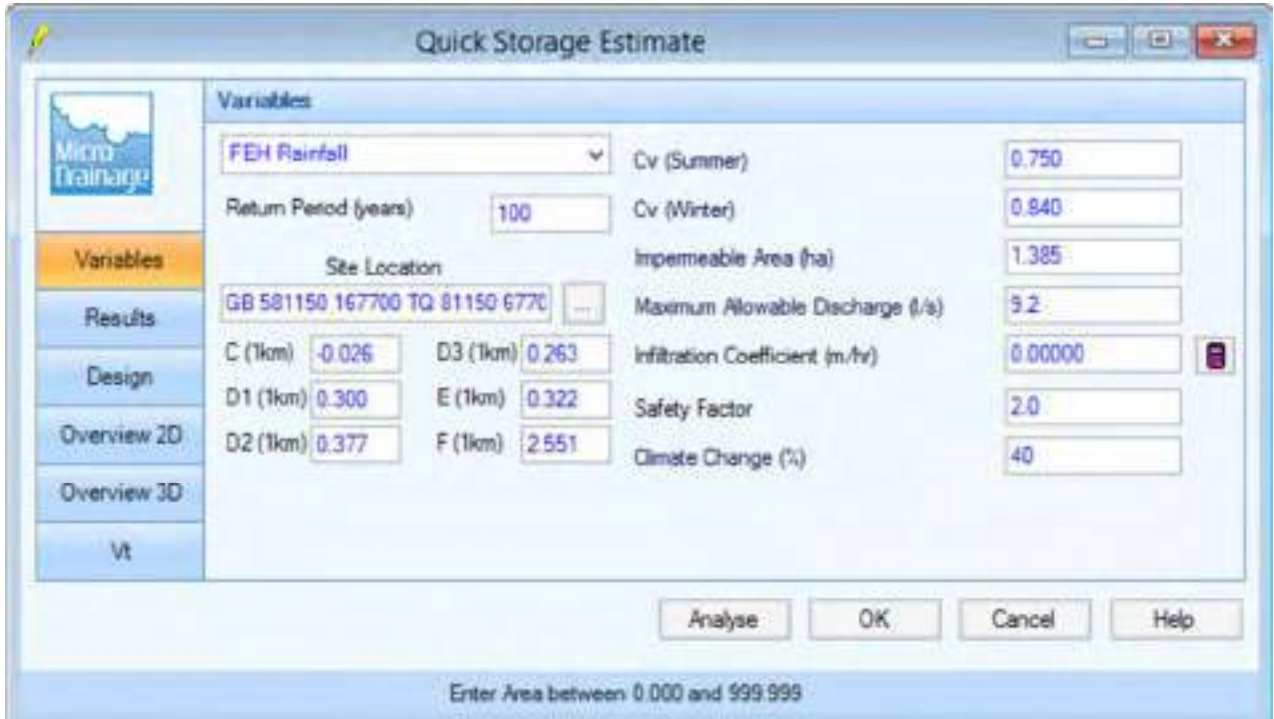
Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CALCULATIONS

Catchment D (a)

Average Volume of Attenuation = 1074 + 1584 = 1329m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location: GB 581150 167700 TQ 81150 6770

Impemeable Area (ha) 1.385

Maximum Allowable Discharge (l/s) 9.2

C (1km) -0.026 D3 (1km) 0.263 Infiltration Coefficient (m/yr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 1074 m³ and 1584 m³.

These values are estimates only and should not be used for design purposes.

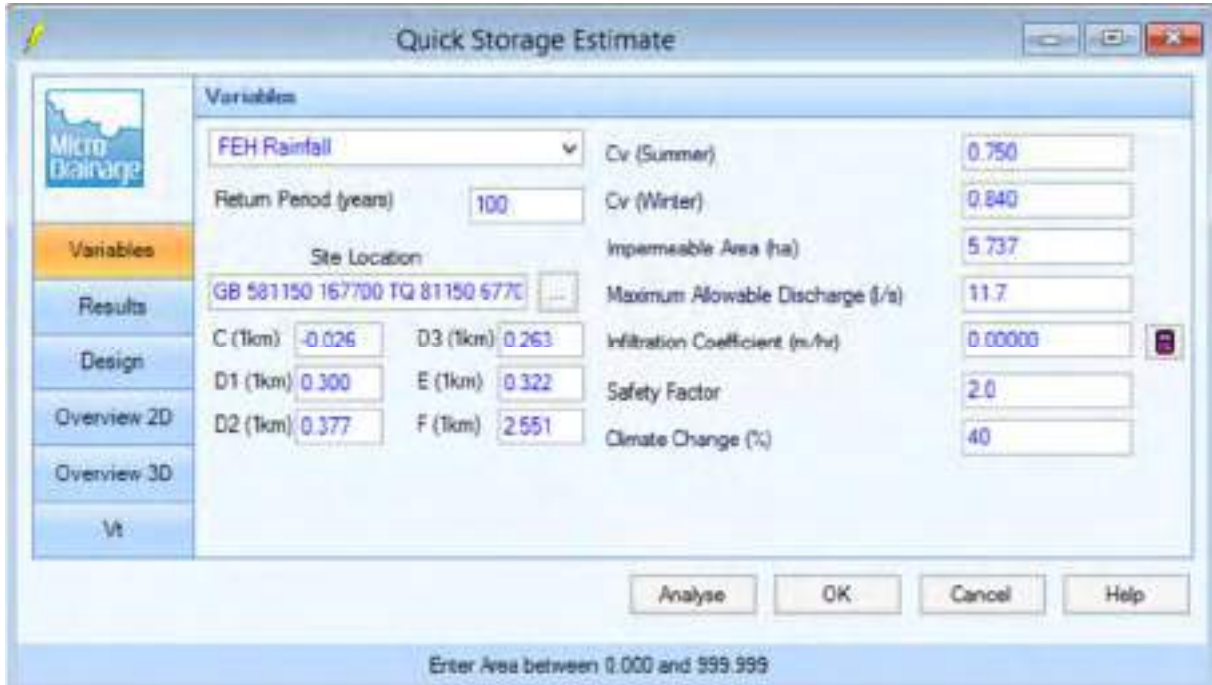
Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment D (b)

Average Volume of Attenuation = 6516 + 8194 = 7355m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall Cv (Summer)

Return Period (years) Cv (Winter)

Site Location Impervious Area (ha)

Maximum Allowable Discharge (l/s)

C (1km) D3 (1km) Infiltration Coefficient (m/hr)

D1 (1km) E (1km) Safety Factor

D2 (1km) F (1km) Climate Change (%)

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 6516 m³ and 8194 m³.

These values are estimates only and should not be used for design purposes.

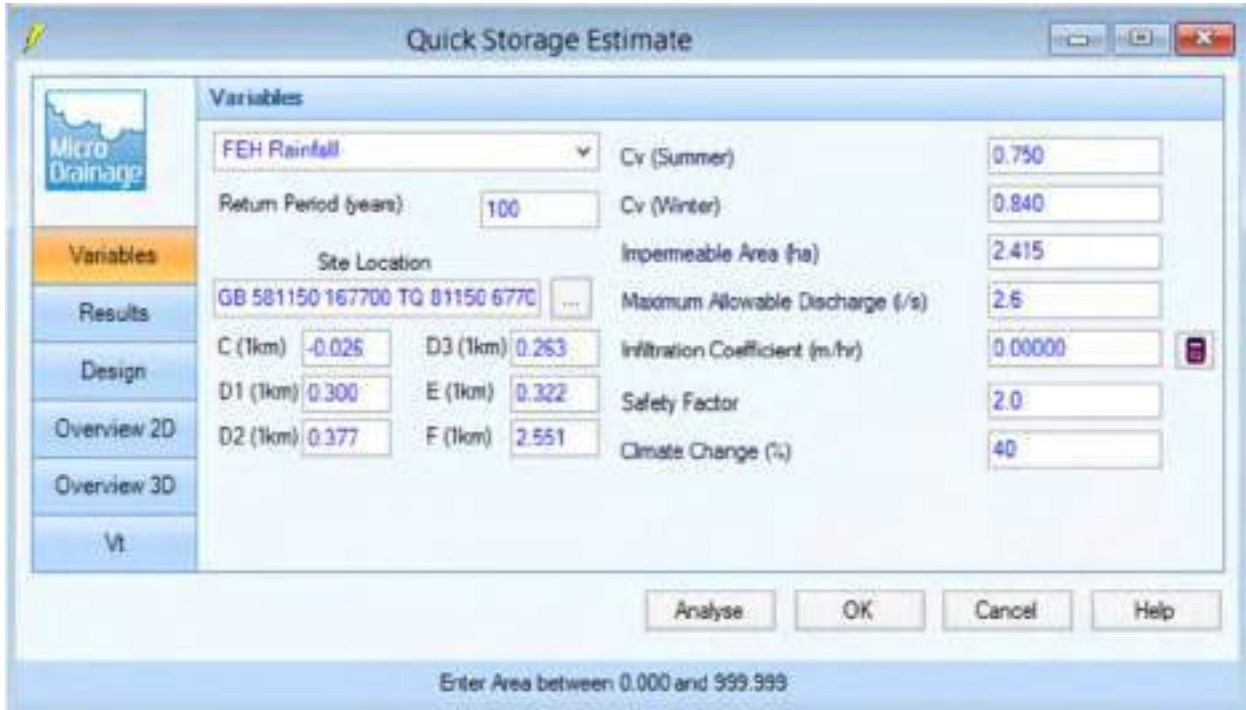
Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment E1 (a)

Average Volume of Attenuation = 3131 + 3811 = 3471m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years): 100 Cv (Winter) 0.840

Site Location: GB 581150 167700 TG 01150 6770 Impermable Area (ha) 2.415

Maximum Allowable Discharge (l/s) 2.6

C (1km) -0.025 D3 (1km) 0.263 Infiltration Coefficient (m/hr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 3131 m³ and 3811 m³.

These values are estimates only and should not be used for design purposes.

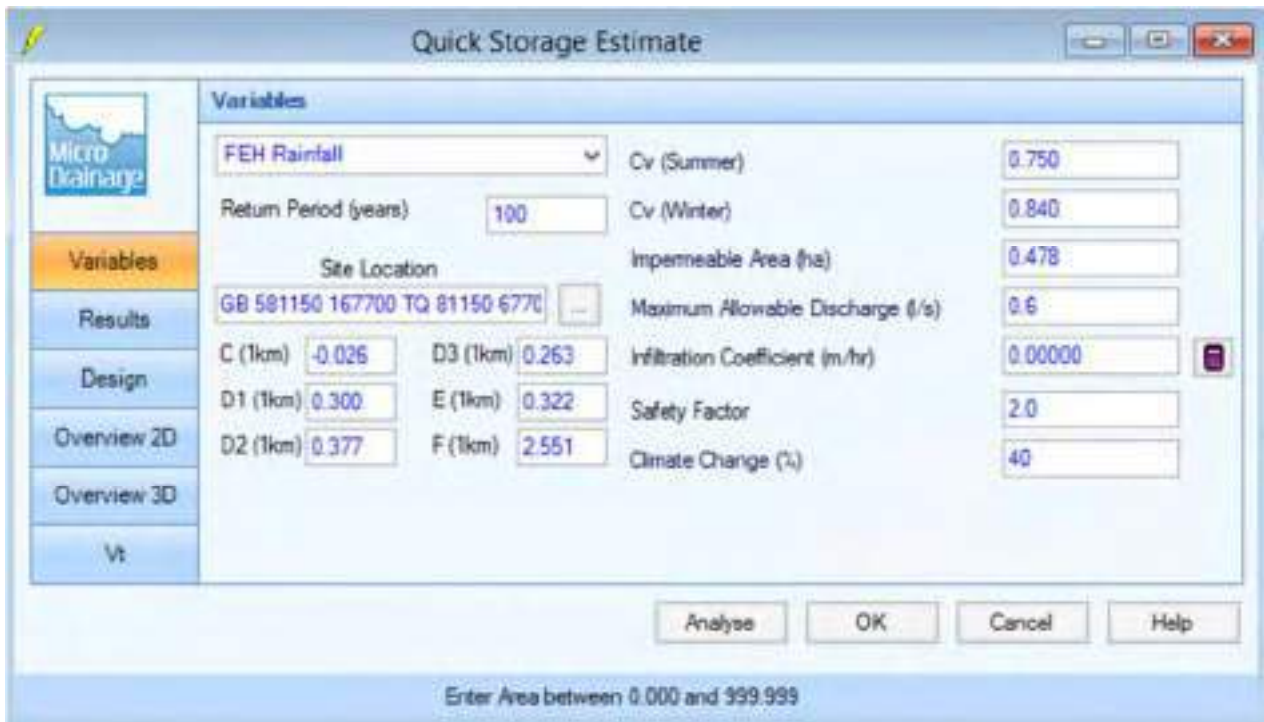
Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment E1 (b)

Average Volume of Attenuation = 606 + 739 = 672m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall

Return Period (years)

Site Location
GB 581150 167700 TQ 81150 6770

Cv (Summer)	<input type="text" value="0.750"/>
Cv (Winter)	<input type="text" value="0.840"/>
Impermeable Area (ha)	<input type="text" value="0.478"/>
Maximum Allowable Discharge (l/s)	<input type="text" value="0.6"/>
Infiltration Coefficient (m/hr)	<input type="text" value="0.00000"/>
Safety Factor	<input type="text" value="2.0"/>
Climate Change (%)	<input type="text" value="40"/>


C (1km) D3 (1km)

D1 (1km) E (1km)

D2 (1km) F (1km)

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 606 m³ and 739 m³.

These values are estimates only and should not be used for design purposes.

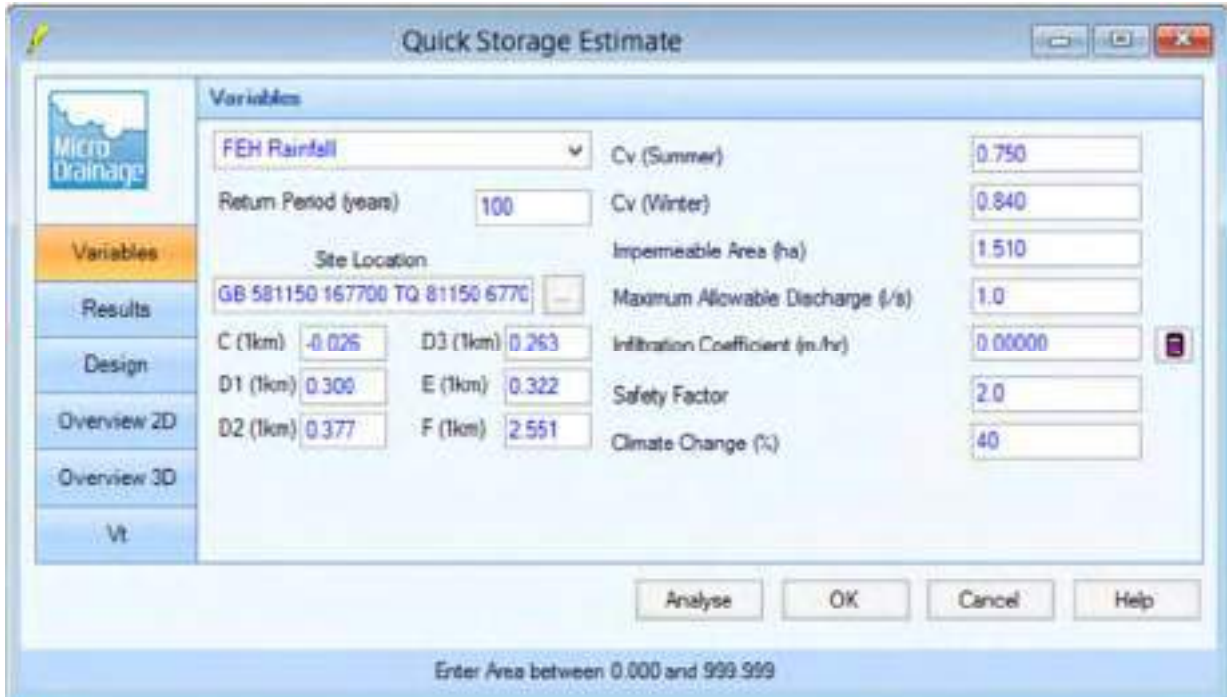
Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment E2

Average Volume of Attenuation = 2128 + 2493 = 2310m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall

Return Period (years) 100

Site Location GB 581150 167700 TQ 81150 6770

Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	1.510
Maximum Allowable Discharge (l/s)	1.0
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40

C (1km) -0.026 D3 (1km) 0.263
D1 (1km) 0.300 E (1km) 0.322
D2 (1km) 0.377 F (1km) 2.551

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 2128 m³ and 2493 m³.

These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

CALCULATIONS

Catchment School

Average Volume of Attenuation = 3084 + 3698 = 3391m³



Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall (dropdown) Cv (Summer) 0.750

Return Period (years) 100 Cv (Winter) 0.840

Site Location Impervious Area (ha) 2.291

GB 581150 167700 TQ 81150 6770 Maximum Allowable Discharge (l/s) 2.0

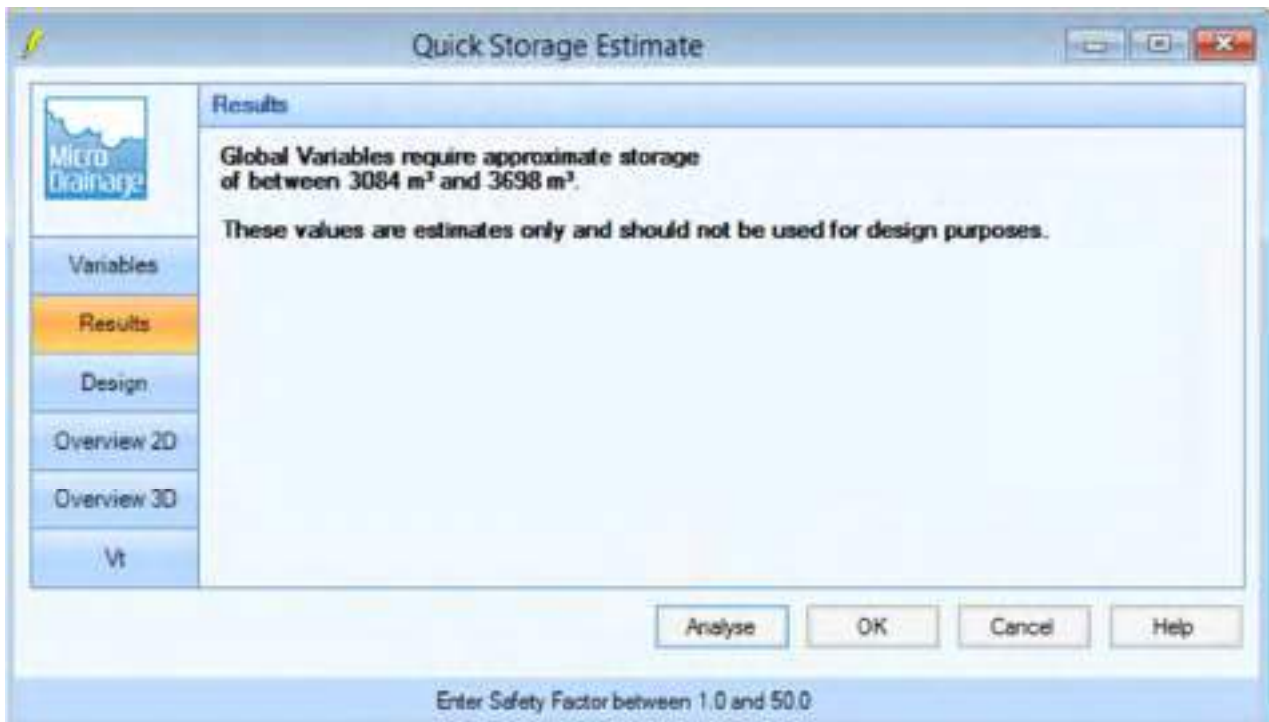
C (1km) -0.026 D3 (1km) 0.263 Infiltration Coefficient (m/hr) 0.00000

D1 (1km) 0.300 E (1km) 0.322 Safety Factor 2.0

D2 (1km) 0.377 F (1km) 2.551 Climate Change (%) 40

Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0



Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 3084 m³ and 3698 m³.

These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0

TECHNICAL NOTE

Appendix E – Flood Risk Assessment

ANNEX 5

Addendum Note: Information for Habitats
Regulations Assessment – Update with regards to
Hydrological Matters (Ecology Solutions, February
2020)

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8242: LAND AT PUMP FARM AND BLOORS FARM, LOWER RAINHAM

ADDENDUM NOTE: Information for Habitats Regulations Assessment – Update with regards to Hydrological Matters

Introduction and Background

1. This Addendum Note has been produced by Ecology Solutions on behalf of AC Goatham & Son and relates to the development proposals for Land at Pump Farm and Bloors Farm, Lower Rainham, Kent (hereafter referred to as the site) (Medway Council reference: MC/19/1566).
2. The planning application was supported by a document entitled *Information for Habitats Regulations Assessment* (IHRA) produced by Ecology Solutions (dated May 2019), which outlines a detailed assessment of the proposals in light of international / European designated sites.
3. Following submission of the planning application, a consultation response was provided by Natural England (dated 1 August 2019). In the letter, further information was requested with regards to the proposed surface water drainage strategy, in order “to demonstrate that measures can be implemented to ensure that contaminated surface water does not enter the River Medway”.
4. Subsequently, a Technical Note entitled *Surface Water Drainage Strategy Addendum* (SWDS Addendum) has been produced by Stantec (dated January 2020), which summarises the findings of further assessment and modelling work which has been undertaken (including infiltration testing) and provides further clarity with regards to the proposed surface water drainage strategy.
5. In light of this additional information, this Addendum Note has been produced to update the relevant section of the IHRA insofar as it relates to hydrological matters (specifically, paragraphs 5.42 to 5.50 inclusive). This Note should be read in conjunction with both the SWDS Addendum and also the IHRA.

Summary of SWDS Addendum

6. As outlined in Sections 4 and 5 of the SWDS Addendum, since the planning application was submitted borehole permeability testing has been undertaken at the site. The results of this work have confirmed that infiltration is indeed a suitable surface water drainage solution for the site. This has therefore

informed an updated Drainage Strategy, which is included at Appendix B of the SWDS Addendum. The assumption made (on a precautionary basis) in paragraphs 5.47 to 5.50 inclusive of the IHRA that a “no-infiltration” system would be required is therefore no longer relevant to the development proposals.

7. As illustrated at Appendix B of the SWDS, the Drainage Strategy involves the use of a number of soakaway basins across the site, each of which contains multiple deep bore soakaways and serves the relevant development plot/s. Swales and filter drains are proposed to treat and convey surface water runoff through the new development to the soakaway basins and interconnect these basins during exceedance events. As a result, surface water will be discharged directly to the ground, and no direct discharges into either existing surface water sewers or watercourses which discharge into the River Medway are proposed. It is therefore clear that the surface water drainage strategy will not be hydrologically connected to the international / European designated sites.
8. Notwithstanding the above, the SWDS Addendum provides further clarity with regards to how the drainage strategy has been designed to ensure that it will fully address surface water requirements, including details with regard to the mitigation measures which are proposed.
9. As outlined in Sections 7 and 8 of the SWDS Addendum, in order to inform the surface water drainage scheme, detailed consideration has been given both to existing and proposed discharge rates at the site, and also to the attenuation requirements of the proposed development (in light of the various catchment areas within the site). This detailed approach ensures that the measures proposed are fully adequate for the development proposed and provide the required capacity to address surface water runoff.
10. The SWDS Addendum notes that the drainage proposals can accommodate surface water runoff from the proposed development with no flooding for all storms up to and including the 1 in 100 (1%) annual probability plus 40% climate change event. Furthermore, the SWDS Addendum shows that the proposed soakaway basins will be equipped with freeboard to accommodate flood water in the event of exceedance, including extreme/bigger storms than the 1 in 100 (1%) annual probability plus 20/40% climate change event. As such the drainage strategy has been designed to ensure that there will be no discharge of flood water into the international / European designated site.
11. However, in a worst-case scenario, where the freeboard of the proposed basins is surpassed, flood water would be directed by basin overflows, conveyance swales and site wide exceedance routes towards Pump Lane and Lower Rainham Road and will drain towards the River Medway. The likelihood of such an extreme flooding event is considered to be exceptionally low indeed light of the design parameters; moreover, it is important to reiterate that the current situation involves discharge of surface water runoff to the Medway Estuary from the site.
12. Sections 10 and 11 of the SWDS Addendum outline the mitigation and pollution control measures that form an integral part of the drainage strategy. These measures will include the use of Sustainable Urban Drainage Systems (SuDS) such as permeable paving, filter drains, swales, and detention basins with deep bore soakaways. These SuDS features in combination provide water quality treatment such as removal of sediments, metals and hydrocarbons from the

surface water runoff, slow down the contribution of the surface water runoff into the drainage system and provide onsite attenuation.

Conclusions

13. In summary, the updated drainage strategy as outlined in the SWDS Addendum confirms that the use of on-site infiltration via deep bore soakaways will avoid any requirement for surface water discharge from the new development to either existing surface water drains or watercourses which lead into the River Medway. As such, there is no direct hydrological link between the proposed development and the international / European designated sites.
14. Moreover, through the use of SuDS measures as outlined in the SWDS Addendum, potential pollutants will be fully addressed, such that there will be no impacts to off-site habitats or species, including those associated with the Medway Estuary. The SWDS also provides reassurance that the measures proposed are fully adequate to mitigate for the scale of development proposed at the site.
15. It is important to note that the final strategy for surface water runoff control at the site will necessarily need to be confirmed at the detailed design stage. However, in light of the information outlined in the SWDS Addendum, the risk of potential adverse effects (via hydrological pathways) occurring as a result of the development proposals is considered to be *de minimis* in nature.
16. On this basis, it may be concluded that the development proposals would not be likely to have a significant effect on the European / international designated sites via hydrological impacts, either considered alone or in combination with other plans or projects.
17. Furthermore, it is considered that no specific mitigation (beyond that which is proposed as an inherent part of the scheme) would be required in order to reach this conclusion.

ANNEX 6

Consultation Response from Paul Hyde (Natural England) to Medway Council dated 4 March 2020

Date: 4th March 2020
Our ref: 287468
Your refs: MC/19/1566



South East Region
International House
Dover Place
Ashford
Kent
TN23 1HU

Hannah Gunner
Medway Council – Planning Service
Physical & Cultural Regeneration
Regeneration, Culture, Environment & Transformation
Civic Headquarters
Gun Wharf
Dock Road
Chatham
ME4 4TR

By email only, no hard copy to follow

Dear Hannah Gunner

Proposal: Outline planning application with some matters reserved (appearance landscaping, layout and scale) for redevelopment of land off Pump Lane to include residential development comprising of approximately 1,250 residential units a local centre, a village green, a two form entry primary school, a 60 bed extra care facility, an 80 bed care home and associated access (vehicular, pedestrian, cycle).

Re MC_19_1566-DRAINAGE_STRATEGY_ADDENDUM-5514657 and Addendum Note: Information for Habitats Regulation Assessment – update with regards to hydrological Matters

The assumption made (on a precautionary basis) in paragraphs 5.47 to 5.50 inclusive of the IHRA that a “no-infiltration” system would be required would result, given a worst case scenario, in flood waters being directed towards Pump lane and Lower Rainham Road which would drain towards the River Medway.

The current situation therefore involves discharge of surface water runoff to the Medway estuary from the site.

Subsequent to the planning application Borehole permeability testing has been undertaken at the site, confirming that infiltration is a suitable drainage solution for the site. The drainage strategy has therefore been updated to include an infiltration system involving the use of;

1. a number of soakaway basins across the site, each of which contains multiple deep bore soakaways.
2. Swales and filter drains are proposed to treat and convey surface water runoff through the new development to the soakaway basins and interconnect these basins during exceedance events.

As a result, surface water will be discharged directly to the ground, and no direct discharges into either existing surface water sewers or watercourses which discharge into the River Medway are proposed. These SuDS features in combination provide water quality treatment such as removal of

sediments, metals and hydrocarbons from the surface water runoff, slow down the contribution of the surface water runoff into the drainage system and provide onsite attenuation.

I can agree that the updated drainage strategy as outlined in the SWDS Addendum confirms that the use of on-site infiltration via deep bore soakaways will avoid any requirement for surface water discharge from the new development to either existing surface water drains or watercourses which lead into the River Medway. As such, there is no direct hydrological link between the proposed development and the international / European designated sites.

However I also note that the final strategy for surface water runoff control at the site will necessarily need to be confirmed at the detailed design stage.

Should the detailed design stage reveal the need for significant changes to the SWDS then the developer will need to consult with Natural England to confirm the changes have not resulted in any increased risk to the designated sites.

Whilst the additional information in relation to the surface water drainage strategy is welcomed, no further information has been provided in relation to how the increased recreational disturbance from residents to the Medway Estuary and Marshes Special Protection Area (SPA) and Wetland of International Importance under the Ramsar Convention (Ramsar Site) will be managed.

Given the size of the development, which is in walking distance of the SPA and Ramsar Site, Natural England's advice remains that in addition to the appropriate financial contribution being made to the Strategic Access Management and Monitoring Strategy, additional bespoke mitigation measures are required. As detailed in our letter of the 1 August 2019 (our reference 287468) these could, for example, include:

- the provision of significant areas of greenspace (either on-site or off-site if it is easily accessible from the development by foot)
- the provision of additional site specific warden presence at locations closest to the application site

In the absence of details of the measures that will be implemented to manage recreational pressure, Natural England's advice is that impacts to the Medway Estuary and Marshes Site of Special Scientific Interest (SSSI), SPA and Ramsar Site. If this additional information is not provided, Natural England may need to object to this application.

Please note that if your authority is minded to grant planning permission contrary to the advice in this letter, you are required under Section 28I (6) of the Wildlife and Countryside Act 1981 (as amended) to notify Natural England of the permission, the terms on which it is proposed to grant it and how, if at all, your authority has taken account of Natural England's advice. You must also allow a further period of 21 days before the operation can commence.

Yours sincerely,

Paul Hyde



Lead Advisor

Kent Land Management Team

t: 02080266052

e: paul.hyde@naturalengland.org.uk

Natural England, International House, Dover Place, Ashford, Kent, TN23 1HU

ANNEX 7

Land at Lower Rainham Road – Bespoke Wardening
Package (Ecology Solutions, July 2020)

Land at Lower Rainham Road - Bespoke Wardening Package

1. Key Details

		Rationale / Justification
Role	Seasonal Warden / Ranger	<p>The role of the seasonal warden / ranger would essentially align with that of the North Kent SAMMS / BirdWise seasonal rangers (funded by strategic contributions), but would act in with more targeted geographical focus (see below).</p> <p>The seasonal warden / ranger's responsibilities are anticipated to include but not be limited to: actively patrolling sensitive areas (specifically Riverside Country Park in addition to other known areas of sensitivity in the locality of the site), engaging with visitors; putting up seasonal signs, fences etc.; familiarisation with the area and identification of disturbance issues; putting in place mitigation measures to remove sources of disturbance (such as illegal motor biking) or reducing disturbance from legitimate users (education, signs, screening etc.; liaison with local communities, landowners and land managers and other organisations; education initiatives with local schools etc.; monitoring impacts from human activities and the effectiveness of mitigation measures</p>
Type of Role	Part-time: August to March inclusive	<p>Winter is the key period for adverse effects from recreational disturbance to qualifying species at the European designated site. The strategic approach as outlined in the SAMM Strategy involves seasonal wardens covering this period only; and the bespoke proposal would mirror coverage over this sensitive period</p>
Geographical Scope	Riverside Country Park and Medway Estuary Sites	<p>Primary focus for the additional warden / ranger would be the Riverside Country Park and Medway Estuary - i.e. all of those sites in closest proximity to the development site. This would either be in addition to the BirdWise ranger that covers this area (to double the likelihood of visitors being 'captured' in the various tasks), or alternatively would effectively free them up to visit other key locations, as deemed most appropriate</p>
Cost	See 'Detailed Breakdown' worksheet - total cost of £198K	<p>The annual cost of the seasonal ranger / warden is close to the costs as identified in the SAMM Strategy report (Footprint Ecology) of £20K per year for each seasonal ranger /warden, which underpins the costings for the strategic approach. The SAMM Strategy notes that the £20K figure is '<i>inclusive of office and vehicle costs</i>', and so it is considered that the detailed figures presented are appropriate and realistic as a total figure for an additional warden / ranger</p>
Length of Role	10 Years	<p>In accordance with the approach set out in the SAMM Strategy, it is considered that a seasonal warden would not be required in perpetuity, as their role is educational and seeks to ensure that when new residents visit the site, they are aware of the key sensitivities, such that access patterns which could cause disturbance (such as dog walking off the lead) are minimised. In terms of dealing with potential effects beyond this stage - i.e. in perpetuity - this would be addressed via the financial contribution which the scheme is already committed to contributing towards (over £300K).</p> <p>This proposal is supported by information set out in the SAMM Strategy, which notes that seasonal ranger posts "<i>may not be required in perpetuity. This is because once access patterns have become established in particular ways that reduce disturbance (such as dogs on leads at particular sites) then there may no longer be a need for staffing to continue at such a level</i>".</p> <p>With regard to the length of time that seasonal wardening may be required, the SAMM strategy states that after eight to ten years the level of seasonal wardening would be reviewed. For this project, the time between occupation of the first new dwelling at the site (assuming grant of planning consent) and occupation of the last new dwelling is also estimated to be circa 10 years.</p> <p>As such, the bespoke wardening proposal would ensure that the seasonal warden / ranger would be in place throughout the entire 10 year period when new residents are moving into the new development to provide education, promote good visitor practices and discourage potentially harmful visitor behaviours before patterns are set.</p>

Land at Lower Rainham Road - Bespoke Wardening Package

Detailed Cost Breakdown

	Est. annual cost	One off cost	Cost over 10 years
<u>Staff cost</u>			
Seasonal Warden / Ranger salary ¹	£ 16,000.00		£ 160,000.00
Employers NI	£ 1,016.78		£ 10,167.80
² LPA Administration			£ 2,000.00
<u>General Equipment</u>			
Laptop and associated equipment		£ 600.00	
Computer: Programmes / Licenses (e.g. Office Home / Business, PDF)		£ 350.00	
Maps / stationery		£ 150.00	
<u>Field Equipment</u>			
Waterproof clothing		£ 150.00	
Boots		£ 100.00	
Rucksack		£ 50.00	
Binoculars		£ 700.00	
³ Mileage fund for personal vehicle use	£ 1,440.00		£ 14,400.00
		£ 2,100.00	£ 186,567.80
			£ 188,667.80
Contingency @ 5% of project value over 10 years (to take into account inflation)			£ 9,433.39
			£ 198,101.19

¹ based upon a 30hr working week over 8 months (August to March inclusive)

² To cover insurance uplifts and other administrative costs for post

³ Based on 100 miles per week @ £0.45 / mile

ANNEX 8

Letter from Tim Goodwin (Ecology Solutions) to
Sean Hanna (Natural England) dated 18 August
2020

Our Ref: 8252/TG/ST/005.let.sh
Your Ref:

18 August 2020

Sean Hanna
Natural England

Sent via email only: sean.hanna@naturalengland.org.uk

Dear Sean

RE: Land at Lower Rainham, Kent – Bespoke Wardening Proposals in respect of Medway Estuary and Marshes SPA / Ramsar site

Trust you are well and are keeping safe. I thought I'd drop you a quick line following the telephone call on Friday between your colleague Perdeep Maan and Simon Taber regarding Land at Lower Rainham. I wanted to send you a brief letter to let you know my thoughts.

Having spoken to a number of your senior colleagues across the country over recent months, I do fully appreciate that Natural England are exceptionally stretched at present, and that your availability is very limited indeed. As such we had no problem whatsoever with your colleagues engaging with us regarding the key issues, and indeed we are very grateful for Natural England's assistance. However, on behalf of our client we really do need to move forward with this site and to do this we will need a clear steer from Natural England but I do want to emphasise that we are keen to work with you to find an appropriate solution.

Following a helpful discussion that I know Simon had with you a few weeks ago, we have subsequently prepared additional information regarding a bespoke visitor wardening package which would be funded as part of the proposed development. For the avoidance of doubt, I can confirm that this package would be delivered *in addition* to the strategic contribution to the SAMM project and also the provision of informal open space and circular dog walking routes within the site itself. The intention of engaging with NE via DAS was to establish whether Natural England are content with this bespoke package (which would, of course, be over and above that required in accordance with strategic mitigation).

Unfortunately, whilst the call was generally helpful, at this stage it remains unclear what Natural England's view is on the proposals. As I know Simon mentioned to Perdeep, our impression is that an appropriate avoidance and mitigation solution is definitely achievable for this site, but evidently we will need your feedback in terms of whether you are content with the wardening proposal as it stands, or whether you feel that amendments or clarification are needed. I hope you understand when I say I can't presently sign off the payment relating to the DAS charges because the purpose of the DAS was to get that clear steer from Natural England and I'm sure our clients would be concerned if I didn't raise this with you.



ECOLOGYSOLUTIONS
Part of the ES Group

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I know that Perdeep has taken a number of questions and points that Simon raised back to you for discussion but I would be ever so grateful if you are able to liaise with Perdeep at your earliest convenience and come back to us. My own feeling is that we are not that far apart, if at all, but I appreciate that both you and indeed our client need to be certain in order to pass the necessary tests set down in the legislation. If it would be helpful to convene a further telephone meeting or if you need any further information, please do not hesitate to let either Simon or I know. Unfortunately, as ever, there is some urgency and so I would be grateful if you could please come back to us as soon as possible. If you'd prefer to have a quick telephone conversation with me so that we can subsequently leave Simon and Perdeep to wrap any remaining detail then I'm happy to try and make myself available at your convenience.

Obviously keep safe in what are incredibly strange times and I look forward to hearing from you to be able to move this issue forward.

Kind regards

Yours sincerely

A handwritten signature in black ink, appearing to read 'T. Goodwin', written in a cursive style.

Tim Goodwin
Director

cc
Perdeep Maan
Simon Taber

ANNEX 9

DAS Letter from Perdeep Maan (Natural England) to
Simon Taber (Ecology Solutions) dated 14
September 2020

Date: 14 September 2020
Our ref: DAS/323244
Your ref: 14125



Simon Taber
Ecology Solutions,
Farncombe House,
Farncombe Estate,
Broadway, Worcester,
WR12 7LJ

Customer Services
Hombeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

BY EMAIL ONLY

0300 060 3900

Dear Simon Taber

Discretionary Advice Service (Charged Advice)

DAS/14124/275569

Development proposal and location: Proposed residential development on land at Pump Farm and Bloors Farm, Lower Rainham, Kent.

Thank you for your consultation on the above dated 24 July 2020, which was received on the same date.

This advice is being provided as part of Natural England's Discretionary Advice Service. Ecology Solutions has asked Natural England to provide advice upon:

- The ecological mitigation plan
- The bespoke wardening package

This advice is provided in accordance with the Quotation and Agreement dated 31/07/2020.

The following advice is based upon the information within:

1. 8252 Bespoke Warden Package.vf (23/07/2020)
2. Conference Call dated 14/08/2020 attended Simon Taber and Perdeep Maan
3. Letter from Tim Goodwin (18/08/2020)

Due to the proximity of the proposed development to protected sites (Medway Estuary and Marshes Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site), a bespoke wardening package and alternative greenspace provision have been proposed in addition to financial contributions to the Thames, Medway and Swale Estuaries Strategic Access Management and Monitoring Strategy (SAMMS).

My advice is that, although these additional measures are being proposed in recognition of the development's proximity to the coast, Natural England will, for the reasons set out below, have particular concerns regarding this development proposal. Given this, I advise it will be necessary to demonstrate robustly how the proposed measures, together with the standard SAMM contribution, will avoid an adverse impact on these sites. In particular, Natural England's concerns would include:

- The proposed development's close proximity to the coastal protected sites, with access facilitated by the existing path and road network, which would introduce a source of recreational disturbance to an area where currently there is not a high density of housing.

- The scale of the proposal. Reducing the number of houses, for instance, would reduce the impact and we would be happy to discuss that further as an option.

Bespoke Wardening Package

The wardening package currently proposes a dynamic and flexible approach to the location of the warden. My advice is Natural England would require confirmation of how the wardening proposal, (together with the greenspace provision) will effectively mitigate the potential impacts from recreational disturbance as a result of the new development. I would recommend that the Birdwise Project is consulted to discuss how the wardening proposal will complement its activities, and enable dedicated wardening to be provided.

An analysis would also be needed to be provided on whether the proposal for one warden would be sufficient, based on an assessment of the likely increase of visitors to the coast as a result of this development proposal. To further inform mitigation measures, I would recommend these are assessed against the expected number of residents for the new development.

Effective mitigation needs to be implemented for the duration of the impact, and in the case of residential development, this is the lifespan of the homes. The SAMMS is therefore implemented in perpetuity. The length of the wardening role is proposed to be for a 10 year fixed term. I advise that Natural England will require evidence on why in perpetuity provision is not being proposed, and how the fixed term proposal would be sufficient to mitigate the 'lifespan' effect arising from the proposed development.

Provision of alternative spaces

The development proposes to provide green spaces, with four alternative walking routes, as well as enclosed areas aimed at dog walkers.

I would recommend that detailed plans are provided for the specific design, management and maintenance of the alternative greenspace in perpetuity, drawing on the north Kent visitor survey evidence base ¹ which aims to understand the coastal draw, and which attributes of recreational space are attractive to local residents. I recommend providing details of how the alternative green spaces will incorporate this evidence to provide an effective alternative to the coast.

I advise that details of these plans should be provided, to demonstrate how the proposed alternatives will provide the recommended high quality outdoor spaces. The proposed measures being taken to encourage residents to use these spaces should be demonstrable. This would mean, for instance, providing the features (such as those summarised in Table 11 of the north Kent visitor survey) that would be necessary to attract residents (particularly dog walkers) away from the coast. I would also recommend setting out how the proposed amount (area) of greenspace would be sufficient in the context of the number of residents.

Given that these areas will need to attract dog walkers away from the coast, the proposal should also set out how the proposed enclosed areas and dog walking routes would work as an effective alternative. This could be, for example, by providing routes of comparable length and quality to those recorded in the north Kent visitor survey.

It is recommended that additional land outside of the proposed development boundary is investigated as having potential to provide local alternative recreational spaces.

In summary, I recommend further clarity is provided on how the proposed green space and wardening package will provide effective mitigation for the proposed development, and I would be happy to provide further advice if needed as these elements are developed in more detail.

¹ Fearnley, H. & Liley, D. (2011) *North Kent Visitor Survey Results*, Footprint Ecology.

Senior adviser to QA letter and check box below

The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours faithfully,

Perdeep Maan
Sussex and Kent

Cc commercialservices@naturalengland.org.uk

ANNEX 10

Technical Note: European Sites Avoidance and
Mitigation Strategy (Ecology Solutions, October
2020)

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8252: LAND AT PUMP FARM AND BLOORS FARM, LOWER RAINHAM, KENT

TECHNICAL NOTE: EUROPEAN SITES AVOIDANCE AND MITIGATION STRATEGY

Introduction

1. Ecology Solutions Limited was commissioned by AC Goatham and Son Ltd in February 2019 to consider development proposals for Land at Pump Farm and Bloors Farm, Lower Rainham, Kent (hereafter referred to as the application site), and to undertake detailed assessment of the potential impacts of the proposals on international / European designated sites.
2. In order to provide the Competent Authority (Medway Council) with all the necessary information to carry out its duties in line with relevant planning policy and legislation, specifically The Conservation of Habitats and Species Regulations 2017 (as amended; hereafter referred to as the Habitats Regulations), Ecology Solutions produced a document entitled "*Information for Habitats Regulations Assessment*". This document, hereafter referred to as the IHRA and dated May 2019, was submitted in support of the planning application (Reference MC/19/1566).
3. In their initial consultation response to the planning application, Natural England sought further clarity in respect of European designated sites, in relation to drainage / hydrology and potential recreational effects. Following the provision of detailed information and clarification in February 2020, Natural England subsequently confirmed that they are fully content in relation to hydrological matters.
4. Further to ongoing discussions with Natural England Officers, this Technical Note has been produced to outline the package of avoidance and mitigation measures which will be delivered in respect of recreational pressure at the international / European designated sites. The purpose of this document is to provide additional information, clarification and justification relating the measures proposed. The measures set out within this document accord with those set out within the IHRA which supported the planning application.
5. It is considered that the information outlined within this Technical Note, in conjunction with the detailed assessment set out in the IHRA, provides comfort that the development proposals are not likely to lead to an adverse effect upon

the integrity of any international / European designated sites as a result of increased recreational pressure, either when the proposals are considered alone or in combination with other plans and projects.

Quantifying potential effects

6. As outlined in paragraph 6.2 of the IHRA, in the absence of avoidance or mitigation measures there remains potential for the development proposals to lead to a significant effect upon Medway Estuary and Marshes Special Protection Area (SPA) / Ramsar site via potential disturbance effects, and on a precautionary basis to contribute towards an effect at other coastal international / European designated sites (specifically, Thames Estuary and Marshes SPA / Ramsar site and The Swale SPA / Ramsar site).
7. The pathway for a potential effect in all cases relates to an increase in recreational pressure, associated with new residents at the proposed development.
8. As outlined in paragraph 5.56 of the IHRA, based on the average occupancy of 2.4 people per dwelling¹, the development proposals are anticipated to result in approximately 3,000 residents living at the site.
9. As outlined in paragraph 5.56 of the IHRA, based on evidence from the Pet Food Manufacturer's Association regarding dog ownership, based on 21% of households owning a dog², the development proposals are anticipated to result in approximately 263 dogs.
10. It is important to recognise that many of these residents (people and dogs) are unlikely to be new to the area; indeed, it is far more likely that the vast majority would currently live in either Medway or the surrounding local authority areas. Given that the identified 'catchment' of the North Kent coast European designated sites is extensive (6km), it is likely that many, if not most, new residents who move into new dwellings at the site would already live within this zone.
11. In these terms, the development proposals would result in the movement of a number of residents within the zone of influence of the European designated sites (from an existing address in the 6km zone to the new development), with potential for some new residents to move in from outside the area. It would be unreasonable ('fanciful') to consider that the development proposals would in fact result in a net increase of 3,000 new people and 263 new dogs living within the zone of influence of the European designated sites.
12. In terms of recreational pressure therefore, it is important to acknowledge that the net change arising as a result of the development proposals is not equivalent to these figures as it does not take into account the resettlement of residents (and dogs) from other addresses in the local area.
13. As outlined in paragraph 6.34 of the IHRA, the development proposals will not provide any enhanced pedestrian linkage between the application site and Riverside Country Park situated towards the north, and specifically avoids any pedestrian only connections to existing public rights of way leading towards the

¹ Figure for average household size (persons) for Medway, taken from the 2011 Census

² PFMA (2019). *Dog Population 2019*

north. As such, whilst new residents could feasibly access the nearest part of the European site on foot, utilising pavements along access roads to reach Lower Rainham Road, before walking along existing public rights of way to reach the designated site, the design of the scheme seeks to discourage this as much as possible, and instead promote on-site alternative areas of open space.

14. Apart from the north-western part of the site, areas of residential development will also be separated from Lower Rainham Road, with existing housing to the north along Lower Rainham Road representing a barrier to movement. In addition, the location of the proposed care centre, village centre and school in the northern part of the site will further reinforce this barrier effect, resulting in a separation between new residential dwellings and the nearest part of the Country Park / European designated site.
15. In the context of avoiding and mitigating for recreational pressures, connectivity between new residential dwellings within the site and the Country Park (and in turn European designated site) is clearly an important factor. By providing a less attractive and more complicated route on foot from new properties to reach the designated site, this is likely to be far less attractive to new residents compared to on-site opportunities, certainly for regular activities such as dog walking (see below).
16. Furthermore, as outlined in the IHRA there are no general parking areas proposed within the site, aside from those associated with the care and village centre, both of which will be subject to parking and management controls. As such the development proposals will not provide parking opportunities for individuals to park within the site and then access the Country Park and international / European designated sites beyond.

Overarching Strategy

17. To address potential recreational effects, a bespoke package of avoidance and mitigation measures is proposed. This can be separated into three distinct elements:
 - Provision of an appropriate financial contribution towards management and monitoring at the SPAs / Ramsar sites, in accordance with the North Kent Strategic Access Management and Monitoring Strategy (SAMMS);
 - Provision of on-site greenspace to offer alternative opportunities for informal recreation for new residents, designed particularly to maximise their use by key user groups (e.g. dog walkers); and
 - Provision of an additional bespoke wardening strategy at Medway Estuaries and Marshes SPA / Ramsar site, which would be funded by the development proposals and which would act in concert to complement strategic measures funded by the SAMMS contribution.
18. Further clarity, detail and justification in relation to each of these three elements is set out under the relevant subheading below.

Element 1 – Contribution towards North Kent SAMMS

19. As outlined in paragraphs 6.24 and 6.25 of the IHRA, the proposed development will provide an appropriate financial contribution towards the North Kent SAMMS.
20. The North Kent SAMMS involves the delivery of a suite of strategic projects which act together to mitigate for an increase in recreational visitors at the international / European designated sites along the North Kent Coast³. As outlined in the document which underpins the SAMMS⁴ (a copy of which is included at Appendix 1 of this Technical Note), projects relate to access, management and monitoring, and are principally focused of measures at the European designated sites themselves. A brief synopsis of the components of the SAMMS is outlined in Table 1 below.

Component	Summary / description
North Kent Coast Dog Project	Engagement with local dog walkers to establish communication between dog walkers and conservation / countryside staff. Main element relates to production of a website, with potential for events. Non-location specific.
Wardening and Visitor Engagement	Small team of mobile wardens / rangers to patrol and deliver measures at the European site(s), engage with visitors and local communities, and implement other measures set out in the strategy. Two seasonal rangers proposed during the winter period only (August to March inclusive), with one senior ranger proposed throughout the year. Senior ranger to be funded in perpetuity; seasonal rangers potentially short-term (related to access patterns). Wardening effort and patrolling will involve all areas and be flexible, with a focus on key locations
New Access Infrastructure	Variety of smaller projects to reduce or modify visitor impacts on a site-specific basis, such as changes to footpaths, gateways, fencing, additional screening planting or other access infrastructure.
Parking	Review of parking opportunities across the North Kent coast area (to be undertaken by wardens) with measures to be implemented where necessary to control, manage or restrict parking
Interpretation and Signage	Provision of interpretation boards and signage to inform visitors of the sensitivity of the designated site, discourage harmful activities and promote good visitor behaviour (e.g. dogs on leads)
Codes of Conduct	Production of specific codes of conduct to cover activities such as dog walking and boating at each of the European designated sites, with the aim of discouraging harmful behaviours
Working with local clubs and groups	Engagement with local clubs and groups to resolve very specific localised issues (linked to codes of conduct)
Refuges	Establishment of parts of the Medway Estuary as refuges for wildlife, where human activity is minimised, and visitors are actively discouraged or prevented from undertaking activities

³ Specifically, Thames Estuary and Marshes SPA / Ramsar site, Medway Estuary and Marshes SPA / Ramsar site and The Swale SPA / Ramsar site

⁴ Liley, D. & Underhill-Day, J. (2013). *Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy*. Unpublished report by Footprint Ecology

Enhancement of existing sites to create hub	Measures to direct users to locations where there are good access infrastructure and management measures in place to reduce disturbance. Delivering enhancements to make them more of a focus and draw for users.
Enhancement of existing green infrastructure away from the European sites	Measures to enhance areas of open space located away from the designated sites to attract users of the coastal European sites, such as changes to path networks, provision of dedicated areas for dogs and provision of attractive and relatively wild dog walking routes
Enforcement	Measures to prevent particularly disturbing activities, such as enforcement of speed limits on the water and dog control orders
Monitoring	Monitoring of visitor numbers, visitor behaviour, wintering waterfowl and disturbance to ensure approaches are working and to identify refinements and tweaks that may be required

Table 1: Components of the North Kent SAMMS (summary based on SAMMS report)

21. It is important to highlight that a number of the individual components of the SAMMS refer to measures which would either act at or which are associated with the nearest part of the Medway Estuary and Marshes SPA / Ramsar site to the application site (the southern edge of the designated site). Particular reference is made to Riverside Country Park, which as noted in the IHRA lies to the north of the application site.
22. Table 2 lists these site-specific measures; further detail in relation to specific locations is available in Maps 2 to 10 inclusive of the SAMMS report (included at Appendix 1 for clarity).

Component	Measures specific to Medway Estuary and Marshes SPA / Ramsar site (south)
Wardening and Visitor Engagement	Roaming warden along Medway estuary shore as a boost to existing warden staff (suggested area for focus of wardening effort)
New Access Infrastructure	Management of existing shoreline vegetation (Bramble) and reinforcement with additional planting to provide partial screening (seaward side of sea wall at Riverside Country Park); management of paths at Horrid Hill and gated entrance to main access path; promotion of fenced 'dogs run free' areas away from shoreline, including in particular dog training area; and fencing to restrict access from Saxon Shore Way on west side of Motney Hill onto adjoining beach
Parking	Potential to restrict roadside parking and close lay-by (Motney Hill)
Interpretation and Signage	Potential signage regarding dogs on leads (Riverside Country Park)
Refuges	Potential refuge area with minimal access and disturbance (island in the estuary)
Enhancement of existing sites to create hub	Enhancements to Riverside Country Park – areas away from shoreline so that access can increase here without further disturbance

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Table 2: Components of the North Kent SAMMS which relate to the southern part of Medway Estuary and Marshes SPA / Ramsar site (summary based on SAMMS report)

23. By its very nature as a strategic approach, individual financial contributions towards the overarching SAMMS associated with any given project are not typically assigned directly to a specific element or component of the overarching strategy. Contributions are collated into an overarching fund which is then used for the various elements of the strategy. However, as outlined in Table 2 there is a significant number of measures proposed which would act directly at the nearest parts of the European designated site to the application site. It is therefore apparent that providing contributions towards the SAMMS will contribute towards a scheme which relates specifically to key areas situated closer to the development site, where it is relatively more likely than an adverse effect could otherwise arise in the absence of mitigation.
24. As set out in paragraph 6.25 of the IHRA, in accordance with the SAMMS a contribution of £245.56 per dwelling shall be made towards the strategic mitigation strategy, with this to be secured by an appropriate legal agreement (Section 106 Agreement or Unilateral Undertaking).
25. On the basis that the planning application is for approximately 1,250 new residential dwellings, on this basis the total SAMMS contribution would therefore be **£306,950** (excluding legal and monitoring officer's costs).

Element 2 – Provision of on-site greenspace

26. As outlined in paragraphs 6.27 to 6.37 inclusive of the IHRA, the second key element of the avoidance and mitigation strategy is the provision of on-site greenspace within the development site. The purpose of this is to offer an attractive and welcoming alternative for informal recreation, and therefore mitigate for a potential increase in recreational pressure at the more sensitive international / European designated sites.
27. As noted in paragraph 6.36 of the IHRA, it is important to recognise that whilst the provision of alternative open space has a role to play in mitigating for an increase in recreational pressure, by its very nature it is not possible to provide a visitor experience which is equivalent to visiting a coastal site. Indeed, visitors to the coast often seek the unique habitats and experience that can only be provided by these landscapes, which cannot be replicated in a terrestrial site.
28. Indeed, visitor survey work undertaken at the European designated site⁵ found that 63% of visitors would not visit an alternative site regardless of the features that it had. As a result, it suggests that providing enhancements to alternative sites is only likely to be effective for a relatively small proportion of visitors, which is acknowledged in the SAMMS report (paragraph 5.77).
29. Whilst providing alternative open space away from the coast can assist in terms of reducing the number of visits from key groups such as dog walkers and also for regular activities typically undertaken close to home (e.g. daily dog walking), it is therefore considered that this element of the avoidance and mitigation

⁵ Fearnley, H. & Liley, D. (2011). *North Kent Visitor Survey Results*. Footprint Ecology

strategy is of comparatively lesser weight relative to other measures which act at the international / European designated sites themselves.

30. Nonetheless, particular consideration has been afforded to ensuring that the development proposals maximise on-site opportunities for informal recreation, with a key focus on providing opportunities for dog walking (given the potential for disturbance to qualifying species at the designated sites associated with this activity).
31. Visitor survey work undertaken at the European designated site sought to ask existing visitors what features they felt would be necessary to make another site attractive as an alternative destination. The findings of the survey are set out in Table 11 of the 2011 visitor survey report, which is replicated in Table 3 below.

Feature	Number of responses	% of responses	% of responses excluding 'nothing'
Nothing	338	63	
Closer to home	37	7	19
Better path surfacing / path network	35	7	18
More dog friendly	31	6	16
Measures to control other users	28	5	14
Attractive scenery	21	4	11
Refreshments (café/pub)	17	3	9
Better / easier parking	13	2	7
Cheaper / free parking	6	1	3
Toilets	5	1	3
Better information / maps / board	3	1	2
Better launching / access to water	2	0	1

Table 3: Features identified by existing visitors to North Kent coast European sites as being necessary to make another site attractive for use as an alternative to the designated site (adapted from Fearnley & Lily, 2011)

32. From the visitor survey work undertaken, it is evident that the most important factor for alternative open space is that it should be located closer to home than the designated site. Other key elements that should be delivered include better surfacing and a network of footpaths, the provision of dog-friendly areas, measures to control other users and attractive scenery.
33. The proposals for open space within the site are shown on the Indicative Recreation Plan and the Green and Blue Infrastructure Parameter Plan (PRC Architects). A copy of this is included at Appendix 2 of this document for clarity. Given the very significant scale of the site (50 hectares in size), and the fact that the development proposals are in outline, detailed planting plans have not been produced to date; however this illustrates the key features as described below.
 - The development proposals will deliver a network of informal public open space throughout the application site. As noted in paragraph 6.29 of the IHRA, and as illustrated on the Indicative Recreation Plan, informal open space will be distributed throughout the site, with more extensive blocks in the central part of the site (including a Village Green around 1.1 hectares in size and retained orchard planting) and corridors of open space extending across, through and around the site. The total area of greenspace proposed within these corridors is approximately 7.4 hectares.

34. It is therefore clear that new dwellings located throughout the site will be situated in close proximity to this network of open spaces, enabling them to access them easily for informal recreational activities such as walking and dog walking. Noting that access on foot to reach the nearest part of the European designated site would be more difficult and therefore far less attractive to new residents (see above), and that the proximity of open space close to home was identified as the most important feature which would make an alternative location attractive to visit, it is considered that this is a key factor that is likely to encourage use by residents.
35. Open space within the site will also support a network of footpath routes. It is expected that these would be surfaced (potentially hoggins, gravel or tarmac) to provide year-round opportunities for informal recreation. It is therefore apparent that the on-site greenspace will also deliver another key feature identified to be important.
36. Visitor survey work undertaken at the European designated site identified that dog walkers on average walk around 2.6km (median distance), whilst people walking without dogs on average walk around 3km in total⁶. Although there are clearly differences between recreational opportunities at the coast (given that this essentially represents a linear feature) and those at other sites further away, providing informal routes of a similar length is considered to be helpful in promoting on-site open space as an alternative to visiting the international / European designated sites.
37. As illustrated on the Indicative Recreation Plan, four walking routes are proposed passing through the new development:
- Route 1: 1.9km in western part of site;
 - Route 2: 1.4km in northern part of site;
 - Route 3: 1.5km in south-eastern part of site; and
 - Route 4: 1.2km in central part of site.
38. Although these routes represent discrete 'loops' which pass across and through the development, these can be linked together to form a number of longer routes as desired, as they connect at various points. For instance, residents would easily be able to combine routes 1 and 2 for a total walk length of circa 3.4km, or routes 2 and 3 for a total walk length of circa 2.6km. Indeed, if residents desired a longer walk, this could also be facilitated. Given the breadth of options available for new residents, it is considered that this will increase the likelihood of recreational activity being undertaken on-site, particularly in terms of regular dog walking for instance.
39. Visitor survey work has identified that dog walkers comprise a significant element of activities at the international / European designated sites. At Riverside Country Park, 67% of visitors were recorded to be dog walking, with 21% walking without a dog and far fewer visitors undertaking other activities⁷. Given the potential for disturbance to qualifying features of the international / European designated sites associated with dog walking (as set out in the IHRA), and also the fact that providing specific measures to make a site more dog friendly was cited by existing visitors to the European site as an important factor for an alternative

⁶ Figures taken from Table 18 of the 2011 North Kent Visitor Survey Report

⁷ Figures taken from Table 5 of the 2011 North Kent Visitor Survey Report

location (Table 3 above), specific measures are proposed to enhance the suitability and attractiveness of on-site greenspace for this key group.

40. As illustrated on the Indicative Recreation Plan, a number of off-lead areas will be provided within greenspace in selected locations across the site (six in total). These are situated at various points along the identified circular routes, and the total size of these areas will range from 400 square metres to 1,200 square metres. In total, the area of off-lead areas present within the site is 0.44 hectares. These off-lead areas will be fenced to allow residents to allow their dogs off the lead to run free in a secure area. Dog bins will also be provided throughout the site to conserve the attractiveness of both these off-lead areas as well as the wider network of open space running through the site.
41. The network of green spaces distributed throughout the site will support a range of semi-natural habitats, including grassland, trees, scrub and wetland features associated with SuDS. Existing features such as natural hedgerows will also be retained where possible. This will result in open space of a high quality which encourages use for informal recreation. Whilst it is important to note that comprehensive landscape and planting plans for open space within the site will be produced at the detailed stage, measures will be adopted to ensure that on-site greenspace is attractive to new residents and that any potential unappealing features, such as undesirable views at specific locations, will be mitigated through the use of screening planting as required.
42. As outlined in paragraph 6.33 of the IHRA, the southern part of the site is higher and slopes downwards towards the north. As a result, areas of open space in this part of the site will enable views of the coast and Country Park to be enjoyed by residents, which will assist by delivering a similar type of visitor experience to walks closer to the estuary.
43. In addition to the measures above, interpretation boards and signage will be provided within the on-site greenspace. The content of the boards will be designed to promote the use of open space within the site, including the circular waymarked routes, and will include a map showing the features of key importance such as connections between the green infrastructure and development areas, as well as features of importance for dog walkers such as dog waste bins and off-lead areas. The boards will also include a section which highlights the sensitivities of the international / European designated sites, in order to inform and educate visitors.
44. The details for the management and maintenance of on-site greenspace will be confirmed at the detailed stage. However, the management prescriptions will be focused upon the key objective of delivering an attractive and high-quality network of open spaces for the life of the development (in perpetuity), including both more formal and more informal areas connected by footpaths. The key focus will be to maximise the use of the area by new residents for informal recreation, in preference to the coast where possible. It is considered that the detail can be set out in a Landscape Management Plan, which can be secured by a suitably worded planning condition. It is envisaged that the funding of on-site open space will be secured via a Section 106 legal agreement.

Element 3 – Additional Bespoke Wardening

45. As set out in paragraph 6.38 of the IHRA, to ensure that there is no potential for an adverse effect to arise on international / European designated sites,

consideration has been afforded to the delivery of additional measures beyond the two elements above (financial contribution to the SAMMS and delivery of on-site greenspace).

46. In accordance with the approach towards avoidance and mitigation for the North Kent Coast (as outlined in the SAMMS) and in light of consultation with Natural England, consideration was afforded to two options: the delivery (or enhancement) of alternative off-site greenspace, and the provision of additional bespoke measures at the international / European sites, in the form of (additional) wardening.
47. As noted above, it is important to reiterate that the 'draw' of the coast cannot be directly replicated through the provision of alternative greenspace; as a result, it must be acknowledged that these options are not 'equivalent' in terms of the extent to which they are likely to avoid and mitigate adverse effects arising upon the international / European designated sites. As a result, it is considered that proportionately greater weight should be afforded to measures which act to avoid and mitigate effects at the international / European sites itself (i.e. wardening), compared with measures which serve to reduce potential visitor pressure (i.e. alternative open space).

Option 1 – Delivery of additional off-site greenspace

48. Discussions were held between the applicant and Medway Council to identify potential options to enhance off-site greenspaces in the local area which were within the ownership and/or control of the Council. Unfortunately, no potential options for the delivery of new greenspace or the enhancement of existing open space have been identified by the Council. As such, it is understood that this is not a viable option that could be delivered as part of the avoidance and mitigation strategy for the proposed development.
49. Consideration has also been afforded to other off-site parcels of land which could potentially be brought forward as alternative informal open space (i.e. those which are currently private land). The applicant does not own or control any other areas of land in the local area (beyond the application site); as a result, the delivery of bespoke off-site open space involves:
 - Identifying a suitable land parcel in the first instance which can reasonably and realistically be enhanced to provide alternative open space to visiting the international / European designated sites (and relevant to the proposed development site);
 - Purchasing the land parcel; and
 - Delivery of suitable enhancements to facilitate and improve access for key user groups including dog walkers.
50. Initial work has not identified any suitable areas of private land located in the local area which could potentially be secured and subsequently enhanced to provide alternative off-site open space.
51. On this basis, it is considered that there are no potential or viable options to deliver additional off-site open space (whether under the control / ownership of the Council or indeed bringing forward private land). However, in light of the bespoke wardening package proposed (see below), which is directly relevant to the proposed development, it is not considered that the delivery of off-site open

space would be required in this case in order to reach the conclusion of no adverse effect upon the integrity of international / European designated sites.

Option 2 – Bespoke wardening package

52. In light of the consultation responses and ongoing advice from Natural England, a detailed bespoke wardening package has been identified which will also be delivered as part of the development proposals. The following section sets out the rationale and justification which underpins this additional measure, with reference to the evidence base which has informed this further element of the avoidance and mitigation strategy.
53. It is important to reiterate at the outset that this measure will be provided in addition to the financial contribution towards the SAMMS, as noted above. As such, the wardening package must be considered as an *additional* measure which would avoid and mitigate for an increase in recreational pressure arising at the international / European designated sites.
54. As noted above, it is evident that visitor wardens (sometimes referred to as ‘rangers’) are a key component of the SAMMS. Wardens deliver many of the other measures set out in the strategy, from public engagement and education of visitors, to identifying site-specific measures such as access infrastructure and signage, and from the implementation and enforcement of codes of conduct, to the monitoring of visitor numbers and behaviour. Indeed, as noted in the North Kent SAMMS, there is published evidence of the effectiveness of wardening in mitigating for adverse effects upon wetland birds.
55. Wardening is also by its very nature more flexible than other components of the SAMMS. In turn, this ensures that it is most effective in delivering effective avoidance and mitigation for potential adverse effects arising from recreational pressures, both in terms of its geographical reach (covering the most sensitive parts of the international / European designated site which may change over time) and also in delivering key measures such as education, public awareness and other resources in a targeted fashion.
56. As outlined above, the design of the proposed development will discourage access to the nearest part of the international / European designated site on foot for new residents. As a result, whilst delivering site-specific measures at Riverside Country Park could initially be perceived as being more relevant to the proposed development (given the fact that it is located closest to the application site via straight line distance), it is considered that a measure which has a broader geographical scope provides greater certainty that potential effects arising from recreational pressure will be fully addressed. The flexible nature of wardening is therefore considered to be ideal to ensure that potential adverse effects will be avoided, including but importantly not limited to Riverside Country Park.
57. The detail of the bespoke wardening package is set out at Appendix 3 of this Technical Note and is described below. The measures have been derived based on detailed consideration of the role of the SAMMS wardens, with regard afforded to the SAMMS report⁴ and also other relevant information from the BirdWise North Kent website⁸.

⁸ BirdWise North Kent – available at: www.northkent.birdwise.org.uk

58. Under the development proposals, a seasonal warden / ranger will be delivered (hereafter referred to as the 'bespoke warden' for clarity). The role of the bespoke warden will be very similar to that undertaken by the North Kent SAMMS seasonal wardens, with the specific responsibilities of the role including (but not limited) to the following:
- Actively patrolling and engaging with visitors at sensitive areas of the European designated site (specifically Riverside Country Park, in addition to other known areas of sensitivity along the Medway Estuary in the locality of the proposed development);
 - Implementing measures to reduce disturbance at the international / European designated sites, particularly through education initiatives, including direct engagement with visitors (at the designated site itself) and liaison with local communities, schools, groups, landowners and organisations;
 - Identifying disturbance issues and putting in place mitigation measures to remove and mitigate for sources of disturbance, including signage, screening and enforcement;
 - Putting up seasonal signage and fences as required to control and manage visitor pressures; and
 - Monitoring impacts from human activities and the effectiveness of mitigation measures at the European designated sites.
59. The most important element of the role will be to deliver education initiatives and raise awareness of the sensitivities associated with the international / European designated sites. The focus of the bespoke warden role will primarily be to engage with new residents living at the development site, with potential initiatives including the promotion of on-site opportunities for dog walkers, production and distribution of information to raise awareness of potential disturbance at the North Kent coast, and promotion of alternative areas of open space in the local area which are not sensitive in ecological terms. It is also anticipated that the bespoke warden will also engage directly with the new school, to raise awareness with students (and indeed staff).
60. Moreover, it is important to note that the bespoke warden will also engage with existing residents and groups in the local area, thereby helping to also mitigate existing recreational pressures arising upon the designated sites (thereby delivering benefits in terms of the net position).
61. As with the North Kent SAMMS seasonal wardens, the role of the bespoke warden will also be flexible and dynamic, to ensure that they are able to best deliver avoidance and mitigation efforts where and when it is required. It is considered that a fixed or more selective role could miss a key area of concern (should one arise), and therefore this is of significant benefit.
62. A number of the tasks outlined above would clearly need to be delivered in conjunction with site owners and managers (for instance, Medway Council in relation to Riverside Country Park). To be as effective as possible (and deliver maximum benefits), the bespoke warden will also liaise and coordinate their activities with the North Kent SAMMS seasonal wardens (as well as other site

staff). As an additional (funded) resource, the bespoke warden will therefore fully complement the strategic measures, providing a proportionately greater benefits than a single warden would acting in isolation.

63. As outlined in Section 4 of the IHRA, the international / European designated sites have been primarily designated on account of their importance for wintering birds. As a result, the autumn and winter seasons are identified as the key period for potential adverse effects to arise from recreational disturbance to qualifying species. The bespoke warden would therefore have a part-time role covering the entirety of this period, from August to March inclusive. This approach accords with that of the North Kent SAMMS seasonal wardens (see paragraph 5.23 of the SAMMS report⁴).
64. In terms of the geographical scope of the bespoke warden, the primary focus will be Riverside Country Park and the Medway Estuary, noting that these are the closest parts of the international / European designated sites to the proposed development. From the SAMMS report, it is noted that the North Kent SAMMS seasonal wardens will also cover this area; indeed specific reference is made to a *“roaming warden along the Medway estuary shore – boost to existing warden staff”* (Table 3). By coordinating closely with the North Kent SAMMS project, this will bolster existing efforts to engage with visitors to the European designated site, such that this would increase the likelihood of visitors being ‘captured’ by various initiatives, or indeed it may assist the strategic warden by effectively freeing them up to visit other key locations.
65. Detailed consideration has also been afforded to the length of time that the bespoke warden role will be required. As noted above, education of visitors to the international / European designated site and raising awareness of harmful activities form the most important parts of the role of the bespoke warden. When visitors are new to an area (or location), engagement in this form is most likely to result in delivering successful avoidance and mitigation; however, once visitor behaviours have become established, it can be more difficult to change them. The crucial aspect is therefore to ensure that educational measures are implemented at the earliest opportunity (following occupation), and that they capture the initial period when visitor behaviour is more likely to be positively affected.
66. Subject to planning permission being granted, the time between the occupation of the first new residential dwelling at the proposed development and the occupation of the last residential dwelling is anticipated to be approximately 10 years. It is therefore proposed that the bespoke warden should be in place to cover the entirety of this 10-year period, when all new dwellings present within the site will be occupied for the first time.
67. The proposal would ensure that the bespoke warden would be in place throughout this entire 10-year period when residents are moving into the new development to provide education, promote good visitor practices and discourage potentially harmful behaviours before patterns are set.
68. In terms of potential effects arising beyond this period – i.e. in perpetuity – it is considered that this would be addressed via the financial contribution which the scheme will provide to the SAMMS project.
69. It is important to note that this approach fully aligns with the North Kent SAMMS. As outlined in paragraph 5.23 of the SAMM report:

“The two seasonal ranger posts would be employed for the autumn/winter only (August-March) and may not be required in perpetuity. This is because once access patterns have become established in particular ways that reduce disturbance (such as dogs on leads at particular sites) then there may no longer be a need for the staffing to continue at such a level”.

70. A detailed financial breakdown of the bespoke warden role is outlined at Appendix 3 of this Technical Note. Taking into account one off costs associated with setting up the role, annual costs over the 10-year period and contingency costs, the total cost of delivering the bespoke warden role has been estimated to be in the region of **£198,101.98**. The bespoke wardening package will be secured via a Section 106 legal agreement.
71. It is noted that the North Kent SAMMS identified a total cost of £20,000 per year for each seasonal warden, which underpins the costings for the strategic approach. It is therefore considered that the detailed figures for the bespoke warden are appropriate and realistic for the delivery of an additional role which has a very similar remit to the North Kent SAMMS seasonal wardens.
72. It is anticipated that further discussion will be required in due course with the North Kent SAMMS wardens (and other stakeholders) to tweak and refine the specific tasks to be undertaken of the bespoke warden, thereby maximising the effectiveness of this additional measure in conjunction with the wider strategic avoidance and mitigation project. However, it is considered unlikely that the fundamental role or remit of the bespoke warden would alter significantly from that set out within this document, such that the proposals outlined above provide comfort that this will represent a significant additional measure to be delivered over and above the SAMMS contribution and on-site open space.

Summary and Conclusions

73. In summary, the package of avoidance and mitigation measures proposed in respect of international / European designated sites is as follows:
- 1) Provision of a financial contribution towards the SAMMS project (£306,950 plus legal and monitoring costs);
 - 2) Delivery, management and maintenance in perpetuity of attractive on-site greenspace, with a particular focus on maximising opportunities for dog walkers; and
 - 3) Provision of a bespoke wardening package as outlined above, delivering an additional seasonal warden for 10 years at a total cost in the region of £198,000.
74. With the implementation of these measures, it is considered that the development proposals would not be likely to give rise to a significant effect on the integrity of the Medway Estuary and Marshes SPA / Ramsar site (or indeed any other international / European designated sites) as a result of an increase in recreational pressure, when the development proposals are considered alone or in combination with other plans and projects.

APPENDICES

APPENDIX 1

North Kent Strategic Access Management and
Monitoring Strategy (SAMMS)

(Footprint Ecology, July 2014)



Thames, Medway & Swale Estuaries - Strategic Access Management and Monitoring Strategy



Durwyn Liley and John Underhill-Day

Thames, Medway and Swale Estuaries – Strategic Access Management
and Monitoring Strategy



Date: 22nd July 2014

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Summary

This report sets out a strategy to resolve disturbance issues to wintering birds on the North Kent Marshes. The report focuses on the European Protected Sites (Thames Estuary and Marshes SPA/Ramsar Site, Medway Estuary and Marshes SPA/Ramsar Site, and The Swale SPA/Ramsar Site) and their internationally important bird interest features.

Previous studies show marked declines of key bird species, particularly on the Medway Estuary. There is currently insufficient evidence to adequately assess the cause of these declines. Disturbance is one potential factor, and studies have shown recreational activities to cause disturbance impacts to birds. The declines in birds have been detected at the SPA level. Within the Medway, the areas that have seen the most marked declines are the area north of Gillingham, including the area around Riverside Country Park. This is one of the busiest areas in terms of recreational pressure.

New development will further exacerbate the pressures. New development (in the region of 68,000 dwellings are set out in the relevant local plans) brings more people to the local area and access levels have been predicted to increase on the coastal sites by around 15%. Such an increase will be gradual and long-term, across a wide stretch of coast; robust solutions are required to ensure that this level of development, considered in-combination, does not have an adverse effect on the integrity of the European sites.

This strategy addresses disturbance impacts and provides a strategic, cross-boundary solution to issues relating to disturbance, there are two aims.

- To support sustainable growth whilst protecting the integrity of European wildlife sites from impacts relating to recreational disturbance
- To reduce the existing recorded recreation impact on birds on the European wildlife sites in order to meet duties relating to the maintenance and restoration of European sites, as required by Article 4(4) of the Birds Directive.

Elements within the strategy are:

- A North Kent Coast Dog Project
- Wardening/Visitor Engagement
- New Access Infrastructure
- Parking (Strategic Review and Changes to Parking)
- Codes of Conduct
- Interpretation/signage
- Work with local club/group
- Refuge
- Enhancement of existing sites to create hub
- Enhancement to existing GI away from SPA
- Enforcement
- Monitoring

The **dog project** and **wardening/visitor engagement** elements are generic and can be established quickly. The **dog project** focuses on the activity that is most associated with disturbance and will engage with local dog walkers. It will be able to promote particular sites to dog walkers and raise

awareness of disturbance issues. **Wardens/rangers** with a visitor engagement role can be mobile and deployed across a range of locations, targeting areas with particular issues or close to new development. **New access infrastructure** will involve a range of discrete, focussed projects that could be phased with new development. **A review of parking locations** will provide the necessary information to underpin long-term changes in parking capacity, charging and provision. Such changes can be phased over time and linked to available funding and locations where new development comes forward. **Codes of conduct** will provide guidance for a range of activities. In-line with these, **interpretation/signage** and **work with local clubs/groups** is envisaged. These three elements dovetail and should be undertaken simultaneously. They also link with the long term aim of creating **refuges** – ‘quiet’ areas within the Medway where recreation and other activities are discouraged. We also set out **enhancement to existing sites**: both those **within the SPA** and **outside**. In the long term access is best focussed away from the SPAs or in particular honeypots around the shore where it can be managed and engagement with visitors targeted. We therefore highlight sites outside the SPA that are close enough to potentially draw some visitors. Sites within the SPA, such as Riverside Country Park, already draw high numbers of visitors and are likely to always draw people. Measures are possible at such locations to reduce disturbance. **Monitoring** across the SPA sites will provide a check on success of measures and inform where further measures, such as enforcement (for example dog control orders) might be necessary.

The strategy therefore contains elements that can be initiated quickly and other elements that can be phased over time and are flexible. Based on the results of a workshop and some site visits we have set out some suggestions for specific locations and we identify the overall cost for the strategy. The costs are set out below (Table 1). While only indicative the costings should provide the opportunity to budget and source funding, but in the long term different elements of the strategy may change in emphasis and costs may need to be distributed differently. Elements of the strategy that relate to new development (and can be classed as mitigation) should potentially be funded through some means of developer contribution. Other elements within the strategy relate to existing impacts or are more aspirational. We therefore categorise elements within the strategy as:

- A. Clearly mitigation for new development as related to particular housing allocations/areas of notable growth or necessary to be confident of no adverse effect on integrity as a result of cumulative impacts of new development over a broad area.
- B. Clearly linked to a current issue or required to rectify current problem
- C. More aspirational or less defined at this stage. This may be a potential opportunity to avoid or mitigate for impacts but could be implemented in a number of ways, with a variety of partners providing input, or may be such that it is best refined over time, informed by new information. At this stage therefore difficult to categorise and possibly elements that could be developed as an external funding bid.

Using the above criteria, elements that are categorised as A are those that could form part of a tight, clearly defined mitigation plan. Implementation of such a plan should ensure that a significant effect on the relevant European sites as a result of impacts from increased recreational disturbance (linked to new development) on wintering/passage waterfowl is avoided. The total capital cost for these elements is £185,300, plus an annual figure of £95,500.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Table 1: Summary of all elements of the strategy. Costs are indicative and approximate, drawn where possible from examples elsewhere, but not based on actual quotes. Total costs are given at the end of the table. These costs are also summarised as a per dwelling figure. This is calculated assuming 35,000 dwellings within 6km of the SPA boundaries and annual costs scaled to apply annually for 80 years (included the three ranger posts). No discounting or contingency is applied.

Recommendation	Set-up/Capital Cost	Annual Cost	Notes	Category
Dog Project	£15,000	£2,000	Staff time not included in cost as assumed undertaken by warden/rangers. Set up cost to cover web design, production of membership packs, launch event. Running costs for web hosting, updates to website, further events.	A
Senior ranger post		£45,000	Long-term post. Includes office and vehicle costs.	A (but some of warden time may end up focussed on existing impacts)
Two seasonal rangers		£40,000	Potentially short-term (c.10 years). Includes office and vehicle costs.	A (but some of warden time may end up focussed on existing impacts)
Path links	£5,000		Cost would depend on surfacing, route etc.	A
Structures to inhibit vehicles.	£3,500	£750	Range of different gate styles or designs possible. Costs need to cover installation. Annual maintenance/checking required	B (could possibly be argued that further development would increase pressure)
Additional planting at various locations	£1,800		Planting relatively low cost, but will need regular checks to ensure gaps are not developing and further planting may be required	A
Horrid Hill path management and screening	£5,000		Will need regular maintenance and checks to ensure new paths are not developing and further work (planting/screens) may be required	A
Dog training area	£3,000		Cost depends on area fenced.	A
Fencing at Motney Hill	£3,000	£500	Cost depends on type of fencing. Will need checking and maintenance	A
Fencing and signs around Shellness	£2,000	£500	Cost dependent on scale of fencing. New fencing may be required each year depending on flooding/changes in bird use etc.	A
Review of Parking	£0		No cost allocated as assumed review conducted by warden/ranger team	A
Changes to Parking	£20,000		Depends entirely on outcome of the review. £20000 would allow one or two small projects to probably be achieved.	A
Interpretation boards	£25,000	£2,500	Estimate based on 10 outdoor panel	A

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Recommendation	Set-up/Capital Cost	Annual Cost	Notes	Category
			interpretation boards (A0 size); £2500 per board. Annual fee allows for replacement of boards over 10 year period	
Signs	£20,000	£1,000	10 signs. £2000 per sign, plus £1000 per year for replacement/maintenance	A
Codes of Conduct developed	£10,500		8 codes produced as a pack for printing and as interactive document; cost estimated at £8,000. £2,500 additional cost for revision and further print runs	A
New Visitor Centre and other facilities at Cliffe Pools RSPB	£4,000,000		Very approximate cost. Aspirational rather than an essential element of the strategy. Range of funding sources may be possible.	C
Enhancements at Northward Hill RSPB	£20,000		Improved parking and other infrastructure	A
Enhancements to Riverside Country Park	£25,000		Enhancements to areas away from shoreline such that access can increase here without further disturbance	A
Enhancements to existing GI away from the SPA	£420,000		Cost assumes around five projects at an average cost of £84,000	C
Speed monitoring equipment including digital camera and speed gun	£10,000		Approximate cost	A
Setting up dog control orders	£10,000		Estimate of costs required for legal advice, administration etc	A
Monitoring visitor numbers at set locations	£10,000	£1,500	Most of the counts every five years, undertaken by warden staff. Budget for automated counters and casual staff/consultancy support as required and included as an annual figure	A
Monitoring visitor activities, motivation, profile and		£1,000	Questionnaire work undertaken every 5 years (i.e. annual budget of £1000 equates to £5000 every 5 years).	A
Continued monitoring of wintering waterfowl		£500	Undertaken already as part of WeBS. Small annual fee to ensure data collated by local co-ordinators	A
Disturbance monitoring		£1,000	Could be undertaken at set intervals - e.g. every 10 years or on an annual basis	A
TOTAL (all categories)	£4,608,800	£96,250	Equates to £351 per dwelling	
A	£185,300	£95,500	Equates to £223.58 per dwelling	
B	£3,500	£750	Equates to £1.81 per dwelling	
C	£4,420,000	£0	Equates to £126.29 per dwelling	

Contents

Summary	3
Contents	7
Acknowledgements	10
1. Introduction	11
North Kent’s international wildlife designations.....	11
Previous studies	13
Growth in North Kent.....	13
Other projects of relevance.....	14
Structure of the Report.....	14
2. A framework for the Plan	15
Legal and policy requirements	15
Geographical area	16
Activities	16
Timescale	16
General Principles	17
Drawing a distinction between current impacts and the effects of new development	17
Maintaining and restoring the European site network by resolving existing impacts	17
Suggested approach to identifying responsibility for measures relating to new and existing impacts	18
3. An overview of possible mitigation measures: the long-list	20
A ‘long list’	20
Assessment of the long list	20
Habitat Management.....	20
Planning and off-site measures	21
On-site Access Management	22
Education and Communication/Awareness Raising	23
Enforcement	23
4. Locations that are a focus for the strategy	25

Thames, Medway and Swale Estuaries – Strategic Access Management
and Monitoring Strategy

5. Elements of the Plan	26
A North Kent Coast Dog Project.....	29
Overview.....	29
Justification.....	29
Detailed Recommendations	29
Indicative Costs and Implementation	30
Wardening/Visitor Engagement.....	31
Overview.....	31
Justification.....	31
Detailed Recommendations	31
Indicative Costs and Implementation	32
New Access Infrastructure.....	35
Overview.....	35
Justification.....	35
Detailed Recommendations	35
Parking: Strategic Review and Changes to Parking.....	39
Overview.....	39
Justification.....	39
Detailed Recommendations	39
Indicative Costs and Implementation	40
Interpretation/signage	42
Overview.....	42
Justification.....	42
Detailed Recommendations	42
Indicative Costs and Implementation	43
Codes of Conduct	45
Overview.....	45
Justification.....	45
Detailed Recommendations	46

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Indicative Costs and Implementation	46
Work with local club/group	46
Overview.....	46
Detailed Recommendations	46
Indicative Costs and Implementation	47
Refuges.....	49
Overview.....	49
Justification.....	49
Detailed Recommendations	49
Indicative Costs and Implementation	49
Enhancement of existing site to create hub	52
Overview.....	52
Justification.....	52
Detailed Recommendations	52
Indicative Costs and Implementation	53
Enhancement to existing green infrastructure sites away from SPAs	55
Overview.....	55
Justification.....	55
Detailed Recommendations	55
Indicative Costs and Implementation	56
Enforcement	58
Overview.....	58
Justification.....	58
Detailed Recommendations	58
Indicative Costs and Implementation	58
Monitoring.....	59
6. Implementation	61
Delivery.....	61
Phasing	62

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Implementing a cross boundary approach to protecting European sites	63
Developer contributions for the impact of new development	65
Community Infrastructure Levy (CIL)	65
Section 106 agreements	66
On-site provision on development sites	67
Other funding sources	68
Delivering measures relating to existing impacts.....	68
Implementation next steps.....	68
7. References	70
8. Appendix 1: Interest Features of the three SPAs	72
9. Appendix 2: Previous Studies.....	74
10. Appendix 3: Our Approach.....	76
11. Appendix 4: A ‘long list’	77
12. Appendix 5: Main Matrix	80
13. Appendix 6: Spatial Context: Identifying areas that should be a focus for the strategy	85
14. Appendix 7: Summary Map and Tables for Elements of the Plan	92

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1. Introduction

- 1.1 In this section we set out the background to this report, summarising why a strategy is required and providing the necessary context for the rest of the document.

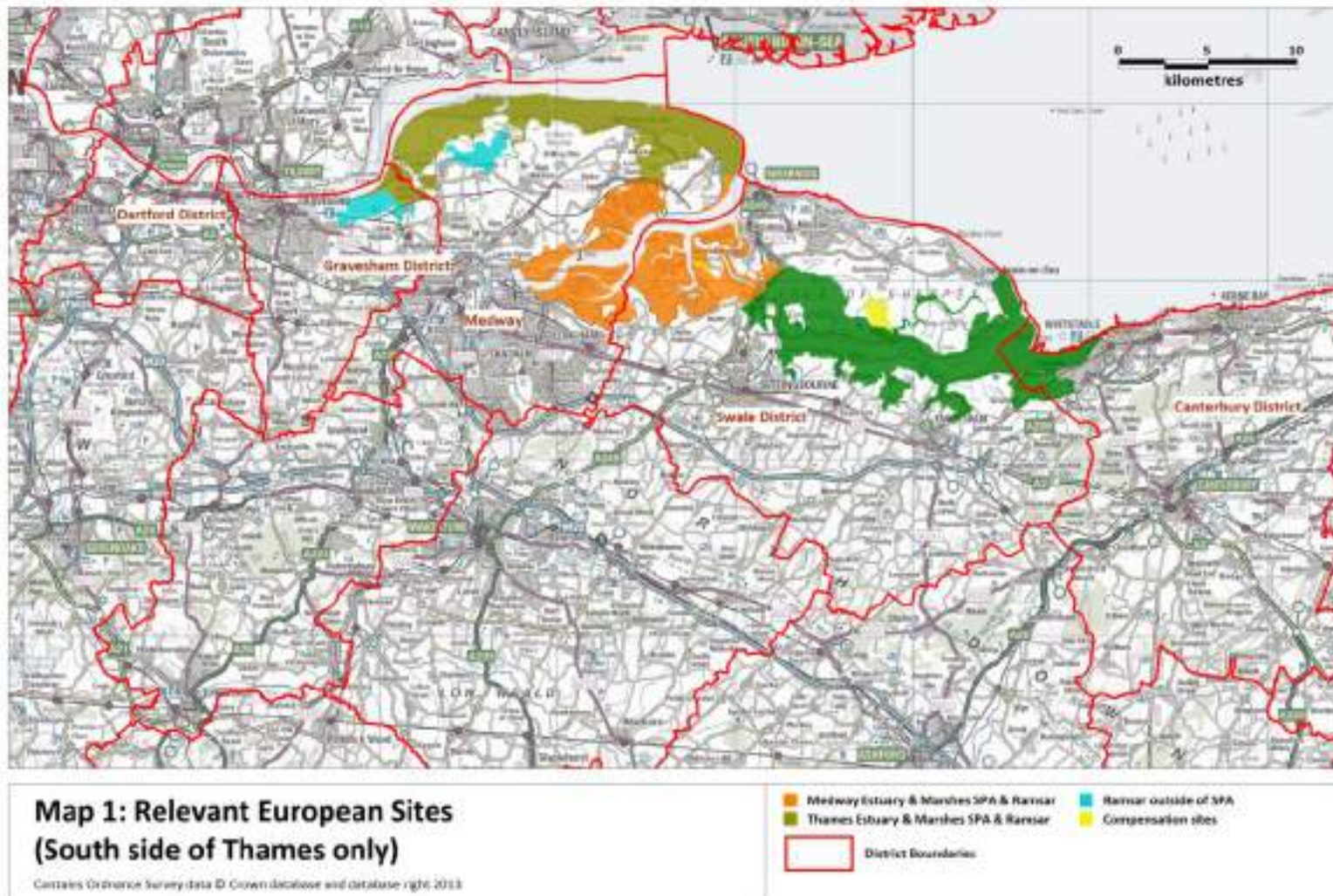
North Kent's international wildlife designations

- 1.2 This stretch of shoreline encompasses three Special Protection Areas (SPAs): the Thames Estuary and Marshes SPA, the Medway Estuary and Marshes SPA and the Swale SPA (Map 1). All three sites are also listed as Ramsar¹ sites, for their wetlands of international importance. The Ramsar site boundary does not quite match the SPA boundary, notably near Gravesham where the Ramsar boundary extends beyond the western boundary of the SPA (see Map 1).
- 1.3 The three sites are classified as SPAs in accordance with the European Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds, updated by Council Directive 2009/147/EC in 2009). This European legislation requires Member States to classify sites that are important for bird species listed on Annex 1 of the European Directive, which are rare and/or vulnerable in a European context, and also sites that form a critically important network for birds on migration.
- 1.4 All three of the north Kent sites are classified for their waders and waterfowl, both Annex 1 and migratory species. The bird interest features for which each site has been classified varies slightly across the three sites, but all three sites provide on passage, overwintering, and breeding habitat to an array of species of European Importance. The sites therefore provide habitat for European wildlife throughout the year, with particular interest varying at different times of the year, and it is clear that the three European sites together provide a vast and linked expanse of critically important habitat to the SPA network around the British coast. Details of the interest features of each of the sites are summarised in [Appendix 1](#).
- 1.5 The additional Ramsar site listing for all three sites arises from the recognition of the international wetland importance of each, under the Ramsar Convention. It is common for SPAs to also be listed as Ramsar sites, and the Ramsar designations do include interest features that are not birds.
- 1.6 Also of relevance are areas of land identified as compensatory measures for adverse effects on European sites. These sites are given the same protection as SPAs/Ramsar sites². There are two areas in N Kent that meet this criteria and they are also shown in Map 1.

¹ Convention on wetlands of international importance especially as waterfowl habitat, Ramsar, Iran, 2/2/71 as amended by the Paris protocol of 3/12/92 and the Regina amendments adopted at the extraordinary conference of contracting parties at Regina, Saskatchewan, Canada 28/5 – 3/6/87, most commonly referred to as the 'Ramsar Convention.'

² See paragraph 118 of the National Planning Policy Framework

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy



Previous studies

- 1.7 Previous studies (Banks *et al.* 2005) show marked declines of key bird species, particularly on the Medway Estuary (these previous studies are listed and summarised in [Appendix 2](#)). There is insufficient evidence to adequately assess the cause of these declines (some of which are long-term, going back 25 years), they may relate to a range of factors. However previous studies (see summary in [Appendix 2](#)) do show disturbance impacts to birds and disturbance may be a component factor.

Growth in North Kent

- 1.8 This strategy focuses on the administrative areas of Canterbury, Dartford, Gravesham, Medway and Swale local authorities. A review of the progression of local plans across the administrative areas of Canterbury, Dartford, Gravesham, Medway and Swale local authorities has identified that plans have progressed across the area since work on the European site mitigation requirements began. The following bullets provide a brief summary of the current progression of the relevant planning documents and indicate that around 68,000 new homes are likely to come forward in the next few decades³:
- **Canterbury** – The preparation of the Canterbury Local Plan by Canterbury City Council is underway, with a recent consultation on the draft plan being undertaken in the summer of 2013. The plan period of 2011 to 2031 is allocated a total of 15,600 dwellings. Land to the south of Canterbury takes up an allocation of 4,000 dwellings, with other large strategic sites at Hillborough and Sturry/Broad Oak.
 - **Dartford** – Dartford Borough Council adopted its Core Strategy in September 2011, with a plan period up to 2026. The plan supports new housing provision up to 17,300 dwellings over the plan period. Key development sites are identified in the plan, with Ebbsfleet to Stone accommodating 7,850 new homes, Dartford 3,070 and the Thames waterfront allocated 3,750.
 - **Gravesham** – The Council is planning for 6,170 houses over its plan period (to 2028), with the Core Strategy for the Borough currently at examination stage. Most of the new housing will be accommodated within the urban area of Gravesend.
 - **Medway** – Medway Council withdrew its draft Core Strategy from Examination in November 2013, following designation of an extended SSSI at Lodge Hill, Chattenden. The Council is in the early stages of preparing a new Local Plan, working to a programme of adoption in 2017. The Council is required to carry out a comprehensive objective assessment of development needs to inform the growth allocations in the new plan that will cover the period up to 2035. Currently, it is premature to indicate the level of the housing provision that will be made in the new plan.
 - **Swale** – the draft Local Plan for Swale proposes a housing target of 10,800 new homes over the plan period, primarily as extensions to the larger towns such as Sittingbourne.

³ The plans for the area have different plan periods with end dates which range from 2026 to 2035.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 1.9 Given this level of growth there is a clear need for a strategic strategy for mitigation measures relating to new growth.

Other projects of relevance

- 1.10 There are a number of other projects or initiatives that provide some cross-over or links to the SARMP, which include:
- Thames Estuary 2100 (TE2100)⁴, which sets out the strategic direction for managing flood risk in the Thames estuary.
 - The Greater Thames Marshes Nature Improvement Area (NIA)⁵ which is one of twelve landscape scale NIA projects in England. Elements within the NIA include habitat management and creation; work with local businesses, community engagement and securing long-term funding.
 - Shoreline Management Plans⁶.
 - Marine and Coastal Access Act: enhanced coastal access will provide a right of access (with ‘spreading room’) around England. Work is planned to start on the stretch of coast between Ramsgate and London in 2014/15.

Structure of the Report

- 1.11 Background to the methods we have used to produce this strategy are set out in [Appendix 3](#). Subsequent sections of this strategy are structured with separate sections that describe:
- An overview of possible measures: the long list, with a review of each of the options within the list
 - Locations that are the focus for the strategy
 - The short-list of measures
 - The detailed strategy.

⁴ <http://www.environment-agency.gov.uk/homeandleisure/floods/125045.aspx>

⁵ <http://gtgkm.org.uk/greater-thames-marshes-nia/>

⁶ <http://www.environment-agency.gov.uk/research/planning/105014.aspx>

2. A framework for the Plan

2.1 In this section we define the aims of the strategy, how those aims are distinguished within the strategy and we set out the guiding principles that provide a framework for the strategy.

Aims of the Plan

2.2 The strategy has two broad aims:

- It will support sustainable growth whilst protecting the integrity of European wildlife sites from impacts relating to recreational disturbance
- It will reduce the existing recorded recreation impact on birds on the European wildlife sites in order to meet duties relating to the maintenance and restoration of European sites, as required by Article 4(4) of the Birds Directive.

Legal and policy requirements

2.3 The National Planning Policy Framework (NPPF) provides the Government's policy framework within which sustainable growth should come forward. It is fundamental to the success of any strategic mitigation strategy for European sites that such a strategy is founded on sound planning principles. This strengthens the strategy and ensures its deliverability in the planning system.

2.4 The first aim of this strategy relates to new development and the need for competent authorities to ensure that new growth will not adversely affect the integrity of the North Kent European sites. This is in accordance with Article 6(3) of the Habitats Directive, transposed into Regulation 61 of the Habitats Regulations, whereby competent authorities are required to ensure that any plan or project for which they are authorising, or undertaking themselves, will not adversely affect the integrity of a European site. This is met by a competent authority in one of two ways. Firstly, the Habitats Regulations allow for a competent authority to be able to screen out the proposed plan or project from any further detailed assessment if it can be determined that it will not be likely to have a significant effect on any European site due to the nature of the proposal or any measures built into the proposal to avoid the likelihood of significant effects.

2.5 Where proposals cannot be initially screened out, the competent authority will proceed to a more detailed level of assessment, known as the 'appropriate assessment,' gathering the best scientific information to determine whether an adverse effect on the integrity of the European site can be ruled out. Measures that can adequately mitigate for any identified effects are considered during this detailed assessment, and added to the proposal where necessary, usually through the use of planning conditions or legal agreements.

2.6 Local planning authorities are increasingly seeking strategic approaches to securing mitigation for new growth, where the potential impact on European sites is similar for each individual development. Such an approach includes detailed appropriate

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

assessment work undertaken upfront, followed by an agreed approach to mitigation that can be consistently applied to development coming forward. This is normally supported by local plan policy, and often with a partnership across administrative boundaries and drawing on input from Natural England and both national and local nature conservation bodies or established partnerships.

- 2.7 Defining potential impacts and making sound decisions relating to when a plan or project is likely to have a significant effect, whether there will be an adverse effect on site integrity and the need to take a precautionary approach whilst not being unjustifiably over precautionary, is a challenging and sometimes very difficult task. These decisions are important not only because they relate to the highest level of wildlife protection, but also because the conclusions may ultimately determine whether a plan or project should proceed or not.

Geographical area

- 2.8 The strategy will relate to the interest features of the following European Sites: the **Medway Estuary and Marshes SPA/Ramsar; the Swale SPA/Ramsar; Thames Estuary and Marshes SPA/Ramsar**. The strategy will not necessarily be limited to measures implemented within these sites, as the interest features may well occur outside the site boundaries at certain times, and in addition, measures relating to access may well be relevant well-outside the site boundaries (for example the provision of new routes or new green infrastructure).

Activities

- 2.9 The strategy will address the impacts of **recreational activities**, and not to impacts relating to other activities (for example there may additional impacts from industrial development, shipping, etc.). New housing may also have other impacts that are outside the scope of the strategy – for example effects on water quality. Impacts that relate solely to other (i.e. non-avian) interest features of the European Sites are also beyond the scope of the strategy.

Timescale

- 2.10 The interest features of the above sites include breeding birds, as well as passage and wintering birds. The declines in birds particularly relate to wintering (though note that the number of little terns has declined, see Liley *et al.* 2011). Following the recommendation of Natural England the strategy will relate only to the winter.
- 2.11 Mitigation measures will need to be secured in perpetuity, and therefore there is a need for the strategy to last and look to the **long-term**. The strategy should be robust enough to give certainty that European site interest will be protected, but at the same time **flexible** enough to be reviewed and modified over time, in line with results indicated by monitoring. It is difficult to be confident of how the coastline, the distribution of birds, the distribution of prey and access patterns may change over long time periods. Different weather conditions may result in people using the coast differently and result in seasonal shifts in bird numbers and access levels. As such the strategy needs to be able to respond to circumstances and carefully monitor changes.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

General Principles

- 2.12 The following principles underpin how the strategy has been prepared. The strategy should be **cost effective** in terms of management, collection, fund-holding, distribution and accounting. It should seek to put in place measures that are required, but not those that are over and above that which is necessary to give certainty that the European sites will be adequately protected, and not those that deliver other objectives for the local area. Requirements of new development should be fairly and reasonably related in scale and kind to the development, as required by paragraphs 204 and 206 of the NPPF.
- 2.13 The strategy should be **fair** in that it is applied fairly to development, proportionate to the potential impact that will be generated. Measures should not target particular types of development and leave other types free to proceed without adequately contributing to the mitigation for their impacts. Equally, the measures should be fair in respect to the types of recreation and the impacts associated with those activities. It is important to note that the local planning authorities, as competent authorities are responsible for securing the necessary mitigation and funding for some measures may need to be raised from other sources (this accords with the solutions focussed approach advocated in paragraph 187 of the NPPF).
- 2.14 The measures within the strategy should be included on the basis of **evidence** to justify their need and their appropriateness and likely effectiveness, and therefore in accordance with the requirements of paragraph 158 of the NPPF. The strategy should not include measures that may be considered desirable to achieve other objectives.
- 2.15 The strategy should be **implementable** with a good degree of certainty that the required measures can be delivered in a timescale that is related to the commencement of the development and the avoidance of potential impacts, taking account of the gradual change in recreational use over time. This will require considerable forward planning for the strategy to be implemented in a timely manner. Some measures will need to be secured in-perpetuity to ensure that impacts are avoided into the long term.

Drawing a distinction between current impacts and the effects of new development

- 2.16 The two broad aims for the SARMP are interlinked aims and very difficult to separate. However, it is important to clarify how they should be addressed as two different requirements of the legislation, as described above in Section 1, and where responsibility lies for securing the achievement of each.

Maintaining and restoring the European site network by resolving existing impacts

- 2.17 The overriding principles of the European legislation in terms of the European site network is the establishment, maintenance, restoration and protection of a coherent network that secures the favourable conservation status of the habitats and species of European importance, listed in the Directives. Article 6(2) of the Habitats Directive particularly requires each Member State to avoid the deterioration of habitats and disturbance of species for which European sites have been designated. It is this requirement that is the reason for the second aim of the strategy, which is to reduce the impact of existing levels of recreation on the North Kent European sites. There

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

have been marked declines in the bird interest on some of the sites for a number of years, and disturbance levels may be a factor in these declines.

2.18 Meeting the requirements of Article 6(2) of the Habitats Directive is a Member State responsibility, and it is therefore a government wide responsibility, which logically extends to all public bodies and individuals holding public office whether their statutory remit includes duties that are relevant to the Article 6(2) requirement. It is worth noting that similar duties in national legislation exist for public bodies with regard to furthering the conservation and enhancement of Sites of Special Scientific Interest (SSSIs).

2.19 Whilst the first aim of the SARMP is specifically met by measures provided by new development, the second aim of the strategy is to contribute to the achievement of Article 6(2) objectives, and this can be achieved by the collective input of a range of authorities, bodies and partnerships. There may therefore be a number of options and opportunities for funding and resourcing measures contributing to this requirement.

Suggested approach to identifying responsibility for measures relating to new and existing impacts

2.20 The intention is to set out a single strategy that addresses the issue of recreational disturbance across the board, from both new development as well as existing development. The strategy aims to provide the right balance between the two aims, apportioning measures to each with logical and justified distinctions, whilst also seeking a realistic and implementable way forward that does not separate out the two aims to the extent that implementation becomes overly complicated and burdensome. Responsibility for existing deterioration should not be borne by new development, and at the same time, where new development will lead to additional impacts, fair and proportionate responsibility should be taken.

2.21 Our approach to seeking to identify responsibility will be to produce a single strategy that addresses disturbance impacts. Within the strategy we will – as far as possible – identify and split measures that relate to the two different aims. These splits will be identified as follows:

- Some measures within the strategy will be applicable to both aims, but it may be possible to subdivide or apportion them. **As far as possible some elements within the strategy may therefore be split according to whether they address new impacts from new development or solely relate to existing access.**
- Some of the measures will be those that are clearly and urgently required and those will therefore highlight existing issues requiring rectification. Such measures are likely to be location specific, and need to be very clearly defined. **This will need to relate back to ecological information to focus on locations in most need of urgent action.**
- Housing allocations may identify where particular measures will be required to prevent any new impacts from occurring. **A check of allocations should identify any such hotspots.** However windfall development and high levels of growth a few

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

kilometres from the coast will mean that changes in access will also occur across a wide area.

- Some measures within the strategy may be less structured at this stage, being opportunities to mitigate for impacts but ones that may be implemented in a number of ways, with a variety of partners providing input, or may be those that can be refined over time. Some of these measures may even be more aspirational in nature. **These types of measures do not offer the necessary certainty to enable new development to meet the requirements of the legislation, but may provide positive opportunities to contribute towards rectifying existing issues.**
- Some measures will not necessarily have a clear allocation to either existing or new development impacts, but there may be logical reasons why their implementation is with one or the other. There will be activities that are best implemented by local planning authorities or other partners, and others that would be very difficult without developer led funding. Additionally, some projects may be of a type that meet external funding bid criteria, and therefore best pursued for existing impacts, leaving developer contributions to fund other important and necessary mitigation. **The most appropriate implementation path should be followed to maximise outcomes, and this will be a consideration in highlighting where responsibility may lie.**
- In checking that the burden on new development is fair and proportionate, consideration should be given to the expected increases in housing, and how that relates to the existing level of impact. **Checks should also be made across to other established strategic mitigation schemes, to assess whether impact, mitigation requirements and costs, and the levy placed on developers is in line with other approaches.**

3. An overview of possible mitigation measures: the long-list

3.1 In this section we provide an overview of the different measures to reduce disturbance impacts at coastal sites: measures that could form part of a strategy. We then review each in terms of cost, deliverability, effectiveness and timescale to implement to provide context to later stages of the report.

A 'long list'

3.2 We set out a summary 'long' list of possible options in [Appendix 4](#). These options range from soft measures and proactive work with local residents, to enforcement. The table simply sets out all the possible ways in which disturbance might be reduced. Some measures can be described as either off-site or on-site measures. Others, such as the promotion of visitor awareness of issues, or habitat creation, may fall into both categories. Therefore this distinction is only made where useful in organising the measures presented in the table. The measures listed are not necessarily compliant with the habitat regulations in terms of mitigation.

Assessment of the long list

3.3 In [Appendix 5](#) we provide a table assessing each of the measures in the long list ([Appendix 4](#)) in terms of effectiveness, deliverability, time frame to implement and cost. The colours facilitate comparison – rows that are mostly green indicate more positive assessment while those rows with dark brown cells indicate approaches with less merit.

3.4 From this assessment we can draw the following broad conclusions.

Habitat Management

3.5 Habitat management measures could include creation of artificial, undisturbed roost sites, creation of additional feeding areas (e.g. managed retreat or new lagoons) or enhancement of habitats to provide better feeding sites (for example changes of management of wet grassland). Problems with these measures include:

- Some are large infrastructure projects which are complex and expensive to deliver,
- There are existing roost sites on islands that are largely free from disturbance,
- Wet grassland habitats (the obvious focus for changing management) are not used during the winter by many of the waders that have been declining (such as knot, grey plover, dunlin and ringed plover)
- They may be dependent on opportunities and other plans (managed retreat),
- Some should be taking place anyway (management of the European sites to achieve favourable condition),
- They are not necessarily compliant with the Habitat Regulations if new habitat is being created outside the SPA to compensate for deterioration of the SPA.

3.6 We therefore suggest that opportunities may arise, such as managed retreat. Such opportunities will depend on other plans and circumstance, and whenever possible maximum potential should be made to enhance habitats and minimise disturbance for the bird interest. As such, habitat management measures are not a main element of this strategy, but should be recognised as important in their own right.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Planning and off-site measures

- 3.7 Ensuring development does not take place around sensitive sites effectively avoids issues relating to the impacts of new development. There are now precedents around the UK where SPA and SAC sites have a development exclusion zone clearly set out within overarching plans. For example local authorities around the Dorset Heaths, Thames Basin Heaths, Breckland, Ashdown Forest and Wealden Heaths have all included 400m zones around their heathland sites. Establishing such a zone with respect to disturbance issues and coastal sites is much more difficult, as recreational users travel from a wide area to visit and use coastal sites (previous work has suggested a 6km zone from which the majority of recreational use originates). There are also practical considerations as each local authority is at different stages in their relevant plans. A ‘sterile’ zone of no development around the three North Kent SPAs would encompass ports, town centres, very built up residential areas and contaminated brownfield sites. Development would potentially be halted or pushed to greenfield sites whilst also preventing regeneration of urban centres. We therefore suggest this approach does not merit further consideration with any large buffer. While not included as a main mitigation element within the strategy, local authorities may wish to consider small exclusion zones (say 400m) around main access points.
- 3.8 The provision of Suitable Alternative Natural Greenspace ‘SANGs’ and other additional green infrastructure is a potentially appealing solution to resolving disturbance impacts. By providing additional space for visitors, it would seem intuitive that an area can support more visitors. In terms of visitors to the coast, alternative sites are most likely to work for types of access that are not dependent on particular coastal features – for example visitors who are simply drawn to sites because it is the nearest open space to their home, or because it is a convenient place to walk the dog and let the dog off a lead. The options to create alternative sites that provide coastal scenery, locations to kite surf or beautiful beaches are likely to be limited. Given the high cost of purchasing land and securing management in perpetuity, SANGs are not ‘quick wins’ and should be carefully selected, targeted and planned. Taking a long view, SANGs may have a longer term and more strategic role in mitigation compared to other measures, and must clearly be carefully considered on a site-by-site basis.
- 3.9 Opportunities for SANGs delivery may come forward through existing sites (potentially already in local authority or county council ownership) which could be enhanced to provide access or when directly linked to individual, large developments. Sites that are linked to development will be likely to be close to new housing (in some ways ideal – but likely to mean a particularly ‘urban’ feel) and need to be considered very carefully on their merit (an area of grassland on the edge of a large development is unlikely to provide a good alternative to the SPA sites). We therefore suggest that provision of new green space sites does have a role in mitigation, but that it is a long-term one and one that needs to be carefully planned. Given the high cost of such measures, they are dependent on local opportunities.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 3.10 Other off-site measures relate to more local approaches, enhancing sites outside the European sites, managing visitor flows on adjacent sites, essentially drawing visitors away from European sites. These approaches have merit, but are small in scale and local.

On-site Access Management

- 3.11 The matrix in [Appendix 5](#) indicates that most on-site measures are relatively easy to implement, effective and relatively low cost. The one measure with concern regarding effectiveness is fenced exercise areas for dogs.
- 3.12 There are a range of management measures that relate to shore based access which would be relatively easy to implement and potentially low-cost, but they are mostly quite local and site specific. As such they could work to resolve issues in particular locations, enhance access in particular places and be carefully targeted. They all require some work 'on the ground', working with local landowners, rights of way officers and other relevant stakeholders, and as such could be considered as a series of individual small, discrete projects:
- Management of visitor flows on adjacent land
 - Paths rerouted inland/below seawall
 - Screening
 - Path management
 - Restricting access at particular locations (such as temporary fencing near wader roosts)
- 3.13 These kind of approaches have merit, but require careful planning and design. Many can be targeted to resolve particular issues at sites or be tailored to particular access types. For example low screening or low fencing at particular locations may provide opportunities to keep dogs away from key areas for birds. These kinds of measures can be phased/targeted as resources allow and as issues arise.
- 3.14 Management of parking (reducing/redistributing spaces/closing parking locations/review of charging) is a means of managing access over a wide area, and applies to a wide range of different access types. Changes to car-parks can take place both on and off-site. In order to ensure success, careful work is needed initially to review existing parking, map parking and identify changes. An important element is the need to ensure a consistent approach across local authorities and others responsible for parking. Changes to parking may also be unpopular with some users, so would need to be undertaken carefully and considerately. It would be necessary to predict and monitor likely displacement to ensure that the pressure did not merely move from one sensitive area to another. Conducting a review, producing a car-parking 'plan' and liaising with users would all necessitate a degree of staff resources.
- 3.15 Zoning is particularly relevant to watersports and there are numerous examples around the country where watersport zones have been established. Zoning works where users spread over a wide area and there are issues with disturbance at particular points. Zoning is positive in that it creates a dedicated space for users, but zones require some careful

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

consideration and consultation in order to get right. As such the approach is not a ‘quick win’.

Education and Communication/Awareness Raising

- 3.16 Education initiatives, such as interpretation, guided walks, wardening, school visits, community events etc., are widely undertaken at many countryside sites and enhance people’s visits to sites and their understanding of the local area. Such approaches are proactive, rather than reactive, but unlikely to solve problems in the short term and depend largely on the audience and style of communication. In general, therefore, education and awareness raising measures are likely to have wider conservation benefits, but there is relatively little evidence that such measures on their own will bring about rapid changes in people’s behaviour and reduce disturbance. Good communication is however likely to be important when linked to other measures, to ensure visitors understand issues and to ensure clear guidance for people on where to go, how to behave etc.
- 3.17 Voluntary codes of conduct provide a means of clearly conveying messages about where to undertake different activities and how to behave, and provide a foundation to other measures such as enforcement.
- 3.18 Wardens appear twice in the matrix, as people out ‘on-site’ can have an engagement role (talking to visitors, showing people wildlife, explaining issues etc.) and/or an enforcement role. Establishing a warden presence is relatively easy to implement, but employment costs over a long-period (in perpetuity) are high. If wardens have an enforcement role, then there is a need for clear guidance to users and legislative support to provide the scope for enforcement.
- 3.19 The presence of a warden on-site, asking people to behave differently, and the wardens on-site to show people wildlife are relatively ‘quick wins’ in that a wardening team can be established quickly. There is published evidence of their effectiveness, for example in resolving impacts from access for breeding terns (Medeiros *et al.* 2007). Given that warden/rangers could undertake monitoring and also work closely with stakeholders on other projects, an on-site presence, at least in an early part of the strategy, would seem a sensible use of resources. It will be important to ensure that the warden/rangers have powers to enforce byelaws etc. as required over time.

Enforcement

- 3.20 A range of legal mechanisms are relevant. Byelaws can be applied to enforce zones, limit speeds and dog control orders provide a range of options for fines to be levied to dog owners (for example requiring dogs to be on leads; requiring dog owners to put their dogs on leads when asked etc.). In general these measures require a little time to set up – involving consultation, evidence gathering etc. – and (not surprisingly) can be unpopular. Users need to be made aware of any changes and some way of monitoring, checking and enforcing (such as wardens, see above) is required. Measures relating to enforcement are therefore ones which have a high likelihood of success, but require some time to set up and establish. We therefore suggest legal mechanisms such as dog control orders and byelaws are elements that potentially feature later in any strategy, after other (more positive) measures have been implemented.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 3.21 Capping visitor numbers is problematical. Permits or similar systems are used in other countries (see Newsome, Moore & Dowling 2002 for details and a review), and occasionally within the UK. In general, however, the approach is applicable to wilderness areas or sensitive nature reserves and has largely lost favour within the UK. At most locations around the SPA there are existing rights of access and controlling access in such a way along the coastline is probably not worth further consideration.
- 3.22 Covenants relating to pets in new development is also not worth further consideration. It is difficult to have confidence that covenants can be applied and be effective in the long term. The checks, monitoring and legal costs of ensuring residents do not keep pets are complicated.

4. Locations that are a focus for the strategy

4.1 In this section we summarise spatial data relevant to the strategy. [Appendix 6](#) includes a series of maps and summarises background information relating to spatial context. It contains the following maps:

- Map 11: Areas important for particular bird species: WeBS sectors holding more than 10% of the count of interest features of the SPAs
- Map 12: Areas that are potentially vulnerable to disturbance/sensitive to disturbance (high tide roosts)
- Map 13: Priority habitats within the SPAs, highlighting habitats relevant to the SPA interest features
- Map 14: Areas where access may increase in particular
- Map 15: Current access
- Map 16: Areas where particular activities are focussed

4.2 The key areas for birds – based on WeBS core count data – are the northern parts of the Swale and the inner part of the Medway (islands). These are some of the quietest areas in terms of access and development pressure. These areas also hold a high proportion of wader roosts. The largest areas of intertidal habitat (the richest feeding for many of the birds) are in the Medway and the outer Thames. The area with the most new housing likely to come forward (within a 6km radius) is the South-west corner of the Medway, between Lower Upnor and Gillingham. Areas near Gravesend and the upper reaches of the Swale are also likely to see a marked increase in housing within 6km. Current access levels are highest near Whitstable (mouth of the Swale) and the upper parts of the Medway.

5. Elements of the Plan

5.1 The following elements form the basis of the strategy. Each are discussed in detail within this section.

- A North Kent Coast Dog Project
- Wardening/Visitor Engagement
- New Access Infrastructure
- Parking: Strategic Review and Changes to Parking
- Codes of Conduct
- Interpretation/signage
- Work with local club/group
- Refuge
- Enhancement of existing sites to create hub
- Enhancement to existing GI away from SPA
- Enforcement
- Monitoring

5.2 The **dog project** and **wardening/visitor engagement** elements are generic and can be established quickly. The **dog project** focuses on the activity that is most associated with disturbance and will engage with local dog walkers. It will be able to promote particular sites to dog walkers and raise awareness of disturbance issues. **Wardens/rangers** with a visitor engagement role can be mobile and deployed across a range of locations, targeting areas with particular issues or close to new development. The level of wardening can be flexible over time and the posts can supplement existing visitor engagement and range posts.

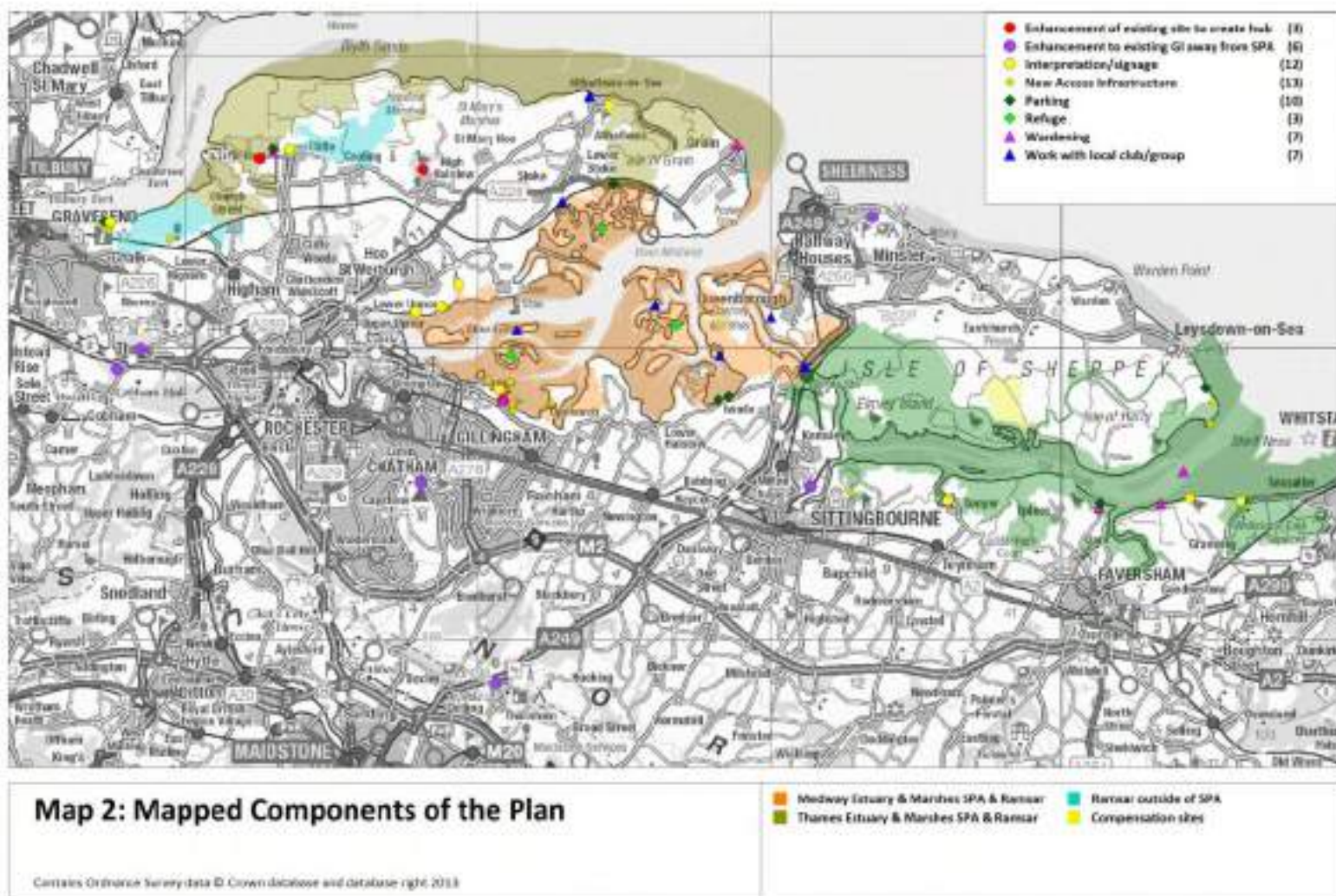
5.3 **New access infrastructure** will involve a range of discrete, focussed projects that could be phased with new development. **A review of parking locations** will provide the necessary information to underpin long-term changes in parking capacity, charging and provision. Such changes can be phased over time and linked to available funding and locations where new development comes forward. **Codes of conduct** will provide guidance for a range of activities, in particular making it clear how users should behave and where to undertake particular activities (important ground work should legal enforcement be required in later years). In-line with these, **interpretation/signage** and **work with local clubs/groups** is envisaged. These three elements should be undertaken in tandem and it is important they interlink, for example the maps on the codes of conduct could also be used on the interpretation. Also linked is the long term aim of creating **refuges** – ‘quiet’ areas within the Medway where recreation and other activities are discouraged. We also set out **enhancement to existing sites**: both those **within the SPA** and **outside**. In the long term access is best focussed away from the SPAs, and the more that existing green infrastructure away from the SPA can absorb access pressure and people’s access requirements the better. Particular honeypots within the SPA will be likely to continue to draw access and coastal sites will always have a particular draw. These sites therefore need to be made more robust, with

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

additional resources made available and management measures targeted to reduce disturbance impacts. Measures are possible at such locations to reduce disturbance.

Monitoring across the SPA sites will provide a check on success of measures and inform where further measures, such as enforcement (for example dog control orders) might be necessary

- 5.4 Elements which can be mapped are shown in Map 2, which provides an overview of the different elements. Note that some parts of the strategy cannot be specifically plotted and for some elements (such as wardening) some suggested locations are indicated on the map but there may be additional locations over time. We also summarise the strategy spatially in [Appendix 7](#). In this Appendix we set out a summary map (Map 17) showing all components of the strategy and an accompanying table that summarises the spatial elements of the strategy.



A North Kent Coast Dog Project

Overview

5.5 A dog project would provide the opportunity to actively engage with local dog walkers and establish a means for dog walkers and conservation/countryside staff to communicate with each other. The approach has been successfully used in other parts of the country where there are concerns about the impacts of dogs on European sites.

Justification

5.6 Dog walking was the most common activity people were undertaking at the survey points included in the disturbance study (Liley & Fearnley 2011). Dog walking accounted for 55% of the major flight events recorded during the disturbance study and the study showed that it was dogs off-lead that were a particular issue. A dog project aimed at establishing communication with dog walkers, providing a means to engage with users, raising concerns, highlighting sites to visit (and sites where dogs are not so welcome) etc. is a positive, proactive and cost effective approach.

Detailed Recommendations

5.7 We recommend that a project is established that has its own identity/branding and is something that is free. The project would be a strategic, over-arching element of the strategy – in that it is not location specific. The main element to the project would be a website that is aimed at those interested in dogs. As such the website could provide:

- social networking opportunities for dog walkers,
- a forum for users to share information on places to walk and local issues,
- help for people with lost dogs
- a list of vets, pet food suppliers, kennels etc.
- a live gazetteer of countryside sites, potentially with opportunities for users to add comments about sites, recommend sites etc. The gazetteer should indicate (potentially with a colour scheme) sites where dogs are welcome and sites where dogs should be on a lead or are not welcome
- a register for professional dog walkers (allowing professional dog walkers to sign up to a particular code of conduct)
- a code of conduct for dog walkers in the countryside

5.8 Besides the website, there is the potential for the project to include events (guided walks, meet-the-ranger type events, events at particular sites where there are dog walking issues, indoors events with stands etc.). Promotion of the project could involve face-face contact on-sites, and also active work with local vets, suppliers etc.

5.9 By holding people's contact details (and potentially details of their dogs, where they live/walk etc.) there is the potential for users to be contacted directly if there are issues on local sites, for consultation etc.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 5.10 ‘Dorset Dogs’⁷ provides a useful precedent – the project has won awards from the Kennel Club and has been developed over a number of years, using funding from developers to off-set impacts related to the Dorset Heaths SAC/Dorset Heathlands SPA.

Indicative Costs and Implementation

- 5.11 The website and the approach of the project will need to be designed with the involvement of local dog walkers and be tailored to the specific area of North Kent. This will ensure it will appeal to local dog walkers and be useful.
- 5.12 The project will need to have its own identity and initial costs will need to cover the design of the website, production of membership packs, display material, equipment for events etc. Staff time will be required to develop the project and organise any start-up events etc.
- 5.13 Costs are summarised in Table 2.

Table 2: Indicative costs for dog project

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Dog Project	£15,000	£2,000	Staff time not included in cost as assumed undertaken by warden/rangers. Set up cost to cover web design, production of membership packs, launch event. Running costs for web hosting, updates to website, further events.

⁷ <http://www.dorsetwildlifetrust.org.uk/dorset-dogs.html>

Wardening/Visitor Engagement

Overview

5.14 A small team of mobile warden/rangers is needed to patrol the SPA, engaging with visitors and providing the staffing needed to implement some of the other measures within the strategy.

Justification

5.15 There are lengths of coastline with currently little or no ranger presence and there are issues of disturbance from both legal and illegal activities. There are also a number of local settlements where there is little liaison with the communities and a lack of understanding of the importance of the SPA featured species and their sensitivity to human activities. Where mitigation measures are needed, there will be a need to liaise with local land managers and owners and to either carry out works or appoint and supervise contractors. A number of places are popular with tourists and enthusiasts at all times of year and engagement with these transient visitors is also important to inculcate an understanding of the importance of the SPA and the vulnerability of the featured species to human impacts. This all requires a presence on the ground of knowledgeable rangers. We therefore envisage a small mobile ranger team that would supplement and fit with existing warden/rangers. The team would have a dedicated role along the lines of a ‘bobby on the beat’, and the team would be flexible over time in that staffing levels and deployment would vary as required.

5.16 There are published studies that show that wardening is effective in reducing disturbance impacts (e.g. Medeiros *et al.* 2007).

Detailed Recommendations

5.17 The warden/ranger’s would function as a mobile team, covering multiple sites (under different ownership and management) and their duties would involve working with the existing site managers (where present) and include:

- Actively patrolling sensitive areas, engaging with visitors.
- Putting up seasonal signs, fences etc.
- Familiarisation with the area and identification of disturbance issues
- Putting in place mitigation measures to remove sources of disturbance (such as illegal motor biking) or reducing disturbance from legitimate users (education, signs, screening etc.
- Liaison with local communities, landowners and land managers and other organisations
- Education initiatives with local schools etc.
- Monitoring impacts from human activities and the effectiveness of mitigation measures

5.18 While we envisage that the main work of the warden/rangers would involve active engagement with visitors, we also envisage that the duties would include work on some of the other areas recommended in this report – the parking review and the dog project for example.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 5.19 The wardens would need to have a strong presence and be clearly identifiable. There are a range of options for how the warden/rangers could be hosted or established. For example it may be possible to add to existing staff teams in the area (e.g. wildlife trust/RSPB/local authority) alternatively the warden/rangers could form their own team with a separate brand and identification.
- 5.20 It would be possible for the core team to work with volunteers, which could provide a means of increasing local support and face-face contact. ‘Walking Wardens’ have been employed by some wildlife trusts⁸ on their reserves to report anti-social behaviour and (for those who have dogs) ‘best practice’ dog walking.
- 5.21 Wardening effort and patrolling would involve all areas, and be flexible. Different locations and issues may become a focus at different times. Map 3 shows suggested locations for the wardening effort to be focused. These are also summarised in Table 3. The list is not exhaustive, but provides an overview of some of the locations where the wardening effort could be directed.

Table 3: Suggested areas for wardening effort to be focussed.

Map ID (See Map 3)	Details
11	Mobile warden/ranger focus: issues with local dog walkers/motor bikes
22	Roaming warden along Medway estuary shore - boost to existing warden staff
41	Mobile warden/ranger focus dog walkers
48	warden presence
51	Existing wardening presence at Oare Marshes, but necessary to ensure continuity and coverage
53	Mobile warden/ranger focus: issues with local dog walkers, roosts wardened at high tides
55	enforce speed limits - jet skis and catamarans in this area

- 5.22 In general the areas that should be a focus for wardening effort should be:
- Wader roost sites at high tides
 - Sites with particular issues, such as a focus for particular activities (off-roading; dogs off-leads etc.)
 - Areas where access is likely to change, for example close to areas where development takes place

Indicative Costs and Implementation

- 5.23 It is anticipated that two rangers will be required during the winter, and in addition one senior ranger throughout the year. Additional short-term posts could be created to supplement the core team as required (monitoring results will provide indication as to whether this is necessary). The senior ranger would supervise the seasonal rangers and would be funded in perpetuity. The senior ranger would cover the sites where wader

⁸ For example in Northamptonshire: [Irthlingborough Lakes and Meadows Walking Wardens leaflet](#)

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

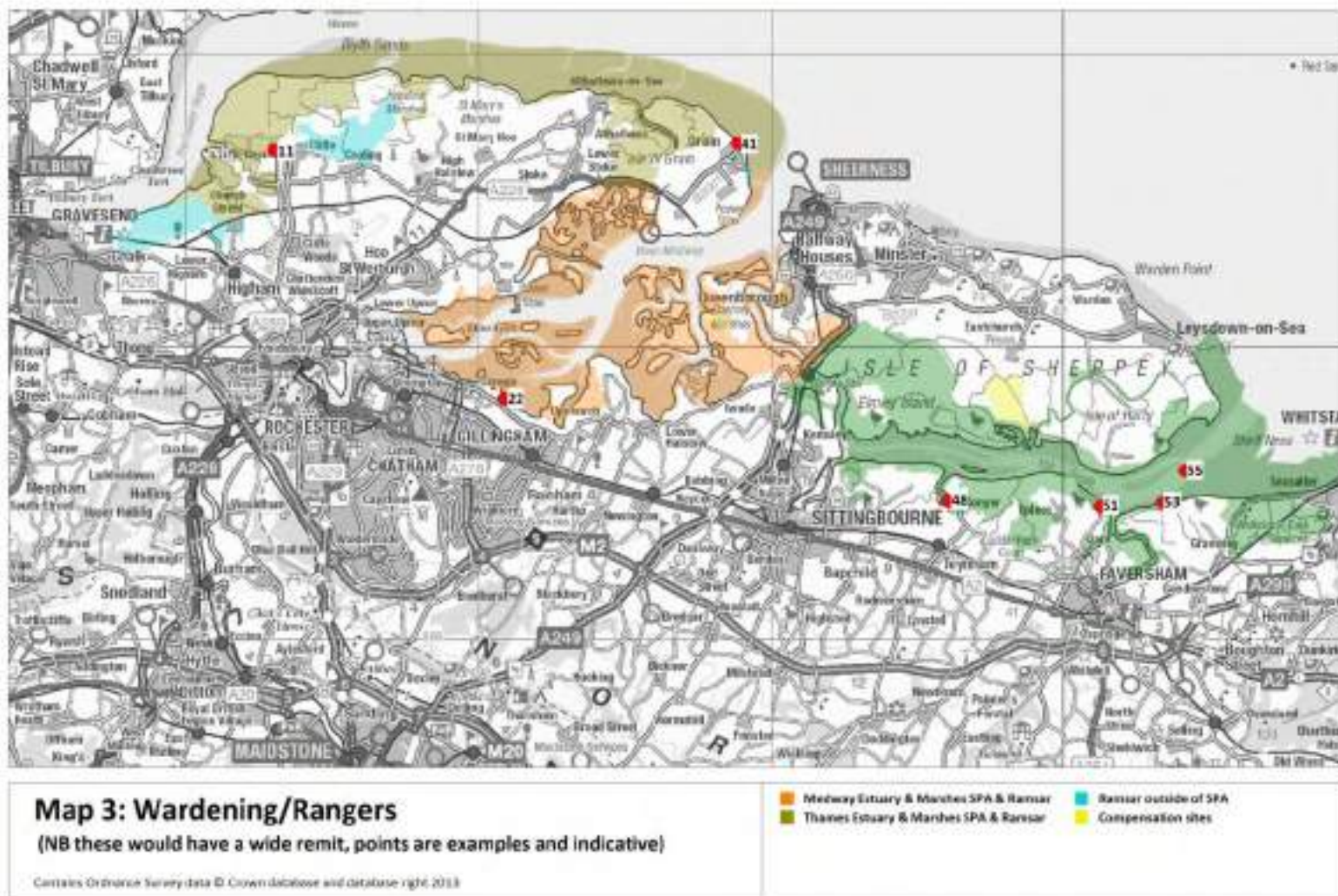
numbers start to build in July and in the quieter summer months (April – July) would be working on the other elements, such as data entry (monitoring data), the dog project, the parking review etc.). The two seasonal ranger posts would be employed for the autumn/winter only (August-March) and may not be required in perpetuity. This is because once access patterns have become established in particular ways that reduce disturbance (such as dogs on leads at particular sites) then there may no longer be a need for the staffing to continue at such a level. Volunteer wardens may prove effective support in the long term too. It may therefore be that – after eight to ten years and following careful review - it would be possible to reduce the staffing levels to two or one.

5.24 Costs would depend on how the team is set up and functioning. We recommend that the team does have its own identity, with an office base, vehicles, branding etc. With three staff in place, one staff member could have a focus on a particular estuary (Thames, Medway and Swale), with the potential for the three to also work together on particular aspects/projects/events.

5.25 Approximate costs are summarised in Table 4.

Table 4: Indicative costs for warden/ranger team

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Senior ranger post		£45,000	Long-term post. Includes office and vehicle costs.
Two seasonal rangers		£40,000	Potentially short-term. Includes office and vehicle costs.
Total		£85,000	



New Access Infrastructure

Overview

5.26 This section is intended to cover small projects to reduce or modify visitor impacts on a site specific basis, for example changes to paths, gateways or other access infrastructure. Generic measures across sites and larger projects such as strategic signage or visitor centres are considered elsewhere.

Justification

5.27 Small, site specific measures may work well to resolve issues at a local scale. For example there are examples of where resurfacing paths has changed where people walk and as a consequence reduced disturbance (Pearce-Higgins & Yalden 1997). Vegetation structure appears to have the potential to affect how disturbance may affect birds (Murison *et al.* 2007), with thicker, scrubbier vegetation potentially screening visitors and reducing access off-paths.

5.28 The visitor survey results (Fearnley & Liley 2011) indicate that certain features draw users to particular locations and include better path surfacing/path network (7% respondents) and more dog-friendly (6%). For dog walkers in general evidence suggests that favourite sites are those where dogs are perceived as most happy; where they are permitted to run off lead, can socialise with other dogs, and where there is little danger of road traffic (Edwards & Knight 2006).

5.29 Re-routing paths, providing screening, providing fenced areas for dogs to be off lead and restricting access at certain (vulnerable) locations are commonly used approaches to simultaneously enhance access and reduce impacts. Many measures will be cost-effective to implement.

Detailed Recommendations

5.30 The following site specific measures have merit and could be focussed to particular locations:

- Allow vegetation to grow to set access back from sea-wall and screen users
- Provision of physical screening, such as reeds or fencing, to keep people away from particular areas and hide them. It may be possible to provide viewing facilities through the screen
- Enhancement of existing paths, for example through resurfacing, to draw users along particular routes
- Enhanced gateway/access furniture to prevent particular types of activity (such as off-road vehicles or motorbikes)
- Linking paths to provide choice of routes and potentially divert access away from seawall/shoreline
- Re-routing paths, for example below seawalls
- Fencing to direct people away from wader roosts

5.31 Opportunities for some of these measures may occur over time or be linked to other projects. It may be necessary to consider particular approaches as access levels change.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Through the workshop and site visits, we have identified a number of particular locations and projects. These are summarised in Table 5 and Map 4.

Table 5: Locations where there is potential for new access infrastructure which will reduce potential disturbance

Map ID (See Map 4)	Details
1	Linking of the shoreline path (Saxon Shore Way) with the Thames and Medway Canal towpath to give a choice of circular walks from housing and industrial area to east of Gravesend
3, 4 & 8	Infrastructure to inhibit motorbikes and other vehicles accessing marshes along the Saxon Shore Way, the Thames and Medway Canal towpath or existing or proposed new paths across Eastcourt or Shorne marshes.
19	Continue to manage existing shoreline vegetation of bramble etc. and reinforce with additional planting to provide partial screening - along seaward side of seawall in country park
23	Management of paths at Horrid Hill –making subtle changes including modification of path surfaces, provision of low vegetation screening and measures to discourage visitors straying onto foreshore instead staying on paths. Gated entrance to main access path onto Horrid Hill Peninsula with dogs on leads restriction on peninsula.
24	Continue to manage existing shoreline vegetation of bramble etc. and reinforce with additional planting to provide partial screening - along seaward side of seawall in country park
26	Promotion of fenced dogs run free areas away from shoreline, including particular dog training area
28	Fencing to restrict access from Saxon Shore Way on west side of Motney Hill onto adjoining beach.
46	Infrastructure to inhibit motorbikes and other vehicles accessing marshes on paths either side of Milton Creek
50	Screening enhanced at Oare Marshes with additional planting
58	Fencing around roost
59	Potential to restrict access at Shellness (privately owned area owned by hamlet) during tern breeding season (fencing and signs) and negotiate for access to very specific locations during winter to prevent disturbance to roosts.

5.32 Many of the recommendations in Table 5 relate to screening and allowing vegetation to develop further at particular locations. Low bramble exists in many locations, particularly around the Medway in the vicinity of the Riverside Country Park, and allowing the vegetation to build on the seaward side of the path to still provide views to people walking, but acting as a screen (particularly for dogs) would be relatively simple to achieve. Such approaches are particularly relevant in areas such as Horrid Hill where the spit allows people to be close to large areas of intertidal habitat important for birds. Provision and promotion of dog fenced areas in this area would also help divert use away from the shoreline, particularly if there is a stronger push for dogs to be kept on leads along the shoreline. Guidance on design and size of dog-fenced areas are provided by Jenkinson (2013). There is scope to provide agility areas (for both owners and their dogs: Jenkinson 2009).

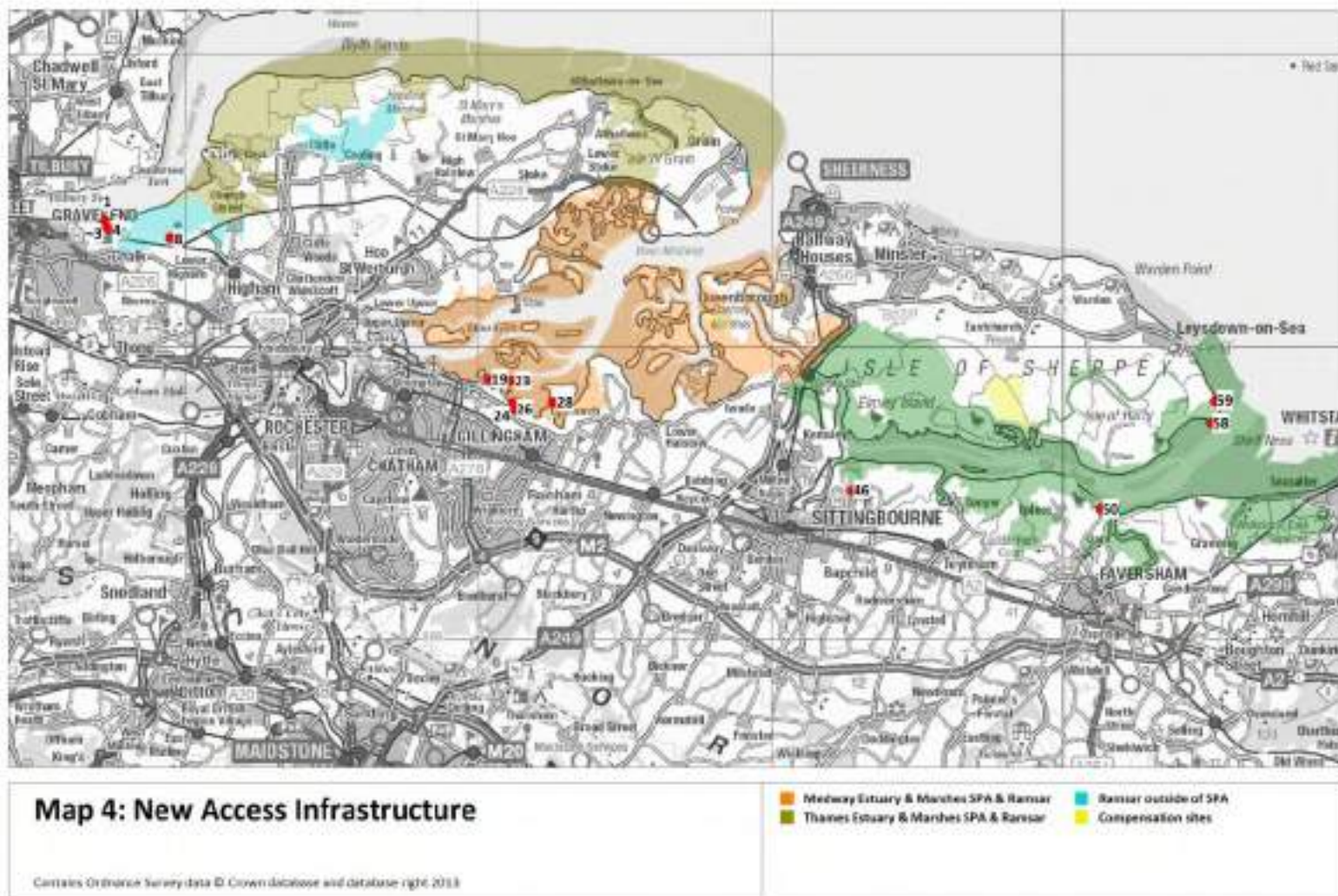
5.33 These relatively small infrastructure projects need to be considered on a case-by-case basis, and could be developed by the wardening team once in place. It may be that the best approach – at least initially – is for projects to come forward over time as funds allow. These projects could be phased with development.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

5.34 Indicative costs for the measures above are summarised in Table 6.

Table 6: Indicative costs for site specific infrastructure

	Recommendation	Set-up/Capital Cost	Annual Cost	Notes
1	Path links	£5,000		Cost would depend on surfacing, route etc.
3, 4, 8 & 46	Structures to inhibit vehicles.	£3,500	£750	Range of different gate styles or designs possible. Costs need to cover installation. Annual cost covers maintenance/checking
19, 24 and 50	Additional planting at various locations	£1,800		Planting relatively low cost, but will need regular checks to ensure gaps are not developing and further planting may be required
23	Horrid Hill path management and screening	£5,000		Will need regular maintenance and checks to ensure new paths are not developing and further work (planting/screens) may be required
26	Dog training area	£3,000		Cost depends on area fenced.
28	Fencing at Motney Hill	£3,000	£500	Cost depends on type of fencing. Will need checking and maintenance
58&59	Fencing and signs around Shellness	£2,000	£500	Cost dependent on scale of fencing. New fencing may be required each year depending on flooding/changes in bird use etc.
	Total	£17,500		



Parking: Strategic Review and Changes to Parking

Overview

5.35 We recommend a review of parking across the three estuaries and adjacent sites. The review should encompass lay-bys, formal car parks and roadside parking. It should consider the number of parking spaces available, any charges for parking and whether there are additional facilities (such as access to the water with a boat). While sites that have access to the SPAs should be the focus, sites that may also attract similar visitors and are away from the coast should be included. Following from the review a series of carefully considered changes should be possible.

Justification

5.36 Of the people interviewed in the visitor survey, 63% had arrived by car (Fearnley & Liley 2011). For locations well away from nearby housing the majority of people will travel by car. Modifying the distribution, cost and ease of parking is therefore a means of managing visitor flows. There are examples of sites where the careful review, assessment and management of parking provision has led to a marked change in how people use sites. For example at Burnham Beeches, an SAC near Slough, the Corporation of London have created a car-free zone in the northern part of the site and then closed part of Lord Mayor's Drive (which allowed vehicular access through the middle of the site). In total three car parks have been closed and roadside parking has been restricted on roads around the site through signage, ditches, banks and dragon's teeth. In parallel with these changes, the Corporation of London relocated the main visitor facilities to provide a central focus of activity slightly away from sensitive SAC features and adjacent to open grassland which was not particularly sensitive to recreation pressure. Car park charges have been introduced at weekends only, a system intended to encourage people not to visit at busier times.

5.37 The Burnham Beeches example illustrates how managing parking has the potential to influence access and redistribute visitor pressure. Closing car parks can however be contentious; for example proposals to close car-parks in the New Forest National Park have been strongly opposed by local dog walkers⁹. Closures should only be undertaken after careful consultation and survey work to ascertain people's reactions and where access might be deflected to. Evidence from Cannock Chase in Staffordshire suggests that results can be unpredictable (Burton & Muir 1974), for example people may still choose to visit favoured areas, but are prepared to park further away and walk further. In general, preventing parking in lay-bys, on verges and other informal parking locations may be easier to achieve than closing formal car-parks

Detailed Recommendations

5.38 A review of parking across the area would involve a short visit to each parking location and assessment of each in a standard fashion – recording charges, capacity, surfacing, signposting etc. Sites can initially be identified from aerial imagery. The review would

⁹ http://www.bournemouthcho.co.uk/news/districts/newforest/888601.Dog_owners_fury_over_car_park_closures/

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

identify changes that could be made to the car-parks, including enhancing some locations (by providing additional spaces, reducing parking fees etc.) and reducing parking and introducing charges/increasing charges at other locations. Suggestions for some locations that could be included in the review are set out in Table 7.

Table 7: Some locations to include in the parking review and where measures relating to parking could be adopted in the future

Map ID (See Map 5)	Details
2	Parking: creation of a small parking area linked to paths to provide circular walk on edge of SPA, i.e. focusing access where signs, visitor engagement etc. can take place.
10	Include in parking review. Track with parking
29	Could restrict roadside parking and close lay-by
34	Potential to close lay
37	Potential to formalise this layby, provide interpretation; low fence/dragons teeth to ensure parking and access contained
39	Potential to formalise this layby, provide interpretation; low fence/dragons teeth to ensure parking and access contained
42	Potential to enhance car-park to create more welcoming feel but also restricting overall number of spaces - potentially removing back half of car-park (already difficult to access and use anyway)
52	Oare Marshes. Include in review with consideration as to limit roadside parking in some locations and enhance car-park
57	Potential to move car-park entirely away from end of road, placing it part way down track and providing access to NNR well away from beach
61	Possibility for measures to restrict roadside parking around Sportsman Pub with aim of ensuring this location does not become too busy in future

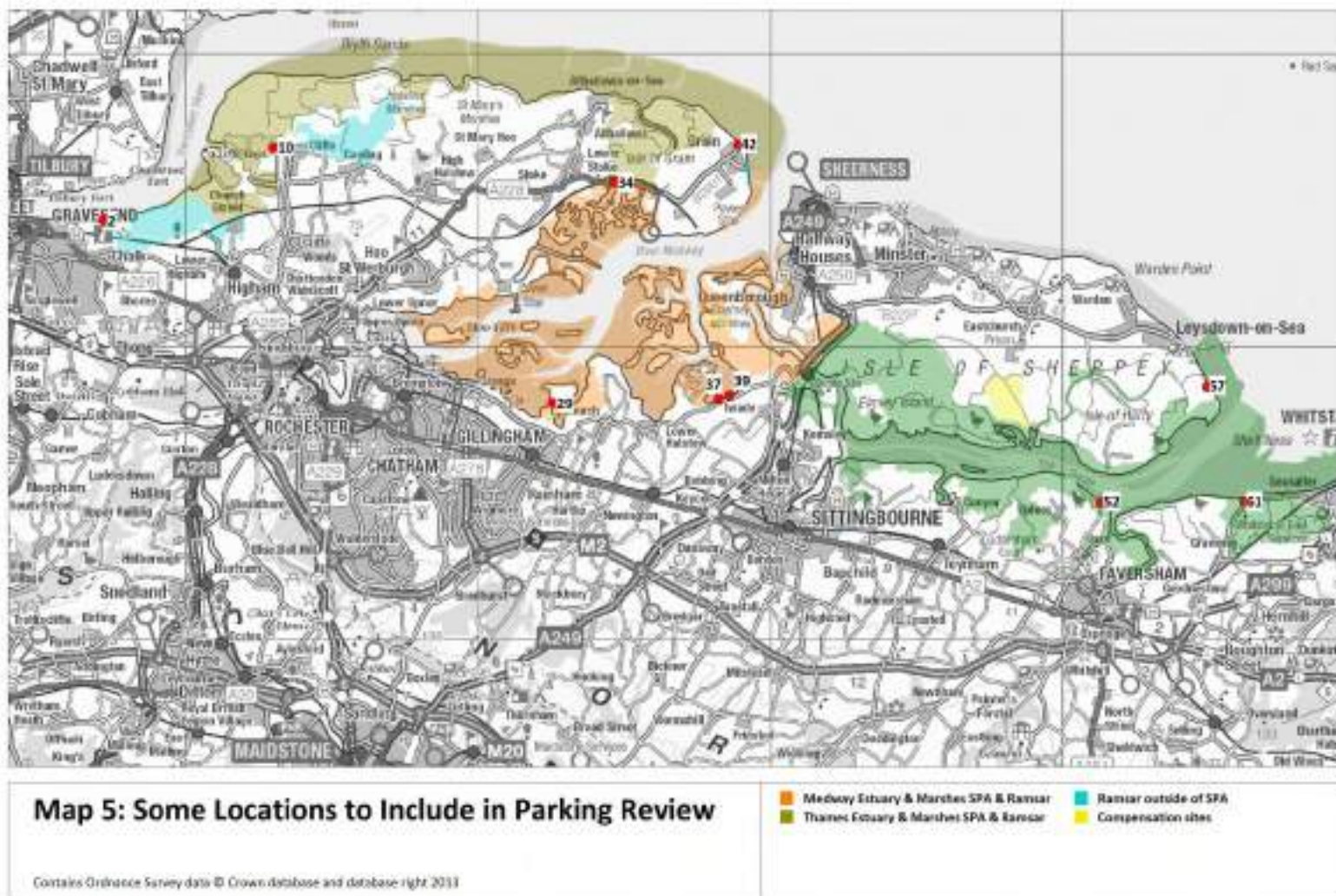
Indicative Costs and Implementation

5.39 It would be possible to include this as part of other projects – such as green infrastructure audits or checks. The review itself would not be a large or complicated piece of work, and could be achieved at little or no cost by wardening staff. Recommendations would need a set budget, but would depend on the outcomes of the review.

5.40 Costs are summarised in Table 8

Table 8: Indicative costs for parking: review and changes to parking

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Review of Parking	£0		No cost allocated as assumed review conducted by warden/ranger team
Changes to Parking	£20,000		Depends entirely on outcome of the review. £20000 would allow one or two small projects to probably be achieved.



Interpretation/signage

Overview

5.41 Interpretation will ensure visitors recognise that the sites they are visiting are important for nature conservation and will potentially increase awareness of nature conservation issues (and possibly behaviour in the long-term). Signage will convey particular messages, such as asking dogs to be on leads or asking people not to stray from the path. We recommend that interpretation with consistent styling and branding is installed at a range of carefully selected locations. Standard signs are also warranted at a range of locations.

Justification

5.42 Interpretation boards and signs are widely used around the UK at nature reserve sites. Tests of the effectiveness of education and interpretation in reducing visitor impacts are limited (Newsome, Moore & Dowling 2002), but studies would seem to indicate that they can be effective if targeted and well designed (Littlefair 2003). Interpretation has a role only in mitigation only as part of a package of measures – while it may help change people’s awareness, new interpretation boards on their own will certainly not be guaranteed to resolve any disturbance issues.

5.43 Signs are an important means of conveying information to visitors. Considerable guidance is available, for example describing design principles, wording, etc. for signs and interpretation (Mcleavy 1998; Kuo 2002; Hall, Roberts & Mitchell 2003; Littlefair 2003; Bell 2008; Kim, Airey & Szivas 2010). Provision of signage and wardening has been shown to result in enhanced breeding success for little terns in Portugal (Medeiros *et al.* 2007), and there is therefore some evidence of their merit.

5.44 Signs can ask visitors to behave in different ways. Interpretation provides information for visitors, enhancing their understanding of the site and its importance. Signs are also important to give the information to users that would be necessary to enable a conviction to be taken in relation to visitors knowingly causing harm to any of the features for which the site is notified.

Detailed Recommendations

5.45 We recommend a series of new interpretation boards should be designed and placed at strategic locations around the three sites. These signs should highlight the importance of the sites and the wildlife present in an inspiring way, and also provide information on what (in general) people can do to help protect the site, for example through keeping dogs on leads.

5.46 It would seem appropriate to establish up-dated signs at strategic points around the estuary, in line with the revised codes of conduct. The signs should clearly set out how users should behave, and a series of designs may be necessary – for example one for dogs on leads.

5.47 The locations for new signs and interpretation should be established by the warden/ranger team and new locations may become evident over time, as access

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

patterns change or as levels of access change at some places. Some suggestions for possible locations are given in Table 9 and Map 6.

Table 9: Potential locations for new interpretation and/or signage.

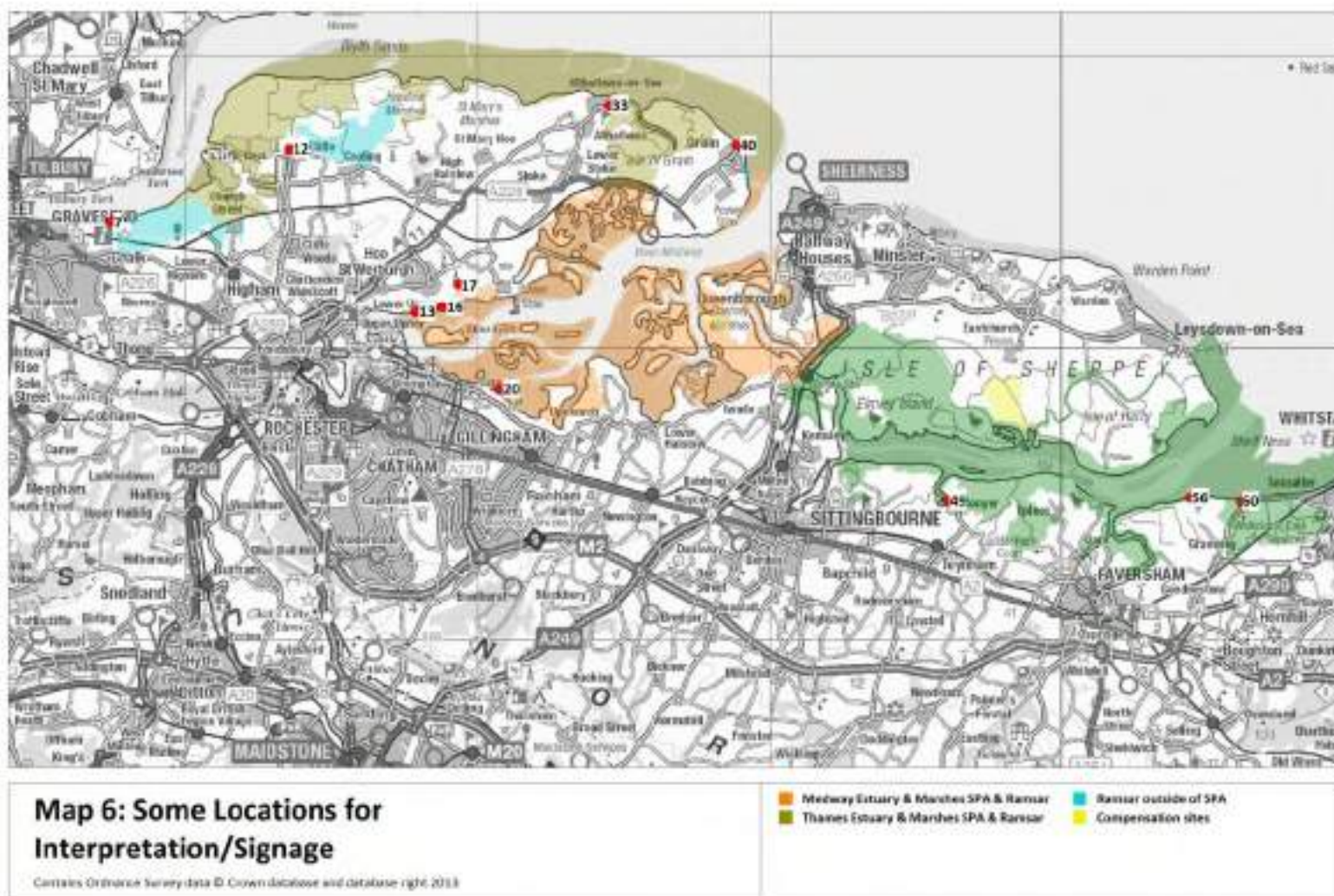
Map ID (See Map 6)	Details
60	Potential for interpretation: targeted to users at caravan park
56	Potential for signage re dogs on leads
49	Potential for interpretation aimed at dog walkers
20	Potential for signage re dogs on leads
13	Potential for interpretation at car-park
16	Potential location for interpretation, edge of marshes
17	Potential location for interpretation
7	Potential location for interpretation
40	Potential location for interpretation
12	Potential location for interpretation : at start of track.
33	Potential location for interpretation at start of footpath across marshes

Indicative Costs and Implementation

5.48 Costs are summarised in Table 10, we estimate that around ten interpretation panels and ten signs would be required. The exact locations would be chosen by the wardens/rangers.

Table 10: Indicative costs for new interpretation and or signage

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Interpretation boards	£25,000	£2,500	Estimate based on 10 outdoor panel interpretation boards (A0 size); £2500 per board. Annual fee allows for replacement of boards over 10 year period
Signs	£20,000	£1,000	10 signs. £2000 per sign, plus £1000 per year for replacement/maintenance



Codes of Conduct

Overview

5.49 Codes of conduct set out how users should behave and provide guidance on a range of issues, including safety. A standard set of codes of conduct should be developed for the main activities and covering all three estuaries. Developing the codes provides a means to engage with local users and once established, a foundation is in place for enforcement if required. Codes of conduct should be widely promoted to users through paper copies, websites, user groups and local clubs. The warden/ranger team should be able to refer to them and give them out as required.

Justification

5.50 Codes of conduct set out clearly how users undertaking a particular activity should behave. Where there is plenty of space, relatively few users and few conflicts, there is unlikely to be a need for any agreed code of conduct. They are however relevant where there are a wide range of different users, potentially not linked to particular clubs, and a range of complicated issues, or where multiple activities overlap. Developing good, clear codes with user groups ensures that safety issues, insurance, consideration of other users and nature conservation issues can be accommodated, ensuring users can enjoy their chosen activities while minimising any impacts. The codes are also useful for casual visitors, who perhaps visit a location sporadically, and are unlikely to be fully informed of all local issues. A code of conduct provides the user with all the information they need to undertake their chosen activity safely, within the law and without creating conflict with others.

5.51 Codes of conduct can be established by directly working with local users, even by the users themselves. Codes developed in this way are likely to be the most effective. Involvement with users directly also makes sure that the codes of conduct reach the right audiences, as one of the key issues can be ensuring that they are read and circulated widely and that visitors are aware of them. Getting people to 'sign up' to voluntary codes of conduct is potentially tricky and may be difficult to achieve where many users are ad hoc, casual visitors and where there are multiple access points (i.e. no central location at which users can be intercepted).

5.52 A good example of voluntary codes of conduct is those for the Thanet area of Kent, where a series of codes of conduct have been brought together in a single document for a stretch of coast¹⁰. The document sets out the bird roosts and European Marine sites, and provides an easily accessible overview for users. The individual codes of conduct include dog walking, horse riding, bait collection, wind-powered activities and powercraft.

¹⁰ <http://www.thanetcoast.org.uk/pdf/ThanetCoastalCodes.pdf>

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Detailed Recommendations

- 5.53 Using the Thanet example, we recommend that a similar set of Codes of Conduct are developed for the North Kent sites. These codes should be similar in design and wording, and should work as a pack.
- 5.54 We suggest codes are developed for the following activities (with a single code of conduct for each activity covering the three estuaries).
- Dog walking
 - Powercraft activities
 - Wind-powered craft
 - Bait digging and collecting
 - Wildlife Watching
 - Shore angling
 - Canoeing
 - A general shore code covering other activities
- 5.55 They should address safety issues, consideration for other users and conservation issues and be developed with users. Monitoring of behaviour should take place after the codes are established.

Indicative Costs and Implementation

- 5.56 The development of the codes could potentially be implemented by the wardening team. Consultancy support and graphic design would be required, and additional input may be required from local authorities/partners.
- 5.57 Costs are summarised in Table 11.

Table 11: Indicative costs for developing generic codes of conduct

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Codes of Conduct developed	£8,000	£200	8 codes produced as a pack for printing and as interactive document; cost estimated at £8,000. Annual cost allows for revision and further print runs

Work with local club/group

Overview

- 5.58 There is scope to resolve very specific local issues by directly talking to local users that have a local club/group and this contact has relevance for some of the other recommendations in this report (such as input into the codes of conduct).

Detailed Recommendations

- 5.59 An estuary users survey was undertaken in 2012 and this provides a useful overview of local clubs and groups. The survey identified 57 local clubs/groups and provides information on which have codes of conduct for members, how each group is set up and provides contact details. Direct contact with some of these groups to discuss

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

disturbance issues and resolve specific issues is recommended. These are listed below in Table 12 and shown in Map 7.

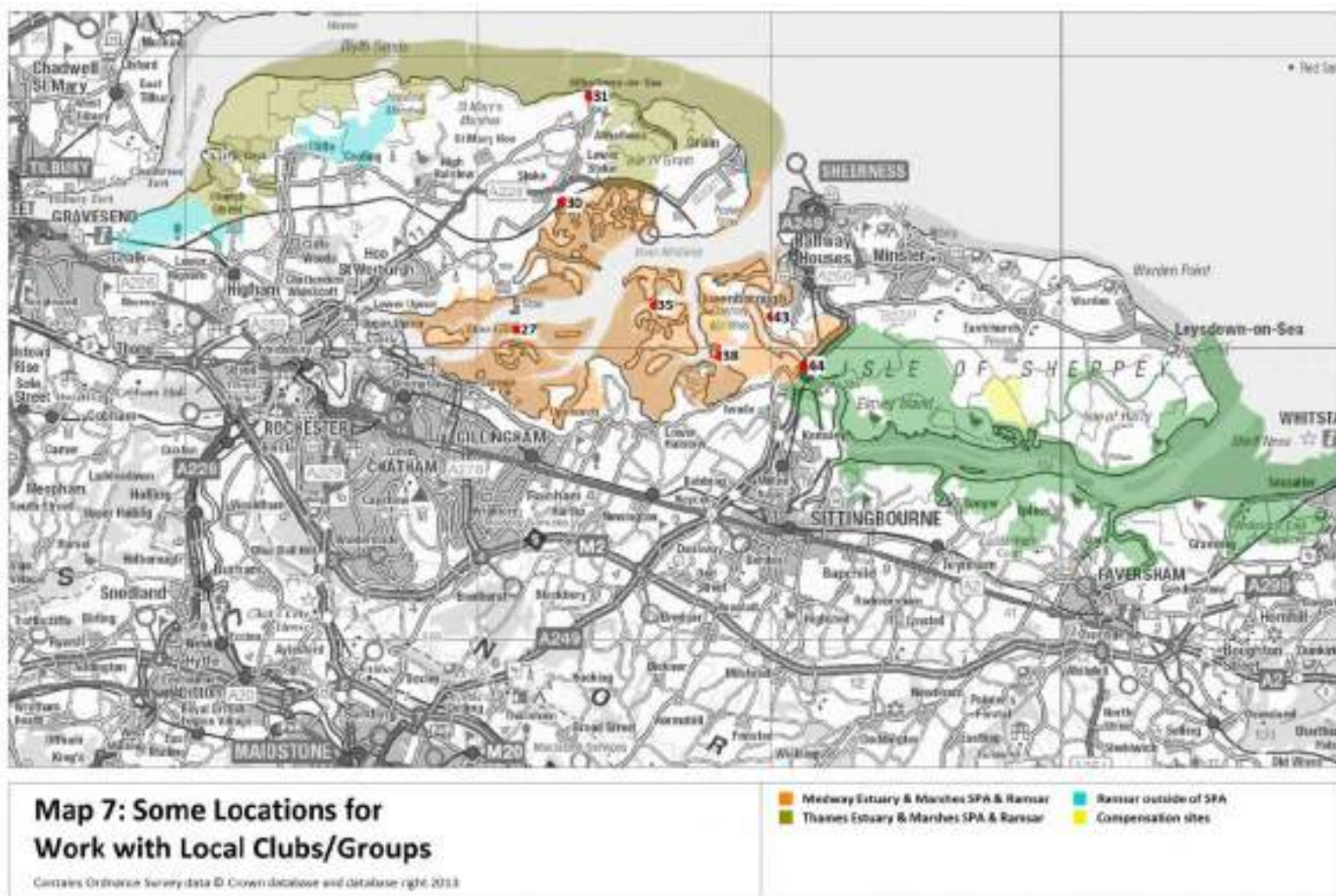
Table 12: Specific locations where there are specific issues relating to a club/group or where there is potential to reduce disturbance through direct contact and discussion

Map ID (See Map 7)	Details
27	Proactive work with canoe clubs, links to codes of conduct.
30	Liaison with the micro light Club (Medway Airsports Club) to attempt to resolve disturbance issues. Club website has no-fly zones but these do not seem to overlap with the SPA.
31	Work with caravan site
35	Work with canoe clubs to minimise disturbance from canoes here
38	Work with wildfowling to minimise disturbance
43	Work with local landowner to reduce disturbance from corporate shoot
44	Liaison with long reach jet ski club. Seems an awkward location given speed restrictions and alternative locations may be better.

5.60 Besides the specific examples given in Table 12 more general contact with local clubs and groups is recommended. The development of the codes of conduct may be a good way to facilitate contact and engage with local groups. Such contact should raise the profile of the nature conservation importance of the sites, ensure that users are aware that it may be illegal for them to disturb wildlife and discuss ways in which users could ensure they are not causing problems.

Indicative Costs and Implementation

5.61 Implementation of this element of the work could be done by the local warden/ranger team and no additional costs are likely to be incurred.



Refuges

Overview

5.62 The Medway is the estuary with the most pressure from new development and the most marked declines in waterfowl. At the workshop it was suggested that creating one or more areas as refuges could be effective. These refuges would essentially be areas where human activity was minimised and users actively discouraged or prevented from undertaking activities in these areas.

Justification

5.63 There are some existing areas in the Medway that are relatively quiet and inaccessible and include a range of habitats. Establishing one or more of these as refuges would provide a means of ensuring a disturbance free area was always available to the birds. Such areas should provide roost and feeding areas.

Detailed Recommendations

5.64 Three potential areas could be established as ‘refuges’, these currently have relatively low levels of access and are relatively remote compared to some other parts of the estuary. The three areas are shown in Map 8 and Table 13. We recommend that at least one and potentially all three are promoted as areas for users to avoid. While access is fairly limited in these areas at present, they are used, for example Hoo Ness and Darnet are visited by canoeists who wild camp on the islands¹¹. Canoeists visiting these islands park at the Riverside Country Park and launch from Horrid Hill. Establishing these areas as voluntary no-go areas could be done through direct contact with the local groups, through maps in the codes of conduct and through other ways, such as restricting canoe launching from certain locations (for example by making it awkward to access the water). Creating these areas as refuges could also be extended to commercial activities and specific planning schemes. Mapping and promoting these areas as ‘quiet zones to protect bird interest’ (or similar) wherever possible would help ensure their effectiveness.

Table 13: Potential locations for ‘refuges’

Map ID (See Map 8)	Details
25	Potential for 'refuge' - area with minimal access and disturbance. Overlap with 36 and 32
36	Potential for 'refuge' - area with minimal access and disturbance. Overlap with 25 and 32
32	Potential for 'refuge' - area with minimal access and disturbance. Overlap with 25 and 36

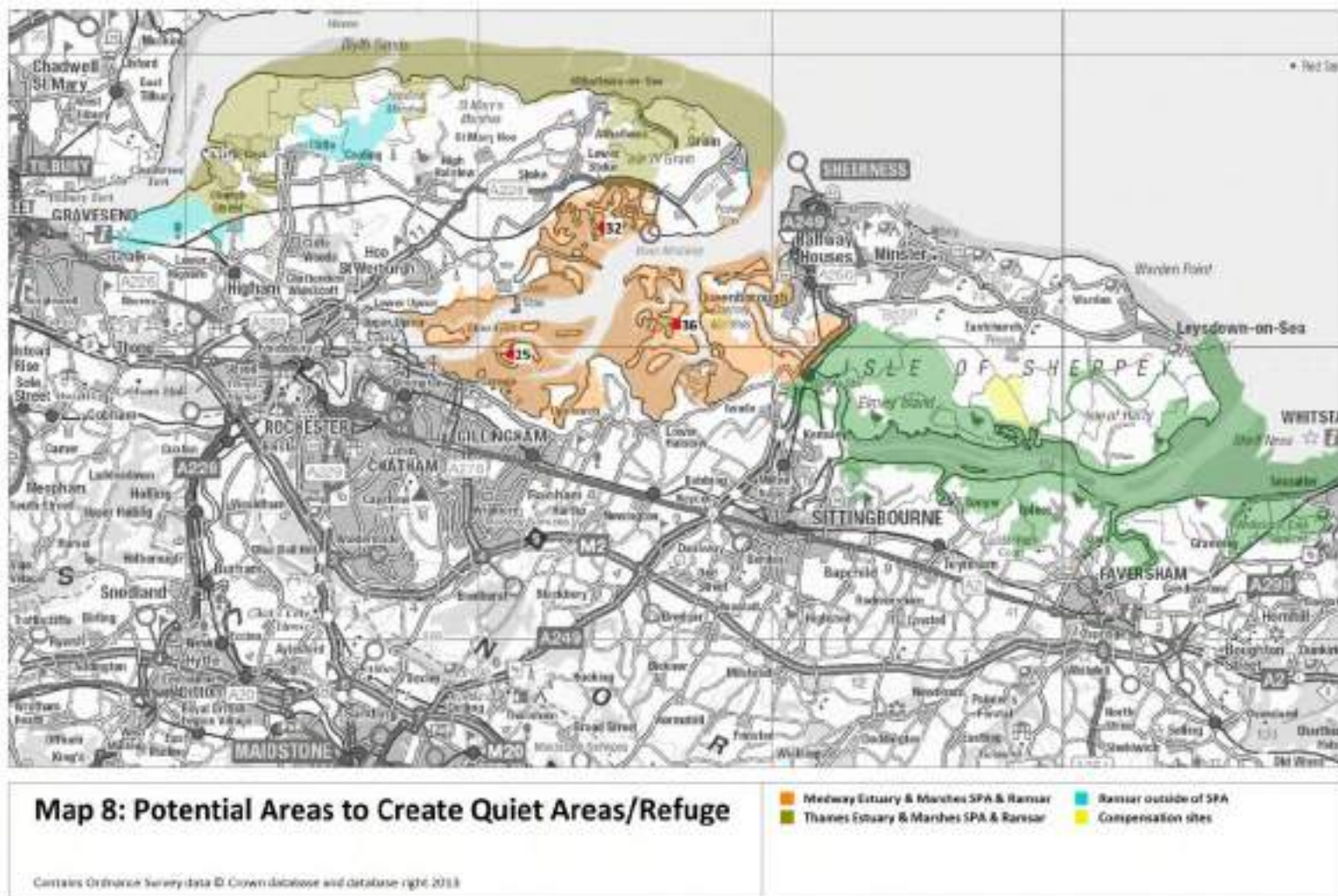
Indicative Costs and Implementation

5.65 Establishing the refuge areas would be a longer term goal than some of the other measures in this strategy, and would dovetail with many of the other recommendations such as the direct contact with clubs and the codes of conduct. We would envisage that

¹¹ For example: <http://www.trekandrunk.com/features/canoetrips/thetwoforts/trip.html>

Thames, Medway and Swale Estuaries – Strategic Access Management
and Monitoring Strategy

the refuges would be established and promoted through these means and therefore the cost of this work would be minimal.



Enhancement of existing site to create hub

Overview

5.66 Directing users to particular locations where there is good access infrastructure and management in place should reduce disturbance. Where the users are deflected from visiting other more sensitive locations and instead spend their time at locations where disturbance is managed this approach is effective and the approach is positive as it enhances access for visitors.

Justification

5.67 At sites with high disturbance pressures it is usually best to aggregate visitors in as small an area as possible, whereas in areas with lower disturbance pressure, an even distribution of visitors may be better (Beale & Monaghan 2005; Beale 2007). A long term aim should therefore be to focus activity at particular locations, drawing users to areas where disturbance impacts can be effectively managed. Such an approach should reduce access in the wider area by drawing visitors who use other sites, rather than attracting new visitors to the area.

5.68 This approach is not a quick win, but would dovetail with the creation of the refuges in the Medway and be a long term goal of drawing access to particular locations.

Detailed Recommendations

5.69 We can identify three sites where existing visitor infrastructure is in place but where enhancements could be made to make more of a focus and draw for users. These three locations are:

- RSPB Cliffe Pools Reserve (Location 9 on Map 9)
- RSPB Northward Hill Reserve (Location 14 on Map 9)
- Riverside Country Park (Location 21 on Map 9)

5.70 At Cliffe Pools there is a secure car-park, nature trails and viewing platforms for seeing wildlife. There is potential in the long term to enhance the facilities here, for example with a dedicated visitor centre, toilets, education facilities and a wider range of walks.

5.71 At Northward Hill the RSPB Reserve has a car-park and toilets. This site could be promoted more for local access/users and access infrastructure enhanced to raise the profile of the site and its ability to absorb more visitors – for example through increasing the amount of parking provision. The existing public rights of way network, including the Saxon Shore Way and bridleways provide routes where dogs can be welcomed. These measures would be much more low-key than at Cliffe Pools. The aim would be to draw local visitors from nearby villages (Cooling, High Halstow, All Hallows) rather than these directly accessing the shoreline at other locations around the Thames/Medway.

5.72 Riverside Country Park covers a long stretch of the Medway shoreline and already draws a wide range of users, including many dog walkers. The site has a large car-park, visitor centre, café and children's playground. A number of measures could be

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

established here to reduce disturbance (see para 5.30) and the site could absorb further visitors. Additional infrastructure at the site could include fenced areas for dogs (again see para 5.30) and promotion of areas within the park away from the shoreline, for example creating more circular walks – drawing more access inland at the park.

Indicative Costs and Implementation

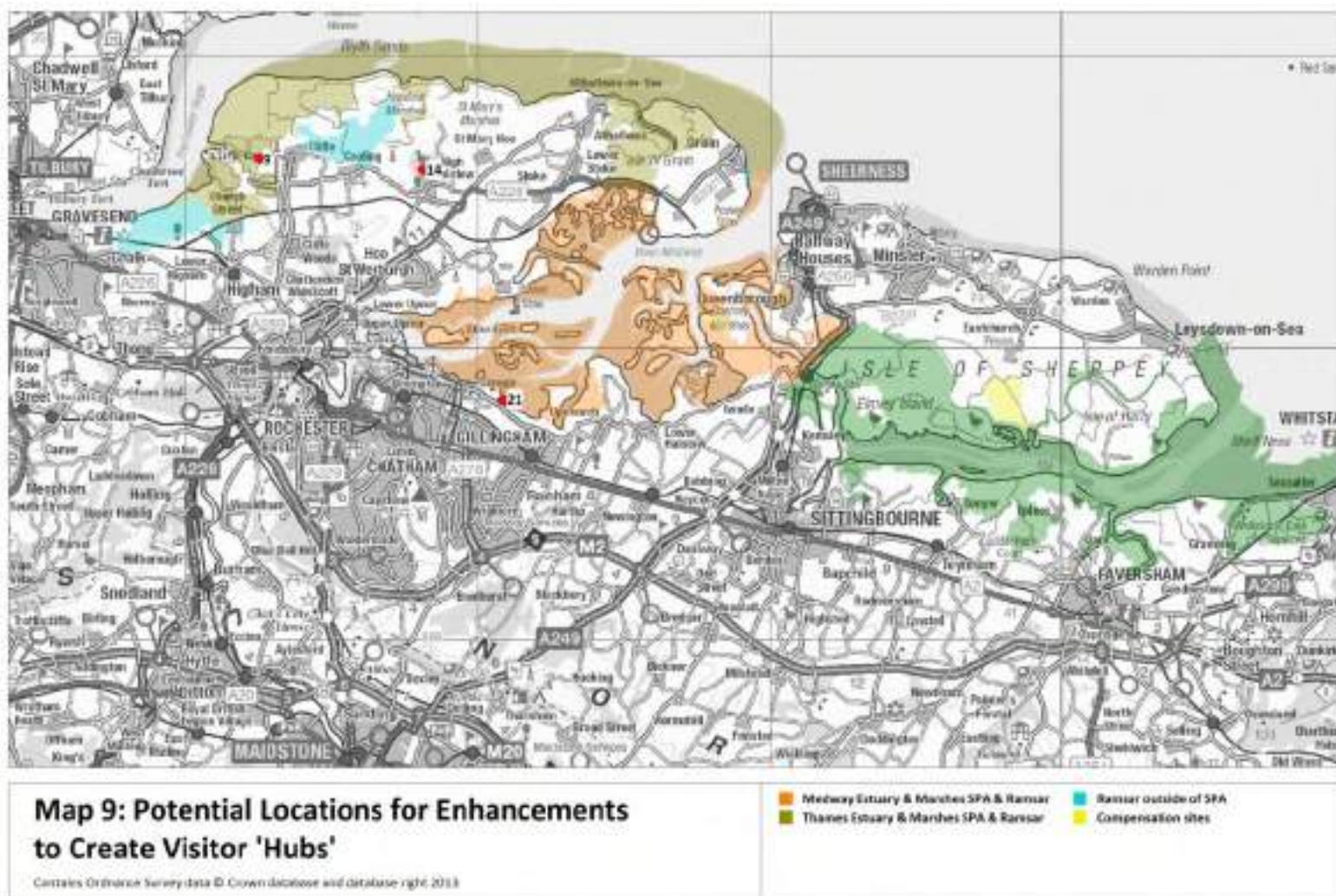
5.73 The enhancement of visitor facilities at Cliffe would be expensive and long-term. Options at both Cliffe Pools and Northward Hill would depend on the RSPB, their assessment of the impact of existing visitor pressure and their long-term aspirations at the sites. At the Riverside Country Park the measures suggested are relatively low key and could be developed relatively easily, potentially incorporated into the site management plan. Any potential changes at the site would be dependent on Medway Council and their aspirations for the site.

5.74 Costs are summarised in Table 14. These costs are difficult to estimate and are approximate costs intended as a guide only. The potential to implement measures at these sites will depend on opportunities

Table 14: Indicative costs for enhancements to additional sites around the SPA

Map ID (See Map 9)	Recommendation	Set-up/Capital Cost	Annual Cost	Notes
9	New Visitor Centre and other facilities at Cliffe Pools RSPB	£4,000,000		Very approximate cost, roughly equivalent to cost of centre at Saltholme ¹² . Aspirational rather than an essential element of the strategy. Range of funding sources may be possible.
14	Enhancements at Northward Hill RSPB	£20,000		Improved parking and other infrastructure
21	Enhancements to Riverside Country Park	£25,000		Enhancements to areas away from shoreline such that access can increase here without further disturbance

¹² <http://www.eshbuild.co.uk/case-studies/leisure/rspb-saltholme/>



Enhancement to existing green infrastructure sites away from SPAs

Overview

5.75 There are some existing sites, well away from the SPAs, which could function as alternative destinations, drawing visitors away from the coast. Enhancements to these to draw visitors that otherwise would visit the SPA coast should help to reduce disturbance.

Justification

5.76 SANGs are a cornerstone of a number of European site mitigation strategies. We do not recommend creation of new sites for access, as whilst the evidence gathered for other strategic mitigation schemes and their particular circumstances indicate a clear need for alternative open space as a primary mechanism to protect the European sites, it is apparent that for North Kent there is a need for a more comprehensive mix of measures because alternative green infrastructure is unlikely to be as successful in drawing all types of visitors away in the absence of a wider suite of measures. It is important to appropriately apply mitigation to meet the individual circumstances of any strategic mitigation scheme, and where alternative greenspace will be successful it plays an important role. However, over reliance on new alternative greenspace that is expensive and potentially complex to achieve in circumstances where the benefits would be notably less will not benefit the European sites or those trying to achieve sustainable development. A strategic mitigation scheme should be evidence led, and it is however apparent that it should be possible to draw some of the very local and regular use of the European sites by improving the greenspace resource in the area. There are some existing nearby greenspace sites which would appear to have the potential to draw visitors and therefore we identify as potential alternative destinations.

5.77 In the on-site visitor work conducted on the North Kent Marshes (Fearnley & Liley 2011), one of the questions addressed whether changes could be made to alternative local sites in order to attract the interviewee to those sites. Of the responses given, 63% indicated that they thought no changes would work. This suggests enhancing alternative sites is likely to be effective for a relatively small proportion (37%) of visitors.

5.78 Modifications (to other local sites) that would appear from the visitor data to have the most merit are improvements to path surfacing and paths; making sites more dog friendly; measures to control other users and attractive scenery.

Detailed Recommendations

5.79 Five locations were mentioned in the workshop and are potentially good locations to draw visitors away from the SPAs. These sites are under existing management as recreational greenspace. It may be possible at each site to change the management slightly in such a way as to attract users that might otherwise visit the SPA. The sites are listed in Table 15 and shown in Map 10. In addition we would expect there to be other greenspace sites in the wider area which may suitable or may come forward over time.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 5.80 We recommend that these sites are included in the review of parking (see para 5.35) and that consideration is given to measures at these sites that would attract those people who might otherwise visit the SPA. Measures would be changes to the path network, provision of dedicated areas for dogs, provision of attractive and relatively wild dog walking routes. Measures would need to be carefully considered and developed with the relevant organisations running the site.

Table 15: Existing green infrastructure sites away from the SPA

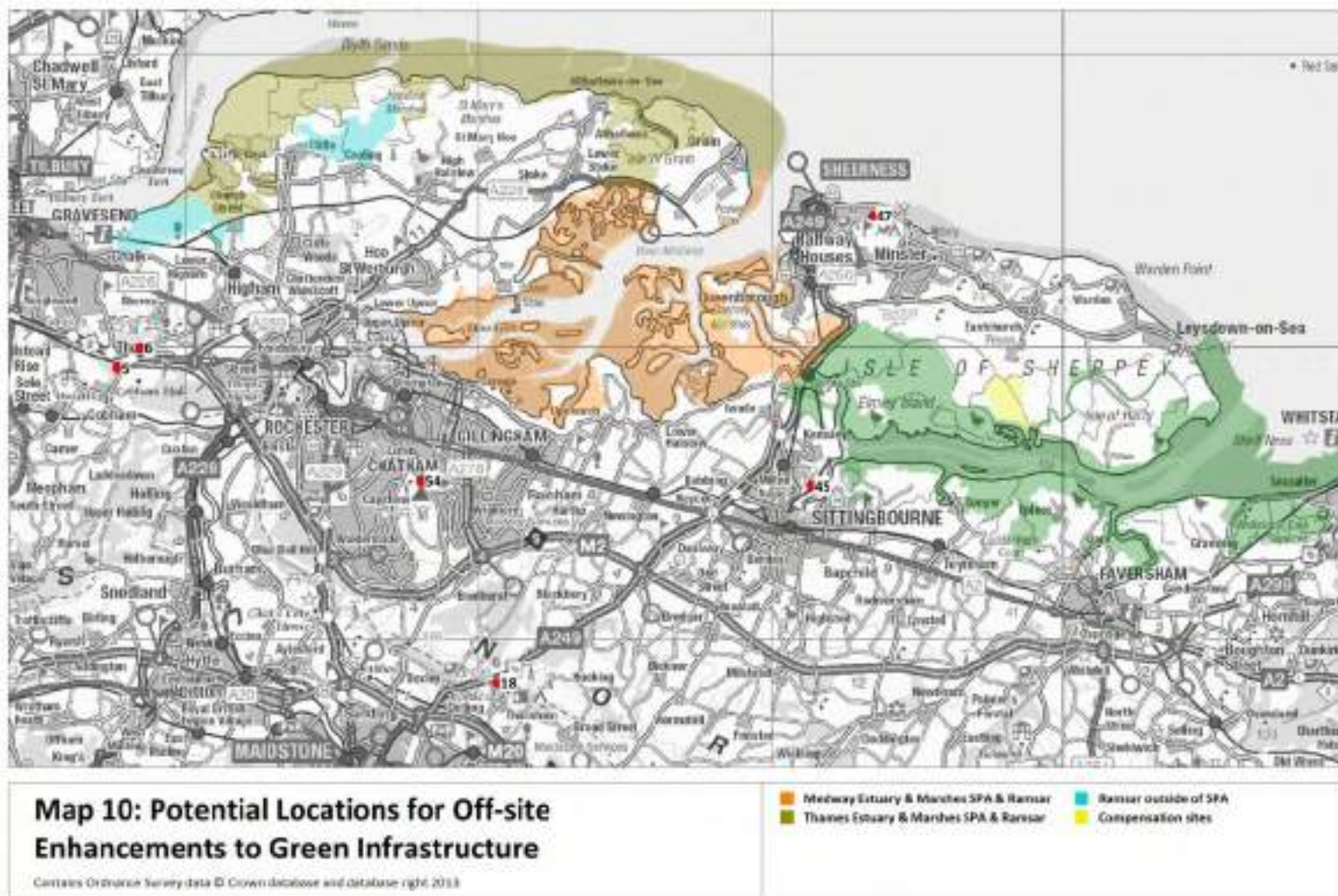
Map ID (See Map 10)	Details
18	White Horse Wood Country Park: potential to enhance and function as alternative destination for dog walking etc, though possibly too distant from main urban areas
45	Sittingbourne Church Marshes: potential to enhance and function as alternative destination for dog walking etc
5	Jeskyns Community Woodland: liaison with FC to ensure function as alternative greenspace and links to Shorne
6	Shorne Woods Country Park: liaison with KCC to ensure function as alternative greenspace and links to Jeskyns
47	Bartons Point Coastal Park: potential to enhance to draw canoeists and other users away from estuary
54	Capstone Country Park: potential to enhance and function as alternative destination for dog walking etc

Indicative Costs and Implementation

- 5.81 Implementation of management measures at the above sites would be undertaken by the organisations responsible for the sites. Costs are difficult to estimate as they are dependent on opportunities at the sites themselves.
- 5.82 As a means of calculating an indicative cost for a project to enhance access at an alternative site we have reviewed measures proposed in Dorset as mitigation (funded through developer contributions) to resolve access impacts on the Dorset Heaths. In the Dorset Heaths Planning Framework 2012-2014¹³ a series of projects are proposed which relate to enhancing existing greenspace sites¹⁴ – these range in cost (the cost sought from the fund) from £4,800 (for a dog gym/agility area) to £200,000 (for a new route and crossing to provide access to an existing open space) and the average cost is £84,000. A total budget of £420,000 would therefore be likely to fund around five projects.

¹³ See: www.boroughofpoole.com/EasySiteWeb/GatewayLink.aspx?allid=8409

¹⁴ Projects 1,4,6,8,10,11,14 and 15 in Appendix A of the above report



Enforcement

Overview

5.83 Legal enforcement provides a means of ensuring some particularly disturbing activities do not take place. We suggest enforcement of speed limits on the water and the establishment of dog control orders as two mechanisms that would reduce disturbance. These should be targeted in response to monitoring data and phased such that they are utilised should other measures not be working.

Justification

5.84 A six knot speed limit operates west of Folly Point on the Medway and an eight knot limit is in place on the Swale. Active enforcement of these for small craft such as RIBs and Personal Watercraft would potentially curb speeding and could encourage users to seek alternative locations for their activity.

5.85 Dog control orders provide a mechanism through which dog walkers can be required to keep their dogs on a leads. Dog walkers whose dogs are not on leads can be fined. This would provide 'clout' to the on-site wardens.

5.86 The enforcement of speed limits and dog control orders would both require active policing and are likely to alienate users. Both are not without practical difficulties. They are therefore justified where other approaches have failed to work and applied to specific locations where disturbance issues are in place. As such their application will be linked to the monitoring results.

Detailed Recommendations

5.87 The enforcement of speed limits would primarily fall under the Medway Port authority. Some funding may be required to ensure effective targeting to the locations and times of year when birds are disturbed. Targeting would be informed by the monitoring. We feel that a dedicated patrol boat may be unnecessary, but additional equipment to record speed and capture images may need to be purchased.

5.88 Dog control orders need to be based on evidence, and will therefore need to be established in line with monitoring results. Costs will include legal fees and administration and in order to be effective active policing will be required. This will necessitate warden/ranger time. Dog control orders could therefore be carefully phased –as required – such that wardens can target their time efficiently.

Indicative Costs and Implementation

5.89 Indicative costs are set out in Table 16. The costs of these elements would depend on scale and may not even be required at all.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Table 16: Indicative costs for enforcement

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Speed monitoring equipment including digital camera and speed gun	£10,000		Approximate cost
Setting up dog control orders	£10,000		Estimate of costs required for legal advice, administration etc

Monitoring

- 5.90 Monitoring is essential to ensure the successful delivery of the mitigation work. Monitoring is necessary to ensure approaches are working as anticipated and to tell whether further refinements or adjustments are necessary. As the individual projects take off, monitoring will inform where resources can best be allocated, for example it may be that once codes of conduct are in place and working efficiently, wardening presence can be reduced or scaled back. In addition it is difficult to be confident of how access patterns may change over time, for example in response to new activities, changes in climate, and changes on the sites themselves. The monitoring is therefore aimed at ensuring mitigation effort is focused and responsive to changes in access, and that money is well-spent and correctly allocated. The monitoring is integral to the mitigation ‘package’.
- 5.91 Specific monitoring requirements are set out in Table 17. Many of these are already undertaken (at least in part) or there are existing protocols in place (for example the WeBS counts for birds).

Table 17: Monitoring elements required as part of the mitigation strategy

Monitoring	Justification	Approach
Visitor numbers at set locations	Repeat monitoring will inform how use is changing over time	Car-park counts, spot counts of people, mapping of people on the site (from vantage points); automated counters. Undertaken at a sample of locations and repeated annually
Visitor activities, motivation, profile and	Provides information on what people do, why they visit and how they behave	Questionnaires at a sample of access points repeated every 5 years. Questionnaires including home postcode, route on site, etc
Continued monitoring of wintering waterfowl	Ensures any changes in bird use of the site are picked up	WeBS
Disturbance monitoring	Checks to monitor response of birds and levels of disturbance	Repeat of approach in Disturbance Study, potentially at 10 year intervals.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

5.92 Indicative costs for the monitoring (as set out in Table 17) are summarised in Table 18.

Table 18: Indicative costs of monitoring

Recommendation	Set-up/Capital Cost	Annual Cost	Notes
Visitor numbers at set locations	£10,000	£1500	Most annual, undertaken by warden staff. Budget for automated counters and casual staff/consultancy support as required and included as an annual figure
Visitor activities, motivation, profile and		£1000	Questionnaire work undertaken every 5 years (i.e. annual budget of £1000 equates to £5000 every 5 years).
Continued monitoring of wintering waterfowl		£500	Undertaken already as part of WeBS. Small annual fee to ensure data collated by local co-ordinators
Disturbance monitoring		£1000	Could be undertaken at set intervals - e.g. every 10 years or on an annual basis

6. Implementation

6.1 In this section we consider the implementation of the strategy, including delivery, phasing, governance, options for developer contributions and how to ensure the strategy can be flexible.

Delivery

6.2 The challenge with the strategy is that it needs to provide for the mitigation measures necessary to address the in-combination impacts of a range of development (including many small developments) spread over a wide area and coming forward over an extended time period. It also needs to ensure that the impacts are resolved in perpetuity, which could be 80-125 years into the future¹⁵.

6.3 A strategic approach that is plan led should enable impacts to be avoided where possible, and adequately mitigated for where the pressure cannot be diverted. A strategic approach for new growth should provide timely measures so that they are in place and functioning in line with growth coming forward, and therefore prevent harm from occurring. Such measures are often particularly difficult to secure where there are numerous, small developments likely to come forward. There therefore needs to be certainty that a package of measures to avoid and mitigate for the potential impact is planned, is fit for purpose, capable of implementation and fully committed to by those competent authorities taking forward the local plans and authorising the development projects.

6.4 However, within this there needs to be an inbuilt level of flexibility to adapt, particularly in light of monitoring findings, in recognition of the fact that further information and opportunities will emerge. Access patterns may change over time, and new recreational activities may become more prevalent. Whilst declines in SPA interest features are known, there are some aspects that are not fully understood, and as the way in which the sites are used changes over time, threats and potential impacts on the birds may also change.

6.5 A partnership of local planning authorities, Natural England and those best placed to contribute to mitigation through their land ownership or remit could be responsible for the continued evolution of the strategy over time. A partnership/board/panel would be responsible for overseeing the whole project and reacting to any changes necessary as monitoring or other new information emerges. Some mitigation measures (e.g. enhancement of alternative sites) will depend on the response of private landowners).

6.6 Within the strategy there is potential for measures to be interchanged, or developed in detail at a later stage, or modified in reaction to new information. Initially, there needs to be momentum behind the implementation of measures that are urgent and/or those that are easily implemented, in order to have confidence that initial development

¹⁵ The Perpetuities and Accumulations Act 1964 defined in-perpetuity as 80 years. The new Perpetuities and Accumulations Act 2009 extended the in-perpetuity definition to 125 years.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

coming forward is being mitigated for by measures that are in progress, thus preventing any significant time lag between development and mitigation. It is suggested that measures to be implemented in the immediate term should include the dog project and the wardening (see phasing section above).

- 6.7 The concept of a flexible list of mitigation is already well established for the Dorset Heathlands strategic mitigation scheme, where for some time the approach has been based on an initial costed list of measures which is used to set a tariff that goes into a central funding pot. Proposals and bids are then put forward to use this money. For North Kent, a similar approach could be implemented, but it is also suggested that the additional element of maximising opportunities through external funding and combining the objective of European site protection with other initiatives should also be a focus, particularly given the twin objectives of this Plan and the need to rectify existing impacts. Changes in land management or ownership, wider green infrastructure or visitor management initiatives, remediation and regeneration projects, European funding, lottery funding, industry led funding schemes or changes in focus within partner organisations could provide additional opportunities.
- 6.8 An approach to implementing the strategy is therefore to develop a tariff based on the overall quantum cost of measures required for the level of new development coming forward, and this tariff calculated on a per house contribution. The partnership/board/panel would then collect and allocate funds according to proposals that come forward. Alongside the initial commencement of the scheme, there is continued work to improve the detail of the Plan, get the monitoring established and continually review opportunities for refined or additional measures. This approach would allow projects to be developed locally, collectively, and carefully planned to ensure success, encouraging proactive development of measures by all partners, and maintaining a best value approach, whilst continuing to ensure that the funding was being allocated to measures that were appropriate.

Phasing

- 6.9 The elements of the strategy, as set out in Section 6, are in an order that represents the order in which the main elements should be implemented and should facilitate phasing. Further notes on phasing are summarised in Table 19.
- 6.10 Establishing the wardening team will provide a core team and staff resources to get the other projects off the ground. Crucially the warden/ranger team could be deployed where most required, i.e. at locations where there is a direct link with new development or where particular issues are in place. The Dog Project could be started in tandem and could be set up very quickly. These two elements provide an immediate start to the strategy. As developer contributions and other funding allows, later discrete projects would include new access infrastructure, the review of parking and commencing work on the codes of conduct. Other elements of the strategy would develop later. This phasing allows mitigation measures to be phased alongside the development and as funding allows, ensuring that the response is proportionate to the impacts and targeted appropriately.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

Table 19: Phasing of the different strategy elements

Elements of the strategy	Phasing
Dog Project	Quick win, website could be established quickly and project started quickly.
Wardening/Visitor Engagement	Establishing wardens at early stage would provide staff resources to oversee later elements. Quickly establishing a base and a team will allow many of the other projects to develop and take place.
New Access Infrastructure	Various small projects, could be phased over a number of years
Parking	Review of parking could be done quickly and easily; measures identified within review could be phased over a number of years
Codes of Conduct	Codes of conduct would need careful planning and consultation. Could start once other elements (above) have commenced.
Interpretation/signage	Would link to code of conduct so should happen in parallel
Work with local club/group	Some links to codes of conduct, so again happen in parallel. Some work could be done earlier (such as contact with micro light club).
Refuge	Long term aim with links to codes of conduct.
Enhancement of existing sites to create hub	More major projects, particularly Cliffe. These elements would be phased much later within the strategy.
Enhancement to existing GI away from SPA	Again, phased later in strategy, potential to be flexible with timing depending on opportunities.
Enforcement	Final elements of strategy, informed by monitoring results and only as required.
Monitoring	On-going through the strategy.

Implementing a cross boundary approach to protecting European sites

- 6.11 There is an increasing interest in developing strategic and cross boundary approaches to mitigating for the impacts of growth on European sites, in recognition of the potential benefits for both the environment and growth. Defra has produced guidance on the development of strategic approaches to Habitats Regulations Assessment, which is currently available in draft form on the Defra website.¹⁶
- 6.12 Any cross boundary approach to European site mitigation requires each planning authority to take full responsibility for the implementation of the strategic approach in their own administrative area. Each remains an individual competent authority and is therefore ultimately responsible for ensuring compliance with the Habitats Regulations for any plan or project taken forward under their authority. However, a strategic and cross boundary approach can provide notable benefits in terms of shared administration, consistency in implementation (proportionate to impacts), collaborative working to rectify existing impacts and fairness to developers across the neighbouring areas.
- 6.13 This SARMP sets out a comprehensive suite of measures to manage access and recreation that may otherwise affect the North Kent European sites. Fundamentally the implementation of the measures is reliant upon funding and resources sourced by each of the planning authorities, and the administration of the Plan, including the

¹⁶ Draft guidance on strategic approaches to HRA can be found at the following link:
<http://guidanceanddata.defra.gov.uk/strategicapproacheshra/>

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

collection and allocation of funds, is a critical element of that implementation. Decisions therefore need to be made regarding the extent to which each planning authority works in partnership, via an elected lead authority, collaboratively or individually to achieve the objectives of the strategy and fund the implementation of measures on the ground.

- 6.14 Dividing or combining the administration and management of the Plan could potentially be achieved by a number of options: to either implement delivery individually, funded locally by developer contributions obtained within each administrative area and other funding sources pursued; to pool all contributions and implement the entire mitigation package jointly; or an approach that is partially individual and partially collective.
- 6.15 If the entirely individual approach was taken, the implementation of measures would become the responsibility of the administrative area in which they needed to be put in place. An entirely individual approach for a cross boundary scheme does present considerable difficulties in administration. Recognising that the reason for the joint approach is to mitigate for a collective potential impact that is not simply and easily defined by boundaries, an individual competent authority's duty to secure the necessary mitigation measures may not be met. There would potentially be some significant reliance on the implementation of measures in a different area by another competent authority, but in the absence of any joint commitment. It may therefore be difficult to secure adequate mitigation for the full impact of existing and new development across the administrative areas, and difficult to adequately monitor the effectiveness of measures.
- 6.16 A partial approach would be for the access and recreation management measures that relate to the individual authority and a specific geographical area to be taken forward by the individual authority, with funding sourced by the individual authority, and then for those measures relating to the area as a whole or are equally applicable across the administrative areas, to be implemented via a joint approach. A per-house contribution could still be made to a joint fund to implement those joint measures for new development, with the remaining elements of mitigation being the individual authority's responsibility to deliver. This approach would include some additional costs of administering a partial approach with funding moving between the planning authorities, and as with an entirely joint approach, the joint elements of a partial approach would be best administered by a lead authority, where funds are pooled.
- 6.17 An entirely joint approach may be the most appropriate way of delivering and monitoring the package of access and recreation management measures set out within this Plan. A fully joined up approach, working as a partnership, would maintain an overview of the entire project, thus ensuring consistent and timely implementation. The burden of mitigation delivery would be shared with each of the planning authorities, as competent authorities, committing to and assisting in the delivery of the Plan. This approach would be likely to be the most resource efficient method as it is the least administratively complicated.

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- 6.18 An entirely joint approach would require one authority to administer the funding, with contributions paid into the fund on a per house basis via developer contributions. The fund would be used to pay for the full suite of access and recreation management measures, irrespective of which area they need to be implemented in. Whether the administration of the strategy is a full or partial approach, it is strongly advised that a partnership/board/panel needs to be established, to maintain transparency, make democratic decisions, and benefit from a range of expertise when reviews, monitoring and future options are being considered. Any staff funded by the project would be important members of the partnership/board/panel, and would be involved in key aspects of monitoring and review. Monitoring will need to cover three aspects of the overall project; the implementation of measures, the finance and administration, and continued monitoring of numbers of houses coming forward to ensure that the measures continue to be provided in a timely manner, and fully mitigate for potential impacts.

Developer contributions for the impact of new development

- 6.19 Competent authorities are responsible for securing any mitigation necessary to prevent adverse effects on European site interest features, but the mechanisms by which such measures are funded is a decision for the competent authorities, and there may be a range of options for funding some of the initiatives. Primarily however, developer contributions form the main source of funding when avoiding and mitigating for the effects of new development, and follow a principle of each development proportionately mitigating for its own potential impact.
- 6.20 Currently there are essentially two main mechanisms for obtaining funding for measures to avoid and mitigate for impacts on European sites: the Community Infrastructure Levy (CIL), or as an individual planning obligation, commonly referred to as a Section 106, or 'S106' as they are planning obligations as set out in Section 106 of the Town and Country Planning Act 1990. An alternative, third option, applies only to large developments, which may be able to provide mitigation measures as part of the development.

Community Infrastructure Levy (CIL)

- 6.21 The Community Infrastructure Levy was first introduced by the previous Government in the 2008 Planning Act. Section 205(2) of that Act states that the overall purpose of the levy is to ensure that costs incurred in providing infrastructure to support the development of an area can be funded wholly or partly by owners or developers of land. Specific legislation, the Community Infrastructure Levy Regulations 2010, brought the levy into force, with subsequent amendments made to those Regulations in 2011 and 2012. A further amendment is expected in 2014.
- 6.22 The Community Infrastructure Levy places a levy on new development that then provides funding to meet local infrastructure requirements, enabling growth to proceed with adequate and maintained infrastructure in place. As the charging schedule for the levy is a document produced in consultation with the public and taken through an Examination process, and given that the schedule takes into account all infrastructure

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

needs for the local area, the Community Infrastructure Levy is promoted as a fairer, more transparent and consistent way of seeking developer contributions for local infrastructure needs.

- 6.23 Importantly, the levy is agreed upfront, having regard for the growth proposed for an area and the consequent infrastructure needs, the needs of the local community, and the viability of the levy, i.e. not making it so onerous that it impedes development in the local area, is the most influential factor in the tariff set.

Section 106 agreements

- 6.24 Prior to the Community Infrastructure Levy, all contributions were obtained via Section 106 legal agreements, which can be bespoke and specific to an individual proposal, or could form part of a wider agreed strategy with numerous developments contributing. A planning obligation is used to fund requirements that are necessary to make the development acceptable in planning terms. With the introduction of the Community Infrastructure Levy to specifically fund infrastructure, the government expects the use of Section 106 agreements to be scaled back, and although there will still be a need for such obligations, they will now be primarily for non-infrastructure or site specific requirements.
- 6.25 Where developer contributions are necessary to fund requirements that do not specifically relate to the provision of infrastructure, or relate to development site specific measures that are necessary to make a development proposal acceptable, contributions can continue to be obtained on a development by development basis through Section 106 agreements. The difference between the application of the Community Infrastructure Levy and Section 106 obligations is that the Community Infrastructure Levy is a levy calculated on the basis of a pre-approved schedule that has taken into account the overall infrastructure needs of an area and its local community. Each new development coming forward will pay a proportionate contribution based on size and nature of the development, whereas Section 106 agreements can contain specific requirements that relate to the development and any particular requirements at that location that are necessary to make the planning application acceptable in planning terms.
- 6.26 There is potentially still provision for infrastructure to be funded through pooled Section 106 agreements, if firstly the infrastructure project requires less than five developments to contribute to its funding and if secondly the infrastructure project has not been listed as an infrastructure project for which the authority will be seeking contributions under the Community Infrastructure Levy. There are other exceptions where use of Section 106 may be the most appropriate means of securing infrastructure funding, particularly where the need is to mitigate for very site specific issues.
- 6.27 Although the Community Infrastructure Levy is relatively new and some local planning authorities are yet to put their charging schedule in place, it is understood that the Government has advised that the levy is appropriate for funding infrastructure required to mitigate for any development impacts on European sites, such as alternative green infrastructure that meets recreational needs of new residents to divert their use away

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

from European sites. The new amendments to the Community Infrastructure Levy Regulations, brought into force in November 2012, provide greater clarity regarding the use of the levy, identifying that the provision of infrastructure by the levy includes the provision, improvement, replacement, operation or maintenance of that infrastructure. Critically therefore, the operation and maintenance of alternative green infrastructure, as well as its provision, should be included in the levy.

- 6.28 It is considered that any non-infrastructure related avoidance and mitigation measure for potential impacts on European sites could continue to be funded by Section 106 agreements. Section 106 agreements can therefore cover a wide range of requirements and have successfully been used for European site mitigation for some time. The new restrictions on the use of S106 agreements do still allow non-infrastructure requirements that are directly related to the development to be funded through this mechanism. The restriction also still allows for development site specific infrastructure projects to be funded, if the total funding can be obtained from less than five developments and if the infrastructure project is not listed by the local planning authority as a project to be delivered by the Community Infrastructure Levy. This therefore provides opportunities for obtaining funding for European site mitigation from developments that may be specifically excluded from the Community Infrastructure Levy, but still have a potential impact.
- 6.29 To date, Government has indicated that provision of alternative greenspace does come under the umbrella of infrastructure to be funded by the Community Infrastructure Levy, but has not issued any specific guidance or statement regarding non-infrastructure elements of European site mitigation schemes. Therefore there remains the option of splitting the measures between the two mechanisms for obtaining the funds, with infrastructure paid for by the levy and non-infrastructure elements paid for by S106 obligations, or to fund the entire package through the levy. The planning authorities should give consideration to the two options, and determine which provides the most appropriate way forward in terms of cost, funding available, administration and flexibility.
- 6.30 It is advised that the contribution to be made into the fund for the implementation of the Plan needs to continually be calculated on a per house basis, as this is the measurement unit by which potential impacts are calculated and mitigated for. Particularly because of the way in which the Community Infrastructure Levy is generated (i.e. per sq m), contributions from the developer to the Levy will differ. However, whilst each house may generate differing levels of funding, via its Community Infrastructure Levy and/or S106 contributions, the overall quantity of the contribution for European site mitigation needs to be based on a consistent per house contribution. Expenditure out of the European site mitigation pot needs to equate to the number of houses that have come forward.

On-site provision on development sites

- 6.31 A third opportunity can also present itself when large developments are able to provide mitigation measures alone, as part of the proposed development, removing the

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

requirement to contribute to a central pot. The latter requires careful consideration to ensure fairness and adequate mitigation, and is most beneficial when considered upfront as part of large allocations within masterplans and green infrastructure strategies, for example.

- 6.32 The kind of mitigation measures that are applicable, with this third option, include on-site green infrastructure, such as dedicated areas for dog walking (see para 3.9 for more discussion).

Other funding sources

- 6.33 Other funding sources besides developer contributions will be necessary to deliver all the elements within the strategy. This is appropriate as elements such as the new facilities at Cliffe Pools and enhancements to green infrastructure away from the SPA will have a wider function and role than mitigating new development. For these elements (category B in Table 1) developer contributions may be appropriate for a small component, potentially providing match funding. We have also identified a measure that is perhaps more relevant to current impacts rather than impacts from new development (category B in Table 1), and again, this would be best funded through an alternative funding source. Other funding sources would be the best way of also securing habitat management within the SPA (which falls outside the role of mitigation).
- 6.34 Other funding sources could include local NGOs, Heritage Lottery Fund, the Nature Improvement Area (NIA) partnership and the Thames Estuary 2100 (TE2100). Other opportunities may arise over time, and partnership working and innovative approaches may be necessary.

Delivering measures relating to existing impacts

- 6.35 As demonstrated in Table 1 there is relatively little within the overall strategy that can be clearly identified as relating to existing impacts and excluded as mitigation. We have however suggested that structures to prevent access from vehicles – stopping off-road vehicles, motorbikes etc. from accessing key areas – relates primarily to existing impacts. Such measures need to be funded through some other means.
- 6.36 In para 3.6 we discussed habitat management and largely discounted habitat management options from the shortlist because some such management should be taking place anyway (management of the European sites to achieve favourable condition) and because they are not necessarily compliant with the Habitat Regulations if new habitat is being created outside the SPA to compensate for deterioration of the SPA. There may be opportunities that arise, however, linked to other plans and initiatives, in particular relating to shoreline management and managed retreat. We therefore suggest that there may be particular opportunities that arise and these should be considered carefully to check for potential to enhance the area for the SPA interest and help to reverse the bird declines.

Implementation next steps

- 6.37 Following from the discussion above, we set out the following as next steps in implementation:

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- Establishment of a developer contributions tariff, based on calculations within this SARMP
- Continued review of spatial planning documents to ensure that the SARMP is planned
- Establishment of a partnership/board/panel with Terms of Reference and memorandums/commitments agreed
- Agreement on the level of individual/joint working to take the scheme forward.
- Agreement on a lead authority and administrative procedures.
- Consideration of dedicated staff/allocated resources for the SARMP within each organisation
- Planning for the implementation of immediate measures
- Progression on the detail of more aspirational measures to establish level of contribution to the two objectives of the SARMP

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8. Appendix 1: Interest Features of the three SPAs

Table gives the interest features of the three SPAs and recent WeBS alerts (the national standard approach of assessing species populations on estuaries, alerts apply to certain wintering waterfowl, breeding birds are not assessed). Colours reflect alert status (red and amber) for the relevant species at the relevant site. Red shading indicates at least one high alert for a given species across all time periods, and amber at least one medium alert (if no high alerts) across all time periods. No shading indicates the species is not assessed or there is no alert triggered. Ramsar columns simply indicate bird species that are listed under Ramsar criterion 6 – species/populations at levels of international importance at time of designation.

	Thames Estuary & Marshes SPA					Swale SPA					Medway Estuary & Marshes SPA					Ramsar		
	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	Thames	Swale	Medway
Avocet			✓		✓	✓		✓		✓	✓		✓		✓			
Bar-tailed Godwit								✓		✓								
Black-tailed Godwit					✓				✓	✓			✓	✓	✓			
Curlew										✓				✓				✓
Dunlin					✓					✓			✓	✓	✓	✓		✓
Golden Plover								✓		✓								
Grey Plover					✓				✓	✓			✓	✓	✓	✓	✓	✓
Knot									✓	✓						✓		
Lapwing					✓					✓					✓			
Oystercatcher										✓				✓				
Redshank					✓				✓	✓			✓	✓	✓	✓	✓	✓
Ringed Plover		✓		✓	✓		✓						✓	✓	✓	✓		✓
Whimbrel					✓										✓			

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

	Thames Estuary & Marshes SPA					Swale SPA					Medway Estuary & Marshes SPA					Ramsar		
	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	4.1 Breeding	4.2 Passage	4.1 over winter	4.2 over winter	4.2 Assemblage	Thames	Swle	Medway
Dark-bellied Brent Goose										✓				✓	✓		✓	✓
Gadwall					✓					✓								
Pintail					✓				✓	✓				✓	✓			✓
Shelduck					✓				✓	✓				✓	✓			✓
Shoveler					✓				✓	✓								
Teal										✓					✓			
White-fronted Goose					✓					✓								
Wigeon										✓					✓			
Cormorant										✓					✓			
Great-crested Grebe															✓			
Hen Harrier			✓						✓									
Little Grebe					✓					✓					✓			
Little Tern											✓							
Marsh Harrier						✓												
Mediterranean Gull						✓												

9. Appendix 2: Previous Studies

9.1 There are a range of potential issues and pressures relating to the North Kent sites, these include industrial development, mineral extraction and water quality. Previous studies in North Kent underpin this strategy and provide context in terms of recreation and the other potential threats. Previous studies include:

- 1) What do we know about the birds and habitats of the North Kent Marshes? (Cruickshanks *et al.* 2011)
- 2) Bird Disturbance Study, North Kent 2010/11 (Liley & Fearnley 2011)
- 3) North Kent Visitor Survey Results (Fearnley & Liley 2011)
- 4) North Kent Comparative Recreation Study (Fearnley & Liley 2012)
- 5) Estuary Users Survey (Medway Swale Estuary Partnership, 2011)
- 6) GGKM Roost survey (mapped in Liley & Fearnley 2011)
- 7) Recent Wetland Bird Surveys results produced by the British Trust for Ornithology
- 8) Phase I Bird Disturbance Report (Liley, Lake & Fearnley 2012)
- 9) Detailed analysis of bird trends on individual parts of the Medway, conducted by the BTO (Banks *et al.* 2005)

9.2 The latest bird data (see Appendix 1) for the Medway Estuary and Marshes SPA (WeBS alerts¹⁷) indicate high alerts (declines above 50%) for nine species and medium alerts (declines between 25 and 50%) for a further three species, out of 17 assessed. In all cases comparison of the trends with broadscale trends suggests the declines are site-specific. Five of the high alerts on the Medway are triggered for the long term (i.e. 25 years). The latest WeBS alerts for the Swale SPA indicate alerts triggered for nine out of the 21 species assessed (site specific declines for two species) and for the Thames Estuary and Marshes SPA alerts have been triggered for seven out of the 14 species assessed (site specific declines for three).

9.3 A simple overview of the various reports listed above indicate that:

- There have been marked declines in some of the bird species, particularly around the Medway
- Within the Medway, the areas that have seen the most marked declines are the area north of Gillingham, including the area around Riverside Country Park. This is one of the busiest areas in terms of recreational pressure.
- There is no evidence to support the suggestion that bird declines on the Medway relate to increases on neighbouring sites (i.e. birds simply redistributing)

¹⁷ See <http://blx1.bto.org/webs-reporting/>

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

- The estuaries and coastline are widely used for recreation and a range of activities take place.
- Recreational activities do result in birds being flushed and displaced.
- Most behavioural responses that were observed from the birds were due to the presence of dogs, particularly those off the lead.
- There was some evidence that bird numbers at locations with high numbers of visitors were low.
- Visitors are mainly local, around a third of people interviewed in the visitor survey had walked from their home and of the two-thirds who had travelled by car, the median distance (home postcode to interview location) was 4.2km.
- Visitor rates decline with distance from the SPAs and indicate that development within a 6km radius of access points is particularly likely to result in increased access levels and activities that relate to day-to-day use of local greenspace.
- The levels of housing around the three European sites are currently relatively high compared to other estuary SPA sites in the UK
- The scale of new development in the general area – as set out in the relevant strategic plans – is considerable and may result in an increase in access levels of around 1700 person visits per day (an increase of 15%).

10. Appendix 3: Our Approach

- 10.1 In this appendix we summarise our approach.
- 10.2 Our approach has been initially to clarify a **framework** (section 3) for the strategy that sets out the aims, the limits (geographical and temporal), legal/planning requirements and guiding principles that underpin the plan. This framework was agreed with the steering group for the project in the early stages of developing the plan.
- 10.3 The next step was to identify a **long list** of all possible measures that could be used to address disturbance issues; this is set out in section 4. This list was then reviewed to consider which approaches have the most merit and the relative advantages and disadvantages of each. From this a **short-list** of measures was compiled that we believe could form the basis of a plan.
- 10.4 In order to identify the **locations** (section 5) that are a focus for the plan, we used GIS data from the previous studies (summarised in paragraph 1.7) to identify areas:
- Important for particular bird species
 - Potentially vulnerable to disturbance/sensitive to disturbance (e.g. high tide roost)
 - That fall within the designated sites or support relevant interest features
 - Where access levels are predicted to increase markedly
 - Where access levels are low
 - Where access levels are high
 - Where there is no or limited public access
 - Where access onto intertidal is limited
 - Where there are particularly high levels of particular activities
- 10.5 These maps provided the information required to identify the locations and geographical focus for the elements within the plan.
- 10.6 The short-list was presented to a workshop¹⁸ comprising local landowners, site managers, countryside staff, rangers, wardens and other stakeholders, whose opinion was sought on how to deliver the different elements. Drawing on their local knowledge we were able to produce a list of detailed, target projects and check the short list. The **detailed strategy** was then finalised after this workshop.

¹⁸ Workshop held at Medway Council offices on 9th September 2013

11. Appendix 4: A ‘long list’

This table provides a broad overview of ways to reduce disturbance to birds at coastal sites. Note that some of these may not necessarily be compliant with the Habitat Regulations, for example habitat management within European sites to enhance the habitat for the interest features would not count as ‘mitigation’.

	Management option	Description
1. Habitat Management		
1a	New habitat creation	Creation of new habitat in areas away from parts of the site with recreation pressure (see also zoning). Examples may include creation of islands for roosts or lagoon areas for additional feeding.
1b	Habitat management	Habitat enhancement may create new breeding/roosting/feeding sites, potentially in areas away from sources disturbance.
2. Planning & Off-site Measures		
2a	Locate development away from sensitive sites	Much recreational use of sites is local, for example from people living within a short drive or walk of sites. Focussing development away from nature conservation sites is a way to reduce the long term future pressures of increased recreation from development.
2b	Management of visitor flows and access on adjacent land (outside European site)	Planting, screening, careful routing, provision of access infrastructure (boardwalks, marked paths, steps etc.) around the periphery and outside European sites can influence how people access sites.
2c	Provision of suitable alternative greenspace sites ('SANGs')	SANGs, sited away from designated sites, have the potential to draw users away from designated sites. Alternative sites need to be tailored to provide a viable and attractive alternative destination, matching the draw of the relevant designated site or providing a near equivalent recreational experience in a more convenient location.
2d	Provision of designated access points for water sports	Provision of public slipways, trailer & vehicle access to shore etc. in predetermined locations where boat access is likely to be away from nature conservation interest.
2e	Enhance access in areas away from designated sites	At a reasonably strategic level it should be possible to encourage people to change access patterns by enhancing access provision at less sensitive sites and not enhancing provision at sensitive locations. Users can be encouraged to locations through the provision of attractions/facilities such as toilets, food, improved walking surfaces, hides etc. Demand can be managed through modification of parking fees and parking capacities, restriction of on-road parking, wardening etc. As such there are parallels with 3e and also the approach is similar to 2d.
3. On-site Access Management		
3a	Restrict/ prevent access to some areas within the site	Potential to restrict access at particular times, e.g. high tide and particular locations (roost sites). Temporary fencing, barriers, diversions etc. all possible.
3b	Provide dedicated fenced dog exercise areas	Allowing dogs off leads etc. in particular locations that are not sensitive for nature conservation or other reasons may increase their attractiveness to dog walkers. Links to 2e.
3c	Zoning	Designated areas for particular activities. Often zones are set out in a code of conduct and prevention of use for the

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

		areas outside the zones is enforced through byelaws. We refer to zoning therefore as positive spaces where users are welcomed, as opposed to the exclusion zones described in 3a.
3d	Infrastructure to screen, hide or protect the nature conservation interest	Screens, hides, embankments etc. are commonly used to direct visitors along particular routes and screen people from birds or other features vulnerable to disturbance. Such infrastructure can also provide enhanced viewing facilities and opportunities for people to get close to wildlife without causing disturbance. Path design can enhance the extent to which people stray or roam from the path. Boardwalks etc. can protect vulnerable habitats.
3e	Management of car-parking	Car-park spaces can be redistributed around a site, parking closed in some areas, parking fees modified (e.g. encouraging people not to stay too long) or a permit system be instigated to limit use of car-parks.
3f	Path design and management	Surfacing, path clearance and other relatively subtle measures may influence how people move around a site and which routes they select.
4. Education and Communication to Public/Users		
4a	Signs and interpretation and leaflets	Provision of informative and restrictive signs, and interpretive boards. Directions to alternative less sensitive sites. General information on the conservation interest to highlight nature conservation interest/importance.
4b	Codes of Conduct	Guidance on how to behave to minimise impacts is promoted at a range of sites, through websites, leaflets, interpretation etc. These are sometimes enforced by byelaws and other control measures (see section 5).
4c	Wardening	In addition to an enforcement role (see 5d below) wardens can provide a valuable educational role, showing visitors wildlife etc.
4d	Provision of information off-site to local residents and users.	Local media, newspapers etc. can provide means to highlight conservation importance of sites and encourage responsible access. Educational events, provision of items for local TV/other media. Information can be made available in local shops, tourist centres etc. Potential to promote non-designated sites, for example through web / leaflets listing, for example, dog friendly sites. Can include school visits and working with children.
4e	Contact with relevant local clubs	Agreed codes of conduct (see 4b) and self-policing can be set up with individual groups and provide a means of ensuring users are aware of how to act responsibly (e.g. water-sports club revoking membership for anyone caught speeding).
5. Enforcement		
5a	Covenants regarding keeping of pets in new developments	Covenants prohibiting the keeping of cats and / or dogs.
5b	Legal enforcement	Byelaws can be established by a range of bodies including local authorities, the MOD, National Trust, Parish Councils etc. Other options include special nature conservation orders, dog control orders or prosecution under SSSI legislation. Enforcement can apply to speed limits (e.g. on water), where people go and how they behave. Dog control orders involve a range of options such as dogs on leads only, on leads when asked, no fouling and no dogs at

Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy

		all.
5c	Wardening	<p>Wardens have both educational (see 4c above) and enforcement roles. With respect to the later, wardens can provide direct contact and intervene when they observe particular activities (such as dogs off the lead on mudflats).</p> <p>The ability of a warden to control disturbing activities is clearly related to whether control measures are in place, and their nature. The more specific and statutory in nature the control, the greater the potential for enforcement by a warden.</p>
5d	Limiting visitor numbers	Visitor numbers capped, for example through tickets, permits or a similar system.

12. Appendix 5: Main Matrix

This appendix sets out the 'main matrix', assessing measures against various assessment criteria. The shading reflects how measures are scored. For all shaded cells, the colours go from green (through pink and orange) to dark red. Rows with lots of green cells are therefore those where measures are most likely to be easy, cheap, effective and will work over a wide area. Green cells therefore lend support for a measure while orange or dark red indicates difficulties or issues with a particular measure. Where there is some uncertainty regarding how to categorise a measure (for example the cost), we have coloured the cell orange.

The categories used are broad and we have categorised measures based on our judgement.