Kemsley SEP

Supplementary Biodiversity Information

Dr Nicholas Betson BSc (Hons) PhD MIEEM

Rob Pilcher BSc (Hons) MSc

For:
St Regis

July 2010

Willow Mere House
Compass Point Business Park
Stocks Bridge Way
St Ives
Cambridgeshire
PE27 5JL

Telephone: +44 (0) 1480 466335
Fax: +44 (0) 1480 466911
E-mail: rpscm@rpsgroup.com
www.rpsgroup.com

FS 32940

Notice to Interested Parties

To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

Document Information

Report title:	Supplementary Biodiversity Information
Client:	St Regis
Document ref:	JPP1804 Kemsley
Author(s):	Nicholas Betson, Rob Pilcher
Report date:	July 2010

Checked by:	Rob Pilcher	02/08/2010
Authorised by:	Rob Pilcher	02/08/2010

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

1.1 Following discussions with biodiversity consultees on the original Environmental Statement (ES), the following supplementary environmental information is provided.

2 AIR QUALITY

Acid deposition

2.1 **Consultee querie**:

- "*Acid deposition is shown as exceeding CL. In the Swale PC is 63% of Critical Load and PEC is 525% of CL. This is discounted as it is thought that the habitats involved are not sensitive to acid deposition – quoting APIS as a source. While this may be true for the inter-tidal habitats (APIS refers to coastal habitats) it is not the case for freshwater grazing marsh. APIS states: "Critical loads may be estimated for the effects of acid deposition on to grasslands, depending on soil type. Most at risk are grasslands which are already moderately acidic, while base rich calcareous grasslands are resistant to acid deposition, due to a high weathering potential. A particular concern is where small base rich areas occur in otherwise acid grasslands, as it has been suggested that these, and the associated species communities may be rather sensitive to acid inputs (e.g. Bobbink and Roelofs 1995, UBA 1996)." There should be a further exploration of the soil type and its' existing pH.*"

2.2 **Response**:

2.3 As detailed in Chapter 9 of the original ES, all of the habitats within the designated sites assessed are considered to be relatively insensitive to acid deposition (www.apis.ac.uk).

2.4 Critical loads are based on the dominant soil type found within each grid square and do not take account of the actual land usage etc. found there. Different soil types have different capacities to buffer changes in pH that may result from acid deposition; generally, the more alkaline the soil, the better the buffering capacity. The majority of grid squares within the assessment range have a CL of 4 $keq^{-1}ha^{-1}yr^{-1}$ (see Figure 1), which is not exceeded by the maximum Process Environmental Contribution (PEC) at the Swale (1.84 $keq^{-1}ha^{-1}yr^{-1}$). However, a more detailed analysis of deposition rates and site-specific critical loads (taken from APIS) has been undertaken (see Figure 1 and Table 1) for those grid squares within the Swale SPA/SSSI/Ramsar where the CL differs from 4 $keq^{-1}ha^{-1}yr^{-1}$ and the Process Contribution (PC) is greater than 0.01 $keq^{-1}ha^{-1}yr^{-1}$ (i.e. PC is >1% of background deposition).

Table 1 Detailed analysis of acid deposition in relation to site-specific critical load for the Swale SPA/SSSI/Ramsar

Grid ref.	Background deposition ($keq^{-1}ha^{-1}yr^{-1}$)	Critical load ($keq^{-1}ha^{-1}yr^{-1}$)	Max PC ($keq^{-1}ha^{-1}yr^{-1}$)	PEC ($keq^{-1}ha^{-1}yr^{-1}$)	PC as % of background
592,165	1.25	0.75	0.038	1.288	3.03
596,164	1.45	0.75	0.017	1.467	1.04
593,168	1.25	1.50	0.068	1.318	5.46
593,165	1.25	0.35	0.043	1.293	3.47
593,164	1.62	0.35	0.026	1.646	1.60
594,165	1.25	0.35	0.034	1.284	2.69
595,170	1.25	1.50	0.034	1.284	2.71
590,167	1.25	0.75	0.031	1.281	2.47
599,164	1.45	1.50	0.012	1.462	0.80
599,163	1.45	0.75	0.011	1.461	0.73
600,169	1.12	1.50	0.018	1.138	1.57

2.5 Where the CL is 1.5, the PEC is always lower and does not exceed the CL. Therefore, any effect of acid deposition as a result of the SEP in these grid squares is considered to be insignificant.

2.6 Where the CL is either 0.75 or 0.35 $keq^{-1}ha^{-1}yr^{-1}$, the background is already considerably higher than this, i.e. the CL is exceeded with or without the presence of the SEP. Further, Figure 1 shows that the majority of these grid squares occur along the southern shore of the Swale to the north east of Sittingbourne and do not contain significant areas of designated habitat (56 ha from a total of 3,062 ha of terrestrial habitat); that which does occur is typical of the SSSI/SPA/Ramsar (classed as other arable on the SPA citation). It is also clear from Figure 1 that the majority of the deposition is towards the north east – dominated by the prevalent south westerly winds. These locations that contain the lowest CL are therefore well away from the main deposition areas.

2.7 Therefore, given the existing exceedances, the small areas involved and the relatively insensitive nature of the habitats present, it is considered unlikely that the operation of the SEP will result in levels of acid deposition that affects the integrity of the Swale SSSI/SPA/Ramsar.

Nitrogen Oxides

2.8 **Consultee querie**:

- "*Table 7.4.24 (Appendix 7.1) shows the results of diffusion tube monitoring for NOx. This includes a site on the Elmley NNR on the opposite side of the Swale to the proposed site. The monitoring reveals annual mean NOx concentrations of 29.8. The background concentration used in the assessment (Table 4.1, Appendix 9.2) for the Swale SSSI/SPA/Ramsar is 23.6. This latter background figure is from APIS which is based on 5km squares and will not take into account localised concentrations. Given the amount of commercial activity in the Ridham/Kemsley area it is not surprising that the measures concentration is higher than the APIS figures.*

The monitoring station was at TQ93867 68048 which is approx 2 km from the proposed SEP. The nearest part of the SSSI/Ramsar/SPA in the same direction is only 150m away, with the nearest terrestrial land approx 400m away. The Process Contribution for NOx is shown as 2.71 which gives a PEC of 32.51, 108% of the Critical Level. The in-combination effect with the recently approved biomass plant at Countrystyle would take this to 127%. The discussion should look at the comment on the actual habitats to found in this area and quantify the areas involved. This will help to quantify the overall effect."

2.9 **Response:**

2.10 Using the background level of Nitrogen Oxides (NO_x) from APIS, the PEC across all sites was less than the critical level of 30 µg m^{-3}. However, taking a measured background value from a single diffusion tube monitoring station located at TQ93867 68048 (approximately 2 km from the proposed SEP site), undertaken as part of the verification monitoring for the SEP ES, background NO_x level is indicated as being 29.8 µg m^{-3} at this location during the time of recording (the 10 months for which data were available). This is considerably higher than that published on APIS for that location (17.8 µg m^{-3}) and the maximum background reported in the original ES of 23.6 µg m^{-3} which occurred in a single grid square TQ92,64 containing around a hectare of SSSI/SPA/Ramsar habitat. The majority of the remainder of the Swale was recorded from APIS as having a background NO_x concentration of between 16 and 18 µg m^{-3}. Indeed, this is supported by other modelled background data that is publically available from DEFRA (www.airquality.co.uk). At a resolution of 1 km x 1 km, this data for 2009 suggests that, away from large sources of NO_x such as roads (the intersection of the A249 and M2, for example, is particularly high) and Sittingbourne town centre, the lower background levels of NO_x found on APIS are a more realistic representation of the actual situation than the single point measurement from the air quality monitoring. Indeed, the highest background for the Swale SPA/SSSI/Ramsar area from this data was 23.1 µg m^{-3}, recorded over Ridham Dock to the north of the SEP site. This modelled data from DEFRA has been subject to significant accuracy testing (AEA 2009) with measured and modelled values not significantly different from each other. Therefore, it is considered unreasonable to use this single point measurement to represent the background across the whole of the Swale area.

2.11 Figure 2 shows the contours of PC for NO_x across the Swale. While approximately 100 ha of the Swale SSSI/SPA/Ramsar on the Sheppey side of the river opposite the SEP was modelled as receiving between 1.8 and 0.8 µg m^{-3}, the remainder of the Swale receives less than 0.6 µg m^{-3}. Therefore, even with the addition of the recently permitted CHP plant at Countrystyle, 500 m to the north of the proposed SEP site (with a maximum PC of 5.7 µg m^{-3}), it is considered unlikely that the critical level of 30 µg m^{-3} would be exceeded significantly within the Swale SSSI/SPA/Ramsar, when using the DEFRA data.

2.12 Further, grazing marsh/reedbed and other wetland habitats are not thought to be particularly sensitive to NO_x (www.APIS.ac.uk, Bobbink, Hornung & Roelofs 1998). Even in habitats that are often thought of as sensitive (such as heathlands), there is a shortage of information on the direct effects of NO_x and separating these from those associated with the resultant nitrogen deposition that occurs has proved

difficult. Therefore, although a critical load of 30 µg m^{-3} has been set, it is considered unlikely that the direct toxic impacts of NO_x threatens semi-natural vegetation (other than bryophytes) except locally near sources (Bobbink, Hornung & Roelofs 1998, Ashmore & Wilson 1994).

2.13 Based on the above, the critical level is not expected to be exceeded across the Swale (using either APIS or the DEFRA background data) and combined with the fact that those habitats present are considered to be insensitive to the direct toxicity of NO_x, impacts of NO_x on the Swale SSSI/SPA/Ramsar are considered not significant or adverse.

2.14 However, due to some uncertainty with regards to NO_x sensitivity of the various habitats that form part of the SPA/SSSI/Ramsar, in particular the plant species assemblage of the Ramsar site, and the increasing number of NO_x-emitting facilities in the Ridham Dock area, a suitable long-term air quality monitoring programme will be implemented that the Kemsley SEP will be part of. The details of the programme will be compiled through discussion with Natural England, Swale Borough Council and the Environment Agency.

Meteorological data

2.15 **Consultee querie**:

- "*The met data is taken from Gravesend 40 km to the west of the site The site is located on the coast whereas Gravesend is located on the tidal part of the Thames. The site will therefore be more influenced by the sea (on and offshore breezes) and north easterly winds are likely to be stronger. As such it would be useful for some comment on this and a discussion on how this could affect the modelling*."

2.16 **Response:**

2.17 In order to address the issue of the source meteorological data for the air quality modelling should be used, it may be helpful to clarify the meteorological conditions likely to be present at Kemsley. Water has a lower specific heat capacity than land which means that more energy is required to raise the temperature of the sea than the land. On a sunny day, the temperature of the air above land on the coast will generally be higher than the temperature of the air above the sea adjacent to the coast. As the air above the land heats up, it expands. As the air expands, its density reduces and the air rises. The air above the sea will be cooler and denser relative to the rising air above the land. This cool, dense air will move into a space vacated by the rising warm air above the land. This can create a stream of cool air flowing in-land from the sea, known as a sea breeze.

2.18 The area of coastline adjacent to the Kemsley site is directly opposite the Isle of Sheppey; the distance between the coastline at Kemsley and the Isle of Sheppey is approximately 500 m. The same meteorological conditions creating sea breezes onto the mainland would also create sea breezes onto the Isle of Sheppey and it is likely that they would effectively 'cancel' each other out.

2.19 Notwithstanding that, we have reviewed windroses for the Manston meteorological station and Sheerness stations provided by Natural England. There

is no evidence of any inland winds and the windroses indicate a prevalence of southwesterly winds, consistent with the data used in the modelling from Gravesend.

HGV movements associated with Morrisons Depot

2.20 **Consultee querie**:

- "*The In-Combination assessment of the Appropriate Assessment does not mention the Morrisons Depot that has only recently become operational. There are large car and HGV movements that may be within 200m of the SSSI/SPA/Ramsar grazing marsh to the north/north west of the SEP*."

2.21 **Response:**

2.22 As reported in the original ES in relation to the Sittingbourne Northern Relief Road, traffic pollution is unlikely to have a significant impact more than 100 m from a site (Bignal *et al.* 2007). Therefore, given the depot is over 200 m away from the Swale SSSI/SPA/Ramsar, any cumulative impact is considered not significant or adverse.

3 NOISE

Assessment of noise impacts

3.1 **Consultee querie**:

- All of the consultees queried the threshold within the original ES for noise-related impacts on bird species, in particular with reference to piling during construction. They also sought clarification of piling methodology, timing and location.

3.2 **Response:**

3.3 It is acknowledged that the majority of the references cited in Chapter 9 of the SEP ES relate to the impact of aircraft noise on birds and that the figure of 80 dB L_{Amax} as an impact threshold was derived from this. However, aircraft noise is considered the best available information on the effects of noise on birds due to the limited scientific information on the effects of piling. More accurate modelling of piling noise has now been conducted based on actual required piling locations that were not available at the time of the original submission. The location of these are shown in Figure 3 with the resulting noise contours in Figures 4-7. The maximum noise received by birds using the intertidal area immediately adjacent to the Kemsley foreshore is modelled to be 60 dB L_{Amax}, with the majority of birds within the original study area receiving less. This figure is well below the 80 dB L_{Amax} threshold used in the original ES and the more precautionary 70 dB L_{Amax} threshold suggested by consultees.

3.4 To support this analysis, a more detailed piling strategy has also been developed. This is based on the use of augered piling where practical and impact driven piles only where absolutely necessary. The starting location for impact driven piling will be closest to the river and moving progressively away from it, as the winter

progresses, using a "soft-start mechanism" as detailed in Chapter 9 of the original ES:

- All piling would be via auger other than where required for structural reasons. Impact piling will only be used at four sites which, at their closest, are around 250 m from the Swale foreshore (approximately 350 m from the edge of the Swale designated site).
- Augered piling has a noise level similar to the background noise of a building site and does not involve any percussive events.
- Impact piling would start on site at the end of August to avoid any disturbance to breeding birds, especially Schedule 1 species within the reedbed.
- The Bunker (250 m from the Swale) requires the most piles and would be started first. It is estimated that this would take three months to complete (up to the end of November). This is the closest location to the SPA that requires impact piling and is timed to coincide with the period when birds using the intertidal areas would be under least stress (Figure 4).
- Piling for the Boiler (300 m from the Swale) would then be completed (moving away from the Swale), estimated at taking a month and a half, up to the middle of January (Figure 5).
- Piling for the Turbine Hall would then be completed by the middle of February, some 400 m from the foreshore edge.
- Final piling for the Flue Gas Treatment (475 m from the Swale) would then be completed by the end of February.
- Piling would be continuous between 07:00 and 19:00, Monday to Friday.
- In order to protect birds during the most vulnerable periods, impact piling would cease in particularly cold weather, as for the statutory suspension of wildfowling (see http://www.jncc.gov.uk/page-2894).

3.5 There was concern that even 65 dB L_{Amax} from a sharp, impulsive noise (such as pile driving) might illicit avoidance responses in birds using the Kemsley foreshore. For comparison, it may be useful to put this in the context of sounds that may occur due to human activity on the Saxon Shore Way. Using a sound meter, the L_{Amax} of the several common sounds were measured (Table 2).

Table 2 L_{Amax} of common sounds

Source	Distance	L_{Amax}
Walking (office shoes on hard carpeted floor)	1 m	63 dB
Slapping thigh	1 m	70 dB
Clearing throat	1 m	73 dB
Stamping foot	1 m	78 dB
Dog barking	1 m	98 dB

3.6 While it is appreciated that piling noise would be near continuous (although this may be considered useful in terms of habituation), in the context of noise that could regularly occur considerably closer to the intertidal areas from human activity along the Saxon Shore Way, the 60 dB L_{Amax} that modelling shows would be the maximum noise level experienced by birds using the foreshore immediately adjacent to the SEP site (less at the SPA/SSSI boundary) is within the range of existing noise and therefore is considered acceptable.

4 HYDROLOGY

Fuel interceptors on surface water drainage

4.1 **Consultee querie**:

- "*Appendix 10.2 – refers to the fact that roofs and external areas will drain freely to the storage ponds for rain events. Elsewhere the report refers to car parks and other areas draining through interceptors. Can you confirm that the external areas referred to 7.3.1.1. does not include areas used by vehicles or other equipment where there may be a risk of hydrocarbon/fuel spillage.*"

4.2 **Response:**

4.3 Surface drainage from any area that is at risk of hydrocarbon/fuel spillage will include appropriate interceptors prior to draining into the attenuation ponds. Any location where such a risk is considered negligible (the roofs of the buildings, for example, and those referred to in 7.3.1.1, Appendix 10.2) will drain directly into the attenuation ponds.

Reedbed drainage

4.4 **Consultee querie**:

- "*Surface water will be directed to the storage ponds and then drained to the Swale at low tide. I assume that previously the land would have drained via the existing ditches to the swamp/reed beds to the north. If this is the case will the hydrology of the site to the north be affected thus causing the reedbeds to dry out? Our previous discussions talked about the restoration of the reed bed habitat and being feed by the clean surface water run-off.*"

4.5 **Response:**

4.6 As mostly made ground, much of the surface water from the existing site drains into the subsoil in-situ. That which does run off, does so with the existing gradient, from west to east into ditches that run adjacent to the sea wall. The majority of the water running into the reedbed to the north of the SEP site comes from run-off from the former tip area. This is not being impacted by the SEP. Therefore, it is not anticipated that the SEP development will result in a reduction in the water volume currently flowing into the reedbed.

5 BREEDING BIRDS

Importance of breeding bird population

5.1 **Consultee querie**:

- "*9.5.27 refers to Fuller's criteria. It states that since the index was developed in the 1970s species diversity has declined and as a result the thresholds are too high for today's populations. However, it then goes on to say that 23 species is only neighbourhood importance because it is below the 25 required for local. If you are saying that the thresholds are too high should you not then have a discussion on where the thresholds should be.*"

And

- *"The assessment of the breeding bird assemblage on site in para 9.5.27 is unclear. It states Fuller (1980) criteria, also states that given declines in bird diversity the thresholds are too high, and that consideration has been given to the number of species of conservation interest (6 sect.41 and/or red list, 5 amber list). Despite this reasoning it states "…it is still considered most likely that the breeding bird assemblage at the site is no more than of Neighbourhood importance (being 23 species, less than the bottom boundary for Local importance[25])". Please can you clarify why the conclusion disregards the reasoning?"*

5.2 **Response:**

5.3 The breeding bird assemblage is well below that given for local importance even based on the inflated criteria used by Fuller in the 70's. We have also given consideration to species with particular conservation interest e.g. if Skylark occurred on site in numbers of local importance then it could be argued that the assemblage should be of local importance to reflect this. However given that none of the species of conservation interest occurred at anything more than neighbourhood importance there was no reason to consider the breeding bird assemblage of the actual site to be of anything more than neighbourhood importance. Suitable mitigation will be provided, as detailed below.

Marsh Harrier

Disturbance

5.4 Marsh Harrier is a migratory species and outside the breeding season most of the British population moves south to winter in southern Europe and Africa. Although small numbers remain in the country, including Kent, only the breeding season is relevant to this assessment. This typically starts between mid-March to early May and female Marsh Harriers generally only have one brood each year.

5.5 In reedbeds like that at Kemsley, Marsh Harriers appear to prefer nest site locations which are away from the land (presumably to minimise risks from land-based predators) and away from water-reedbed edges (presumably to avoid open water and reduce the risk of flooding). Nest site distance from open water has been shown to range from 15.1 - 46.9 m and 7.2 – 52 m from the shore

(Stanevicius, 2004). Such locations also tend to reduce the risk of disturbance from human activity.

5.6 The female takes about 10 days to build the pile of sticks, reeds and grass that serves as a nest. Both parents add material to the main nest during breeding. The female Marsh Harrier does most of the incubating of eggs over a period of usually between 31-38 days (Robinson, 2005), during which time they are reliant on the male to provide food. When the male returns with food, the pair will execute an aerial food pass, usually by the male dropping the prey for the female to catch. For the first week or so the chicks are brooded by the female, who feeds them beak-to-beak, but later they feed themselves in the nest. As the young develop, the female helps with the hunting. After a month or so the chicks scatter into the surrounding vegetation and fledge at 35-40 days.

5.7 The nest of Marsh Harrier in small reedbeds like that at Kemsley is often well hidden. Detecting disturbance of Marsh Harriers during breeding is difficult due to habitat constraints imposed by reeds that obscure the field of vision. Due to other practical and legal constraints there are relatively few studies on human disturbance on Marsh Harrier reproduction in Britain. Marsh Harriers have traditionally been considered prone to human disturbance. A review of available literature led Underhill-Day (1984) to historically attribute 8.7% of nest failures in Britain to human disturbance. It should be borne in mind that some of this recorded disturbance could be intentional persecution and not the unintended effect of legal activity such as development.

5.8 More recent work on the Tay in Scotland has suggested females desert nest sites if humans come within 400 m (Moyse and Bell, 2006). This was based on radio tagging in the largest reedbed in Britain where Marsh Harrier were probably not habituated to human activity, especially if this included people in the reedbed. Stanevicius (2004) further suggested that birds were not actively disturbed until someone entered the reeds close to the nest and boat activity on the lake did not flush birds from the nest during a study lasting three years on 55 breeding pairs.

5.9 With around a hundred breeding females now recorded in Kent each year, some are using what would traditionally have been considered less suitable locations. It has been asserted that provided the patch of reeds remains damp and secure enough from direct human ingress into the reedbed, that Marsh Harrier can now be expected to breed in locations as close as 50 m to regular human activity. One nest is reported to be within 7 m of a public footpath from which it was possible to count the eggs (Clements, pers. com.).

~~5.10~~ Most studies conducted outside of Britain in relation to disturbance of Marsh Harrier have generally not quantified potentially important interactions.

5.11 The effects of human disturbance on parental care by Marsh Harrier and the nutritional condition of nestlings have been studied at Dos Reinos Lake, Spain (Fernández and Azkona, 1993). Whilst the effects of severe human disturbance were considered to limit Marsh Harrier parental care, male behaviour was considered only affected during food provisioning in the incubation stage. Overall, breeding success was unaffected between disturbed and undisturbed pairs,

suggesting Marsh Harriers have developed coping mechanisms for increased disturbance. This would seem to apply at the Kemsley site where the nest is close to the regular passage of haulage vehicles on the track immediately adjacent to the northern edge of the reedbed.

5.12 There will be no direct entry of the Kemsley reedbed by people or machinery as a result the proposed SEP. The need to mitigate any indirect affects arising from disturbance from activities during both construction and operation of the proposed SEP will be dependent upon both the stage that the Marsh Harrier has reached (nest building, eggs or chicks) and the nature of the activity. The following activities will not occur within the distances listed of the nest site in the event that Marsh Harrier is found breeding in the Kemsley reedbed:

5.13 Activities that only involve the movement of vehicles:

- Nest building 100 m
- Eggs 100 m
- Chicks 50 m

5.14 Activities that involve people outside of vehicles and construction activities such as excavation, concrete pouring and assembly:

- Nest building 200 m
- Eggs 200 m
- Chicks 100 m

5.15 These distances are derived from experience and expert judgement informed by literature review (e.g. Ruddock and Whitfield, 2007), some of that literature itself being based on an expert judgement process. The shorter distances of vehicle movement would apply to people out of a vehicle (but not construction activities) in the site specific circumstance that the people were completely out of sight of the nest because of a structure obscuring the view. To facilitate this it is proposed to erect standard 2.4 m high plywood faced timber framed boundary hoarding along the northern side of the proposed development site to screen activities and prevent unauthorised closer access to the reedbed.

5.16 Appropriate mitigation is detailed below. The construction of the proposed SEP will not, therefore, result in the displacement of Marsh Harriers from a breeding site and there is no indication that there will be an adverse effect on the breeding population of this species.

Urbanisation

5.17 The best evidence on whether or not Marsh Harrier are affected by the presence of buildings would be through a deliberate, controlled experiment to establish how close Marsh Harriers will nest to buildings before they fail to successfully rear young or even attempt to nest. This is neither practical nor legal. Assessing whether it can be concluded that the proposed development will not have an adverse affect on the integrity of the Swale SPA breeding population of this species will therefore need to be based on best available information, expert opinion and the precautionary principle.

5.18 The core breeding areas for Marsh Harrier in England, which include north Kent, are well-monitored. Local recorders report nesting in a variety of habitats including reedbeds, ditches and fields. This is consistent with the literature which suggests Marsh Harrier prefer wetlands with dense, tall vegetation (particularly with stands of reed) for nesting. They also seem to favour brackish or freshwater sites equally and will occupy marshes, ponds, lakes, lagoons and riverbanks. In some locations, they have adapted to drier habitats having bred in hedges and fields (Hagemeijer and Blair, 1997) as well as in intensive arable farmland, with 21% of the total population nesting in winter cereals in 1995 (Underhill-Day, 1998).

5.19 The true number of breeding pairs of Marsh harrier is not fully recorded. In 1995 Underhill-Day (1998) organised a full census that provided an estimate of the population in Great Britain of 156 females producing eggs. Females are taken as the appropriate count measure because the species can be polygynous. This figure is regarded by the British Trust for Ornithology (BTO, 2010) as probably an underestimate of the true population because of both missed early failures and missed nests as the census was not based on a formal sampling strategy. The Rare Breeding Birds Panel figures for around the same time were 20-25% lower, giving some indication of the extent of under-recording for this species.

5.20 The location of almost all nest sites of Marsh Harrier is also not explicitly stated in the published literature. This is at least in part due to the risk of increased egg collection that could result. Due to this lack of available detail, it is not possible to produce a systematic review or cite many examples of how close they have nested to structures. However, it has been reported that in 2007 a pair of Marsh Harriers successfully raised four chicks in a small reedbed at Damhead Creek in north Kent some 600 m from an approved second power station (Penny Anderson Associates Limited, 2007).

5.21 Species such as Marsh Harrier have responded well to the provision of safe breeding habitat and have expanded into other areas where there is a nucleus of good habitat. With more than a hundred breeding females in Kent, they are now occupying what would have historically been considered unusual locations. It is considered that provided a patch of suitable reed remains damp and is secure enough from human interference and close access into the reedbed that Marsh Harrier can breed in locations as close as 50 m to buildings (Clements, pers. com.). The importance of freedom from human access into the reedbed is confirmed by the findings of Fernández and Azkona (1993) and Stanevicius (2004).

5.22 At Kemsley, Marsh Harriers are already nesting within 200 m of existing buildings. The nesting territory recorded within the reedbed is some 300 m to the north of the site of the proposed SEP. To the south of the application site the proposed SEP will have a backdrop of both the existing mound of the sealed tip and the existing paper mill. The visual impact of the proposed SEP from the reedbed will therefore be mitigated to a large extent by existing structures. The Kemsley reedbed is also currently open to the Swale on the east side. Observations made during the breeding bird surveys indicate that this is the direction from which the male both enters and leaves the area. The proposed SEP will have no affect on this side of the reedbed.

6 SPA

Visual disturbance and intrusion

6.1 **Consultee querie**:

- The RSPB required clarification regarding the potential for visual disturbance and intrusion to birds using the SPA.

6.2 **Response**

6.3 The final building is not considered likely to cause visual disturbance for the birds using the Kemsley foreshore. While substantial in size, the main building is set well back from the sea wall (approximately 200 m).

6.4 There is significant evidence from similar sites that large power station-like structures do not cause noticeable visual disturbance or over-shadowing impacts to birds using intertidal habitats. For example, Kingsnorth, Tilbury, Medway, Grain and Fawley power stations are all of a similar scale or bigger to the SEP and within a comparable distance or closer to SPA habitat. The areas of the respective SPAs adjacent to the power stations also have similar species compositions to that found at Kemsley (Musgrove *et al.* 2003).

6.5 From observations by RPS staff of waterbirds using intertidal areas immediately adjacent to industrial developments, particularly power stations, it appears that for some species and individuals at least, the presence of an imposing building does not result in the abandonment of the adjacent intertidal zone for feeding. On both the Thames Estuary at Tilbury Power Station and the Medway Estuary at Grain Power Station Black-tailed Godwit; a species of conservation interest in relation to the Kemsley development, has been observed feeding, in varying numbers, on the intertidal zones immediately adjacent to these buildings. Other observations of species such as Redshank and Oystercatcher on intertidal zones immediately adjacent to industrial developments also suggest that the developments do not result to the abandonment of these areas for feeding by these species.

6.6 Much of the SEP structure will also blend into the existing mill buildings behind it, something that does not occur at the other stations listed which are generally isolated in the landscape and therefore visually more intrusive.

6.7 The SEP is located to the west of the Swale SPA/SSSI/Ramsar with the tallest building approximately 50 m high, some 250 m from the river. As the sun rises in the east, there would be no over-shadowing of the SPA/SSSI/Ramsar for the majority of day. Figure 9a-f provides details of where shadows from the SEP building would fall at 09:00, 12:00, 15:00 & 18:00 on a bi-monthly basis through the year. The modelling was completed using the shadow render function of AutoCAD 2008 with building dimensions from those submitted with the original ES. These figures show that there is no significant overshadowing of the SPA by the SEP.

6.8 Further, there is growing evidence for night feeding amongst wildfowl and waders when over-shadowing would not be an issue. For example, Redshank have been observed feeding on the margins and beds of channels and creeks in Langstone Harbour only exposed at low water spring tides—feeding sites not available in day light (Tubbs *et al.* 1980) and Avocet feeding patterns have been noted as uninfluenced by time of day with day and night activities essentially the same Hotker, 1999). Therefore, it is considered that over-shadowing of the Swale by the SEP would be negligible and any effect not significant or adverse.

6.9 Paragraph 9.184 of the AA provides the percentage of the 360° view of a bird on the mean low water mark as being 6.4%. This means that, within that single plane, the SEP would occupy 6.4% of the bird's view. If the full hemispherical view of that bird were to be considered, this would figure drop considerably. If it is assumed that the view of a bird standing on the mean low water mark is represented by a hemisphere, the total "area" of view that bird can see is given by $0.5 \times 4\pi r^2$ where r = 210 m (from Figure 9.12 of the original ES), or 277,080 m^2. The total surface area of the 85 m wide 22 m high (above the sea wall) SEP is 1,870 m^2 or 0.67% of the total view of that bird.

6.10 Therefore, on the basis that there are significant numbers of large power stations in similar situations to the proposed SEP and that the percentage change in view is likely to be very small, it is considered that no visual disturbance to birds using the Kemsley foreshore is likely and any impacts would be not significant or adverse.

Work on seawall to install drainage outfall

6.11 Although no detailed timetable of construction has been produced, the work on the seawall to install a drainage outfall will be completed outside of the over-wintering period (October to March inclusive) to avoid visual disturbance to birds feeding on the Kemsley foreshore area during this period.

7 BADGERS

7.1 **Consultee querie**:

- "*Paragraph 9.4.90 states that no signs of badgers were identified during the surveys. Badgers can move in to an area relatively quickly. If there is a delay on the proposed development a further badger survey must be carried out.*"

7.2 **Response**

7.3 As part of pre-commencement works, the site would be subject to suitable surveys for Badgers to ensure none were present. If a sett were found, suitable mitigation would be incorporated into the final design, in agreement with the Local Authority.

8 BATS

8.1 **Consultee querie**:

- "*Paragraph 9.4.88 states that there are no potential roosts on site and the site has limited potential for foraging. However the paragraph did state that the site had some potential to be used by commuting bats and bats*

may use the surrounding area for foraging. No consideration appears to have been given to the impact the increase in lighting may have to bats in the surrounding area. The lighting must be designed to minimise the impact on any foraging or commuting bats."

8.2 **Response**

8.3 A full lighting strategy for the site has been developed as part of the original ES. The principals of this are to ensure that lighting is directed inwards at the SEP and that the surrounding areas of habitat are not subject to direct illumination. The layout of the site has also be designed in such a way that the most active areas are in the centre of the site, shielded by buildings from the more sensitive ecological receptors such as the reedbed to the north of the site and the rive Swale. Therefore, it is not anticipated that the development of the SEP will impact upon bats or other nocturnal wildlife due to operational lighting.

9 ON-SITE MITIGATION

9.1 **Consultee querie**:

- All of the consultees required clarification of on-site mitigation relating to reptiles, invertebrates, breeding bird habitat and BAP habitat.

9.2 **Response**

9.3 The following section provides details and clarifications relating to the need for on-site mitigation and covers reptiles, birds, invertebrates, BAP habitats and Annual Beard-grass.

Suitability of proposed reptile receptor site

9.4 The suitability of the proposed reptile receptor site and the lack of survey of this area were queried. However, discussions during the visit on site illustrated that this area is densely vegetated with tall ruderal and scrub species, making it unsuitable for reptiles and impossible to survey. As per the mitigation strategy detailed below, this area will be enhanced and made suitable for reptiles prior to translocation.

Mitigation strategy

9.5 In order to produce a suitable mitigation strategy, the areas of habitat that require mitigation have to be calculated. The final development includes substantial habitat creation, facilitated by the attenuation ponds and other landscaping. Therefore, the total habitat "budget" is provided in Table 3 below, with areas of hardstanding and artificial spoil provided for information. This is based on Figure 9.5 from the original ES (the Phase 1 Habitat map), along with Figure 8 from this supplementary information.

Table 3 Areas of habitat types to be lost, retained or enhanced

Habitat Type	Total on-site	Lost (ha)	Lost but reinstated (ha)	Retained and enhanced (ha)
Scrub dense continuous	0.28	0.19		0.09
Ephemeral/short perennial	0.42	0.04	0.38	0
Hardstanding	1.25	0.87	0.38	-
Unimproved neutral grassland	1.76	1.57	0.11	0.08
Artificial spoil	0.84	0.45	-	-
Swamp	0.22	0.09	0.12	0.01
Tall ruderal	2.16	1.28	0.65	0.23
Total	**6.94**	**4.49**	**1.98**	**0.47**

9.6 The colour coding in Table 3 refers to that in Figure 8. Habitat to be reinstated is generally around the attenuation ponds, that to be lost is under the footprint of the SEP and the retained/enhanced refers to habitat that will be protected during works.

9.7 Part of the site qualifies as the BAP habitat Open Mosaic Habitat on Previously Developed Land (OMH). From discussions with consultees on site, the habitat that comprises OMH to be lost is highlighted a lighter shade of blue in Table 3. This gives a total area of OMH of 3.09 ha, with 0.09 ha of swamp also likely to be lost (adjacent to the existing ditch to the west of the site). Much of the attenuation pond and associated landscape area (coloured yellow) will be established as a mosaic of grassland, open/bare ground and scrub habitat with reedbed (swamp) along the centre of the pond (>0.09 ha). As shown on Figure 8, this covers an area of just over 2 ha and will mitigate the loss of the 1.6 ha of habitat coloured yellow above (removing the hardstanding from the calculation).

9.8 Therefore, in order to ensure that a sufficient area is created to ensure the support and enhancement of the species and habitats on site, alongside the habitat reinstated/enhanced, a further 3.1 ha of mosaic habitat will be created on the former landfill adjacent to the SEP site. This will broadly comprise around 2.35 ha of grassland, 0.5 ha of open/bare ground/ephemeral and 0.25 ha of scrub to be planted as appropriate for the maintenance of the landfill cap integrity.

Mitigation principals

9.9 The following provides the broad principals that cover the SEP mitigation strategy for on-site mitigation.

Reptiles

- Population estimate survey to be completed prior to final mitigation strategy.
- Mitigation strategy to be compiled, based on population estimate survey, and agreed with Local Authority.
- Habitat enhancement/creation to be completed at least the year before translocation under supervision of Ecological Clerk of Works (ECoW).

- Habitat creation/enhancement to be as original ES with new refugia/hibernacula along with a mosaic of grassland and scrub.
- Translocation of reptiles to be completed only once habitat is established.
- Receptor site to be surrounded with suitable reptile fencing, with gaps facing the landfill to facilitate population expansion into this area.
- The remainder of the SEP site will also be fenced and compartmentalised to facilitate trapping. Trapping by artificial refugia and to be continuous for at least 30 days (depending upon final population estimate) and to only cease once five days recorded with no captures. Trapping to only be completed during suitable weather conditions.
- Upon completion of trapping, a destructive search of potential hibernacula and refugia (such as rubble piles) to be completed under the supervision of an ECoW.
- Monitoring of population to be completed annually for 5 years subsequent to completion.
- Management to be undertaken annually throughout operational life of SEP to ensure mosaic of habitats maintained.

Breeding birds

- Habitat to be created at least a year before development begins to allow establishment.
- Where possible, scrub from within the development footprint will be translocated into areas to be enhanced/retained.
- Mosaic of long grass and scrub to be created – scrub within attenuation ponds and around base of former landfill, grassland on the landfill.
- Management to be undertaken annually throughout operational life of SEP to ensure habitats maintained.

Invertebrates

- Mosaic of grassland/scrub and open ground to be created within reptile receptor site and on former landfill.
- Grassland to be species-rich to ensure sufficient diversity of host plants and nectar source.
- Management to ensure maintenance of mosaic habitat.

Annual Beard-grass

- Site to be surveyed for presence of Annual Beard-grass prior to site clearance at appropriate time of year for it to be visible, prior to plant setting seed.
- Individuals and stands of plant to be marked and allowed to set seed.
- Once seed set, top soil from around plants to be translocated to suitable open ground habitat under supervision of ECoW.
- Translocated soil to be dug into the open ground areas to create disturbed conditions to allow species to grow.
- Subsequent management to disturb soil on a bi-annual basis.

10 OFF-SITE MITIGATION

10.1 Despite the expectation that Marsh Harrier will continue to nest in the Kemsley reedbed, it is further proposed to provide suitable offsetting habitat in the order of

1 ha in a more remote area considered suitable for use by the breeding Marsh Harrier population of the Swale SPA. The most suitable location for this would appear to be on Isle of Sheppey as part of a SEEDA initiative as this is adjacent to a core breeding area.

10.2 The detailed design of the reedbed habitat will be agreed in consultation with the relevant bodies, including the RSPB, Natural England and SEEDA.

11 REFERENCES

Ashmore M.R. & Wilson R.B. (1994) *Critical Levels of air pollutants for Europe*. Department of the Environment.

Bignal K.L., Ashmore M.R., Headley A.D. (2008) *Effects of air pollution from road transport on growth and physiology of six transplanted bryophyte species*. Environmental Pollution **156** (2); 332-340.

Bobbink R, Hornung M & Roelofs J.G.M. (1998) *The effects of air-borne nitrogen pollutants on species diversity in natural and semi-natural European vegetation*. Journal of Ecology, **86**. 717-738.

British Trust for Ornithology. (2010). Website - Raptor Population Estimates, Humphrey Q P Crick http://www.bto.org/research/advice/raptors/raptorpopestimates.htm

Fernández, C. and Azkona, P. (1993). Human disturbance affects parental care of Marsh Harriers and nutritional status of nestlings. *Journal of Wildlife Management*, 57, 602-608.

Hagemeijer, W.J.M. & Blair, M.J. (eds.). (1997). *The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance.* London, T. & A.D. Poyser.

Hotker H (1999) *What determines the time-activity budgets of Avocets (Recurvirostra avosetta)?*. Journal of Ornithology, **140**: 57-71.

Moyes, S. and Bell, H. (2006). Report on Marsh Harriers on the Tay in 2006. Marsh Harrier Satellite Tracking Project.

Musgrove, A J, Langston, R H W, Baker, H and Ward, R M (eds). 2003. *Estuarine Waterbirds at Low Tide: the WeBS Low Tide Counts 1992/93 to 1998/99*. WSG/BTO/WWT/RSPB/JNCC,Thetford.

Penny Anderson Associates Limited. (2007). Damhead Creek Phase II Proposed Development Bird Surveys, 2007.

Robinson, R.A. (2005) *BirdFacts: profiles of birds occurring in Britain & Ireland* (v1.24, June 2009). BTO Research Report 407, BTO, Thetford (http://www.bto.org/birdfacts)

Ruddock, M. and Whitfield, D. P. (2007). A Review of Disturbance Distances in Selected Bird Species. A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

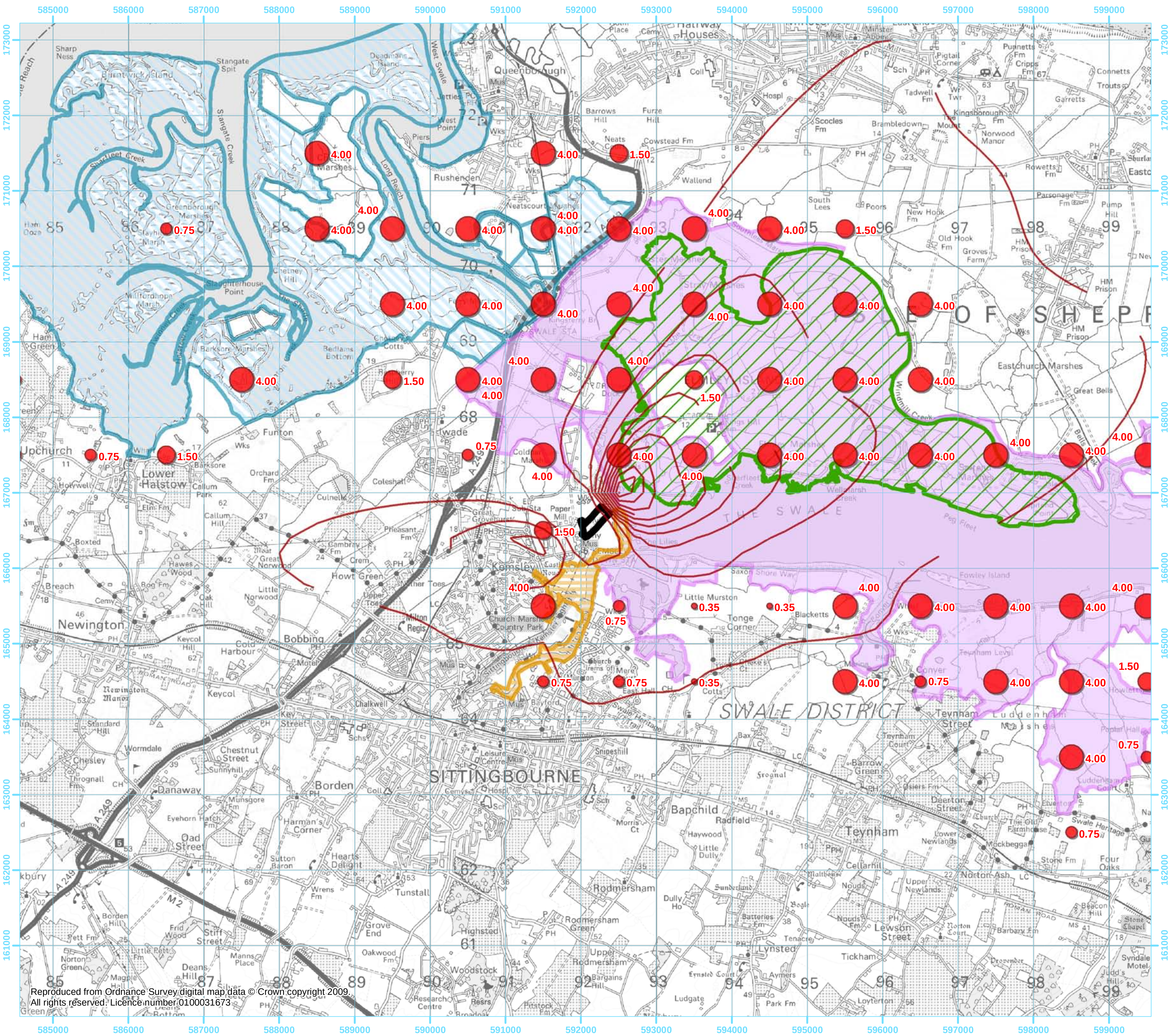
Stanevicius, V. (2004). Nest site selection by Marsh Harrier (Circus aeruginosus) in the shore belt of helophytes on large lakes. *Acta Zoologica Lituanica*, 14, 47-53.

Tubbs, Colin R. and Tubbs, Jennifer M.(1980) 'Wader and Shelduck feeding distribution in Langstone Harbour, Hampshire', Bird Study, 27: 4, 239 — 248

Underhill-Day, J.C. (1998). Breeding Marsh Harriers in the United Kingdom, 1983-95. *British Birds,* 91, 210-218.

Underhill-Day, J.C. (1984). Population and breeding biology of Marsh Harriers in Britain since 1900. *Journal of Applied Ecology*, 21, 773-787.

Figure 1 Critical load variation across the Swale SPA/SSSI/Ramsar



Legend

Application boundary

The Swale
(SPA, SSSI and Ramsar sites)

Medway Estuary & Marshes
(SPA, SSSI and Ramsar)

Emley
(National nature reserve)

Milton Creek, Sittingbourne
(Site of Importance for Nature Conservation)

Critical Levels /Loads
Acid Deposition (keq/ha/yr)

0.35

0.75

1.50

4.00

Acid Deposition contours

Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2009

Status: **FINAL**

RPS
Willow Mere House, Compass Point Business Park, Stocks Bridge Way, St. Ives, Cambridgeshire, PE27 5JL
T 01480 302751 F 01480 466911 E rpscm@rpsgroup.com

Client: G.E.L.

Project: Kemsley Mill ES

Title: Air Quailty - Acid deposition

Scale: 1:50,000 @A3

0 1 2 km

Projection: British National Grid Datum: OSGB36

Date: 01/12/2009 Drawn: BF Checked: NB

Job Ref: **JPP1804** Figure No: **1** Revision: **A**

www.rpsgroup.com

Project Ref: O:\JPP1804 Kemsley Mill ES\GIS\JPP1804_AirQuality.mxd

Figure 2 NO_x emissions from proposed SEP

RPS
Willow Mere House Compass Point Business Park Stocks Bridge Way
St. Ives Cambridgeshire PE27 5JL
T 01480 302751 F 01480 466911 E rpscm@rpsgroup.com

Client: St. Regis

Project: Kemsley SEP

Title: Nox concentrations from operations of SEP

Date: July 2010 Scale: Not to scale

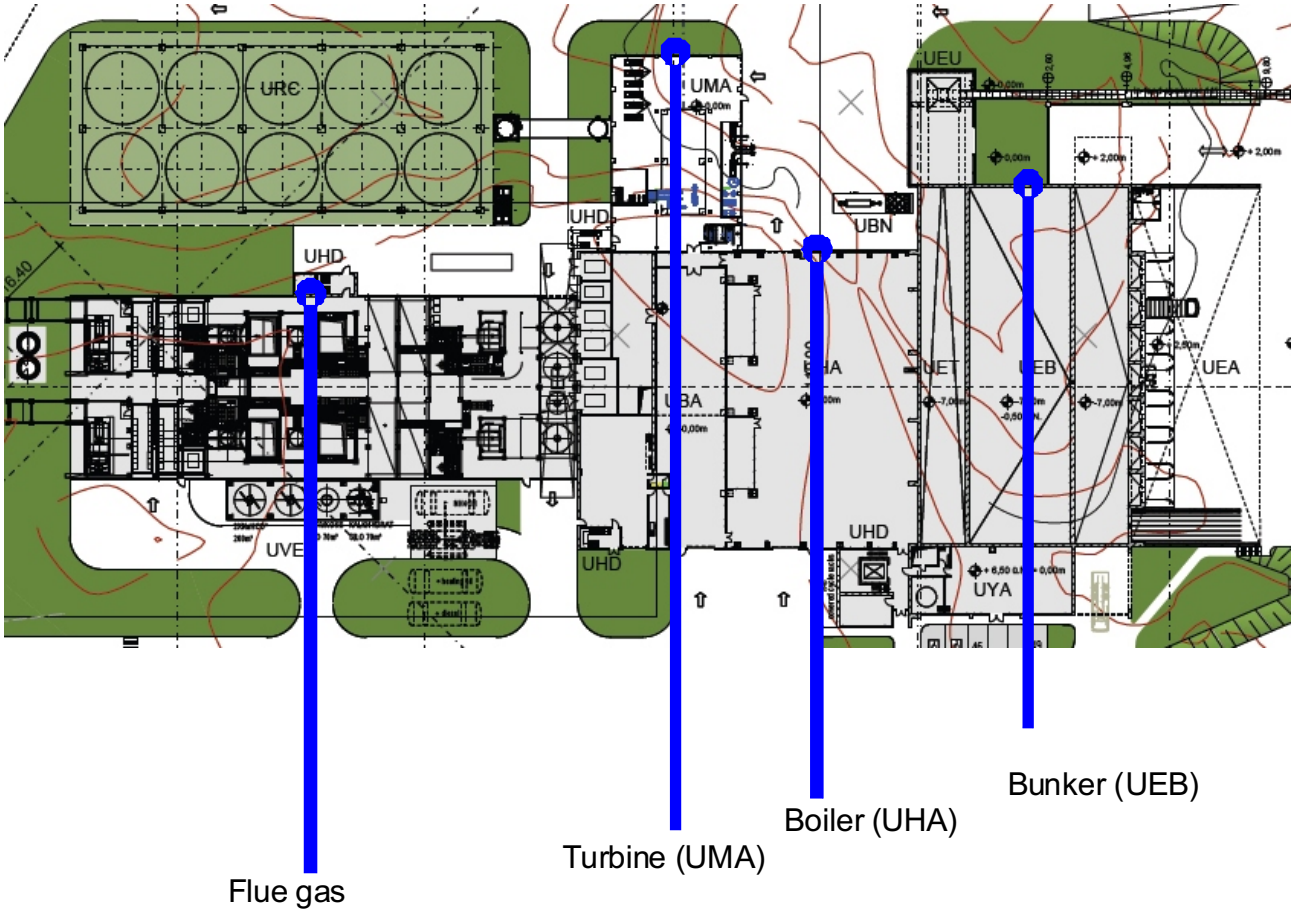
Drawn: BF Checked: NB

Job: **JPP1804** Figure No: **2** Rev: **A**

www.rpsgroup.com

Drawing Ref: O:\JPP1804 Kemsley Mill ES\GIS\JPP1804_NoxConcentration_July2010.cdr

Figure 3 Location of noise modelling



RPS
Willow Mere House Compass Point Business Park Stocks Bridge Way
St. Ives Cambridgeshire PE27 5JL
T 01480 302751 F 01480 466911 E rpscm@rpsgroup.com

Client: St. Regis

Project: Kemsley SEP

Title: Location of pilling noise modelling

Date: July 2010 Scale: Not to scale

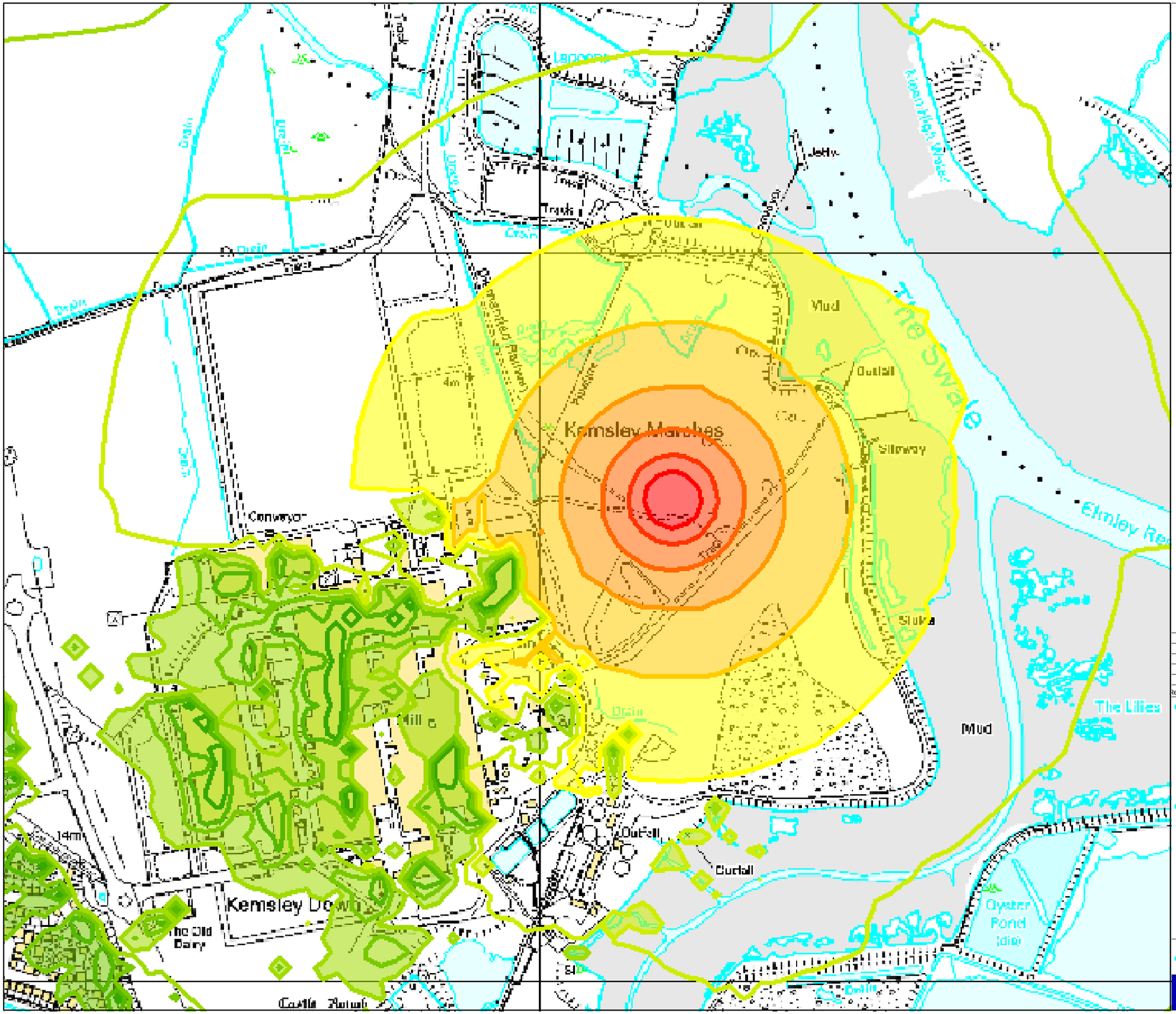
Drawn: BF Checked: NB

Job: **JPP1804** Figure No: **3** Rev: **A**

www.rpsgroup.com

Drawing Ref: O:\JPP1804 Kemsley Mill ES\GIS\JPP1804_LocationPillingNoiseModelling_July2010.cdr

Figure 4 Noise modelling for impact piling at Bunker



Legend

Noise Contours (LAMAX)

- 85dBLAMAX
- 80dBLAMAX
- 75dBLAMAX
- 70dBLAMAX
- 65dBLAMAX
- 60dBLAMAX
- 55dBLAMAX
- 50dBLAMAX
- 45dBLAMAX
- 40dBLAMAX
- 35dBLAMAX

Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2010

Status: FINAL

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 02380 8081440 F 02380 8081441 E rpsso@rpsgroup.com W www.rpsplc.co.uk

Client: St Regis

Project: Kemsley Mill

Title: Construction Noise Contours Bunker

Scale: A3 @ 1:5000

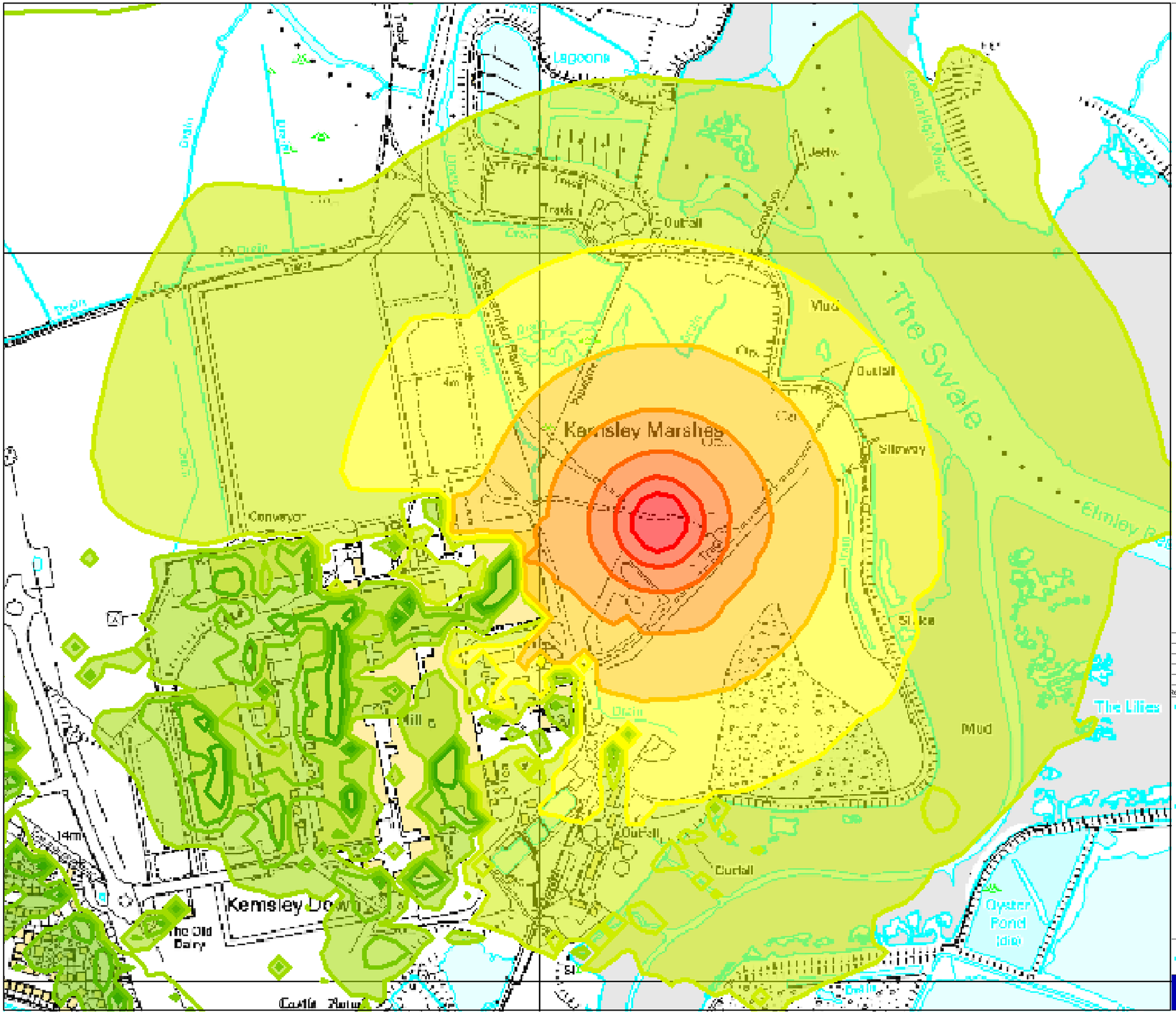
N

Date: 15/07/2010 Datum: OSGB36 Projection: BNG

Drawn: SH Checked: NB Job Ref: JPP1804

Figure No: **4** Revision: **-**

Figure 5 Noise modelling for impact piling at Boiler House



Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2010

Status: FINAL

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 02380 8081440 F 02380 8081441 E rpsso@rpsgroup.com W www.rpsplc.co.uk

Client: St Regis

Project: Kemsley Mill

Title: Construction Noise Contours
Boiler House

Scale: A3 @ 1:5000

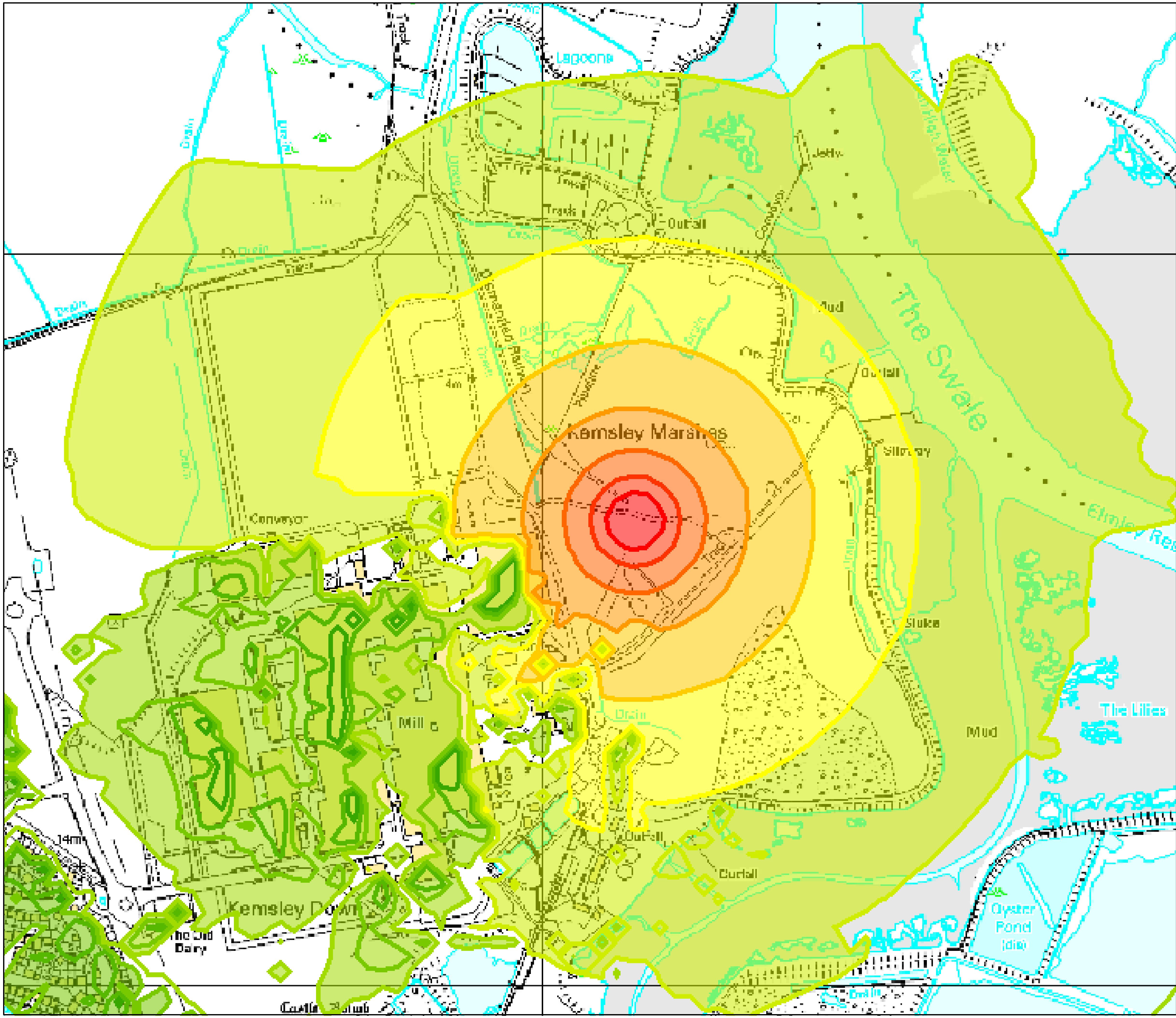
N

Date: 15/07/2010 Datum: OSGB36 Projection: BNG

Drawn: SH Checked: NB Job Ref: JPP1804

Figure No: 5 Revision: -

Figure 6 Noise modelling for impact piling at Turbine Hall



Legend

Noise Contours (LAmax)

- 35dBLAmax
- 40dBLAmax
- 45dBLAmax
- 50dBLAmax
- 55dBLAmax
- 60dBLAmax
- 65dBLAmax
- 70dBLAmax
- 75dBLAmax
- 80dBLAmax
- 85dBLAmax

Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2010

Status: FINAL

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 02380 8081440 F 02380 8081441 E rpsso@rpsgroup.com W www.rpsplc.co.uk

Client: St Regis

Project: Kemsley Mill

Title: Construction Noise Contours Turbine

Scale: A3 @ 1:5000

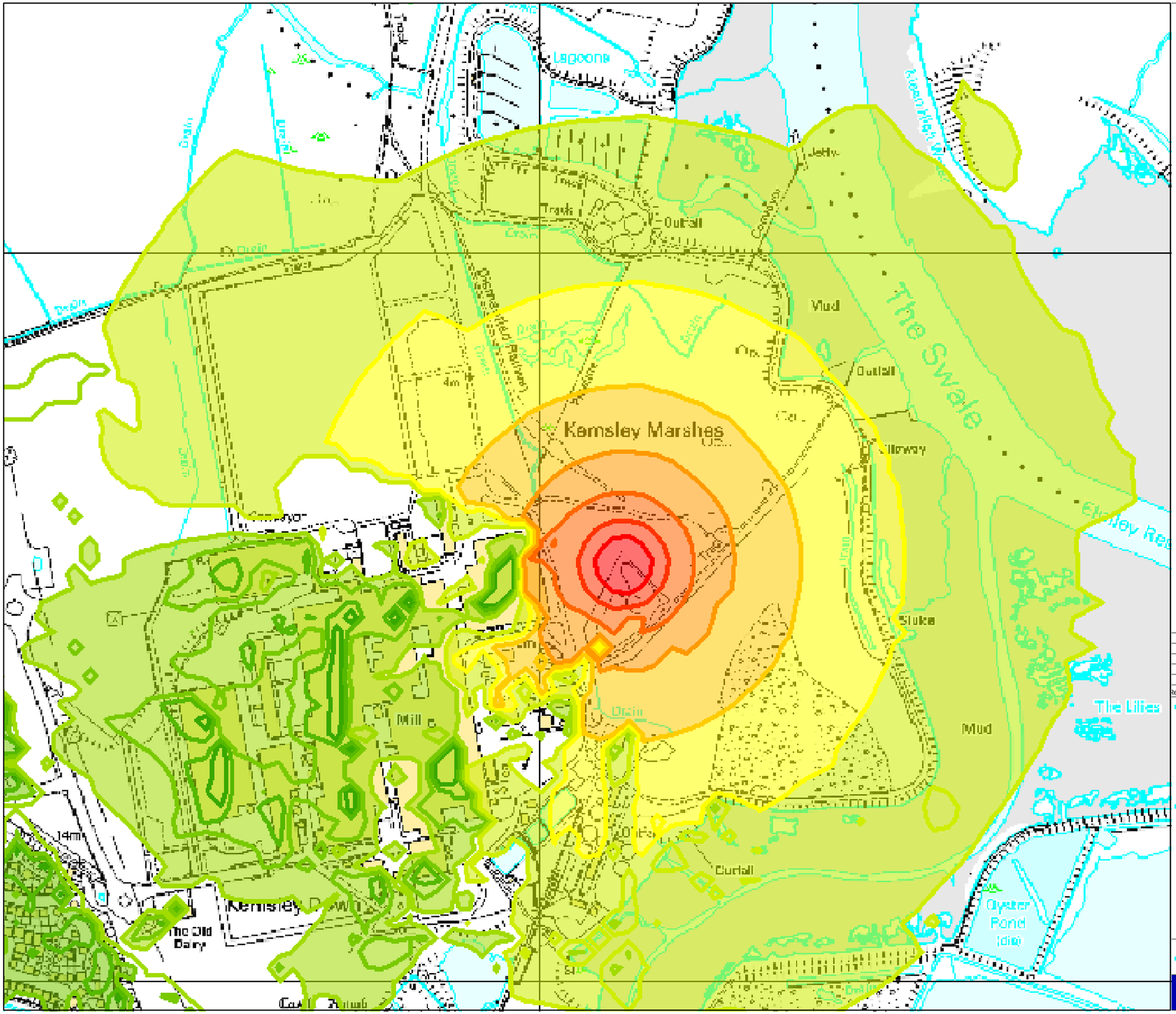
N

Date: 15/07/2010 Datum: OSGB36 Projection: BNG

Drawn: SH Checked: NB Job Ref: JPP1804

Figure No: 6 Revision: -

Figure 7 Noise modelling for impact piling at Flue Treatment



Legend

Noise Contours (LAmax)

- 35dBLAmax
- 40dBLAmax
- 45dBLAmax
- 50dBLAmax
- 55dBLAmax
- 60dBLAmax
- 65dBLAmax
- 70dBLAmax
- 75dBLAmax
- 80dBLAmax
- 85dBLAmax

Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2010

Status: FINAL

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 02380 8081440 F 02380 8081441 E rpsso@rpsgroup.com W www.rpsplc.co.uk

Client: St Regis

Project: Kemsley Mill

Title: Construction Noise Contours Flue

Scale: A3 @ 1:5000

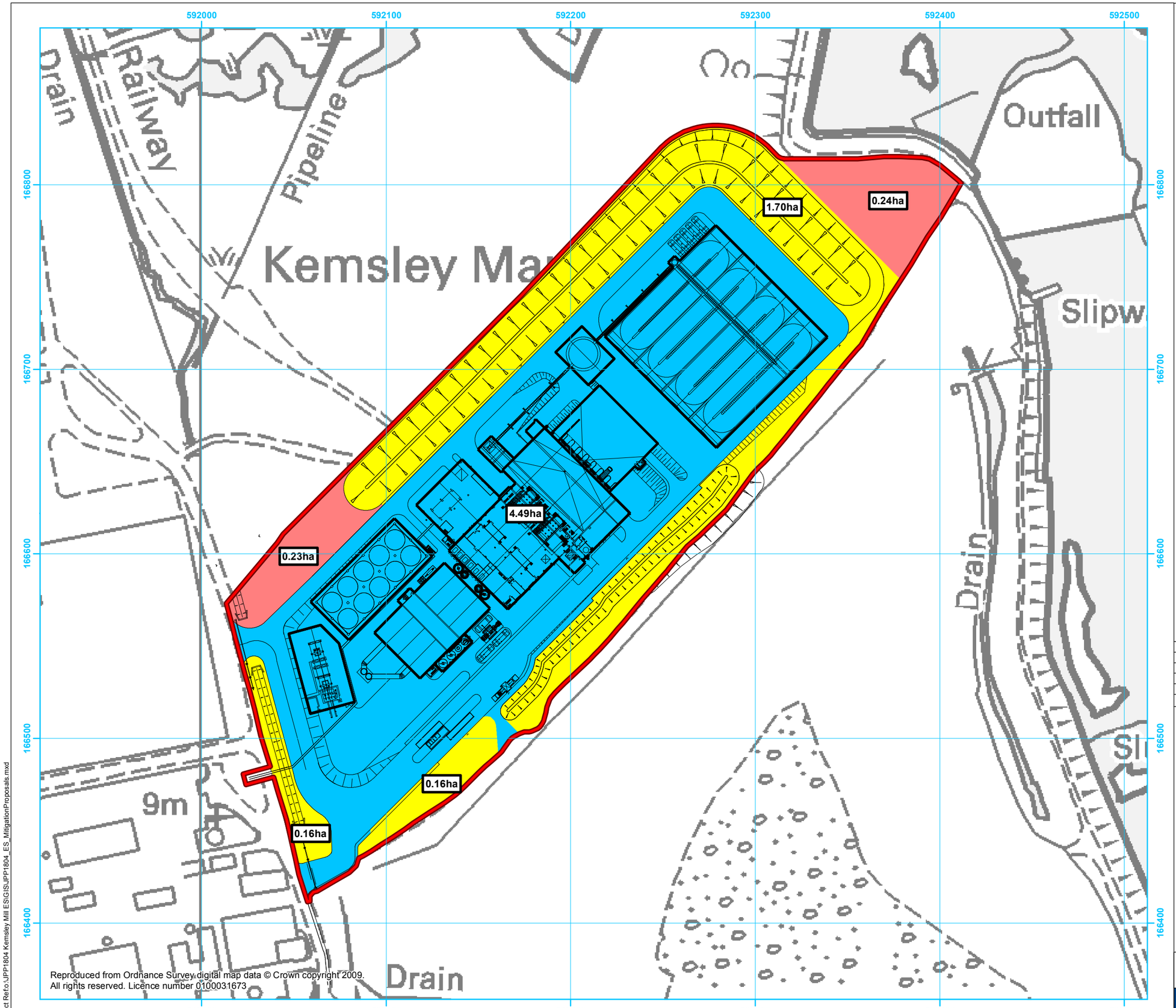
N

Date: 15/07/2010 Datum: OSGB36 Projection: BNG

Drawn: SH Checked: NB Job Ref: JPP1804

Figure No: 7 Revision: -

Figure 8 Mitigation areas



Legend

- Proposal site
- GCN Lost
- Lost
- Retained

Based upon:
Landscape Proposals, drawing reference
5958D_091126AVG_LandscapeProposals_RevA.dwg

Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2009

Status: **FINAL**

RPS
Willow Mere House Compass Point Business Park Stocks Bridge Way
St. Ives Cambridgeshire PE27 5JL
T 01480 302751 F 01480 466911 E rpscm@rpsgroup.com

Client: G.E.L

Project: Kemsley Mill ES

Title: Mitigation Proposals

Scale: 1:2,000 @A3

0 10 20 40 60 80 m

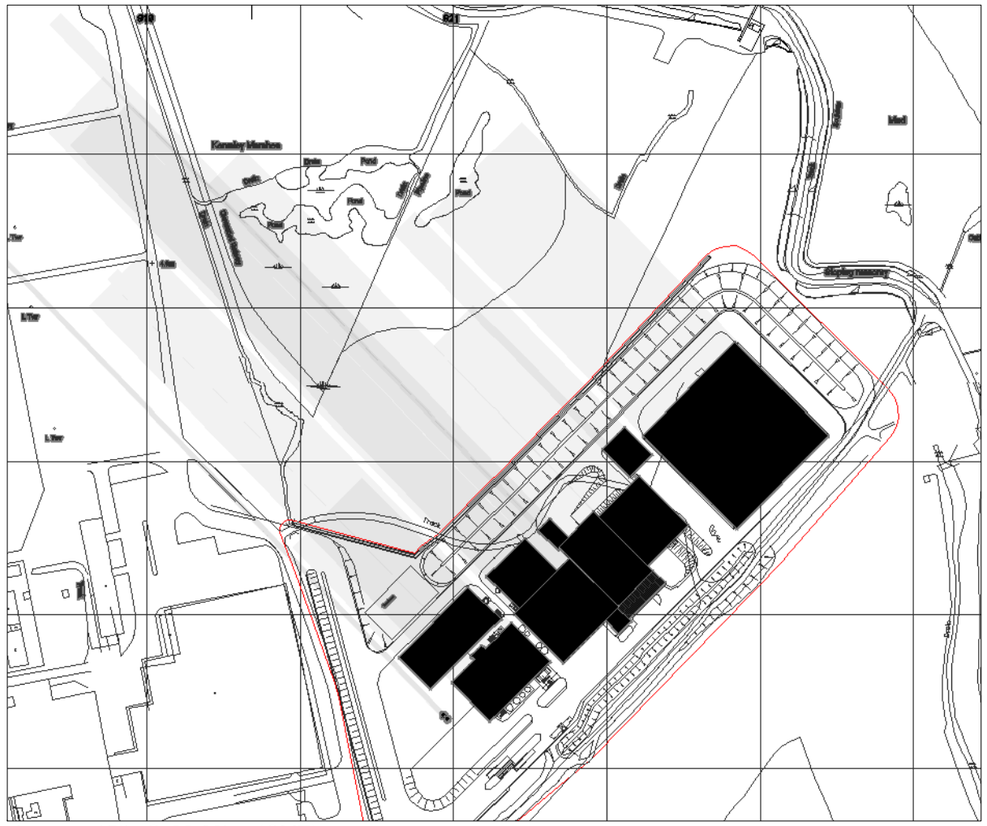
Projection: British National Grid Datum: OSGB36

Date: 02/12/2009 Drawn: BF Checked: SS

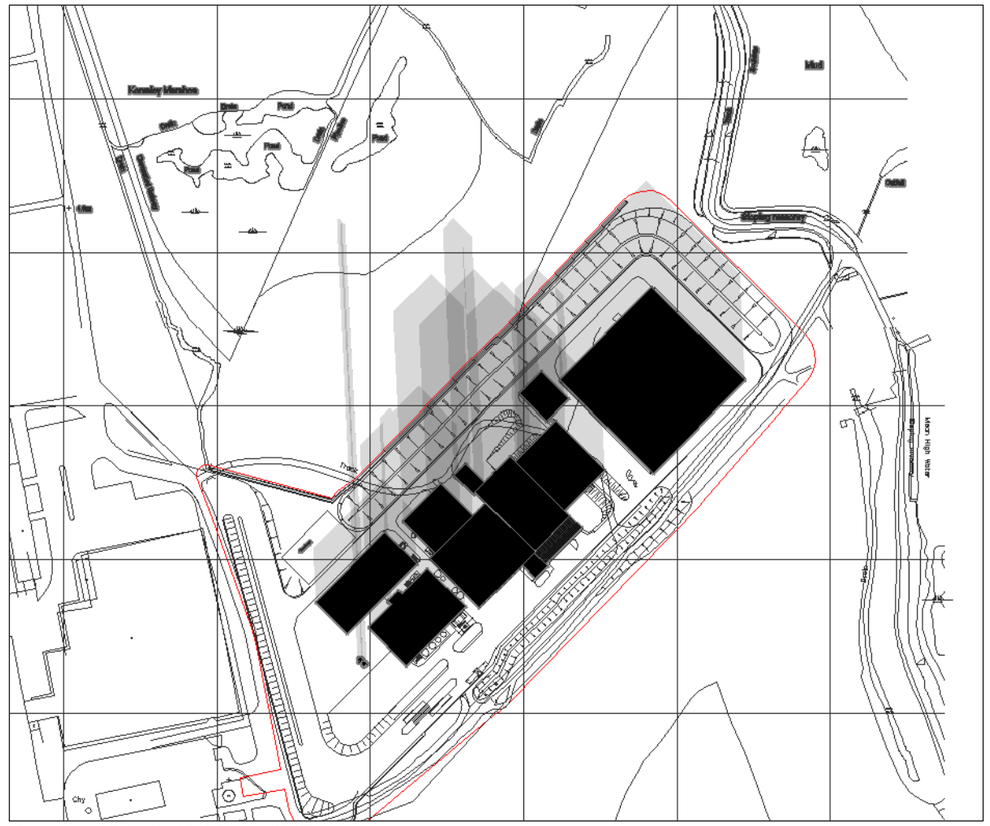
Job Ref: **JPP1804** Figure No: **9.13** Revision: **B**

Project Ref:o:\JPP1804 Kemsley Mill ES\GIS\JPP1804_ES_MitigationProposals.mxd

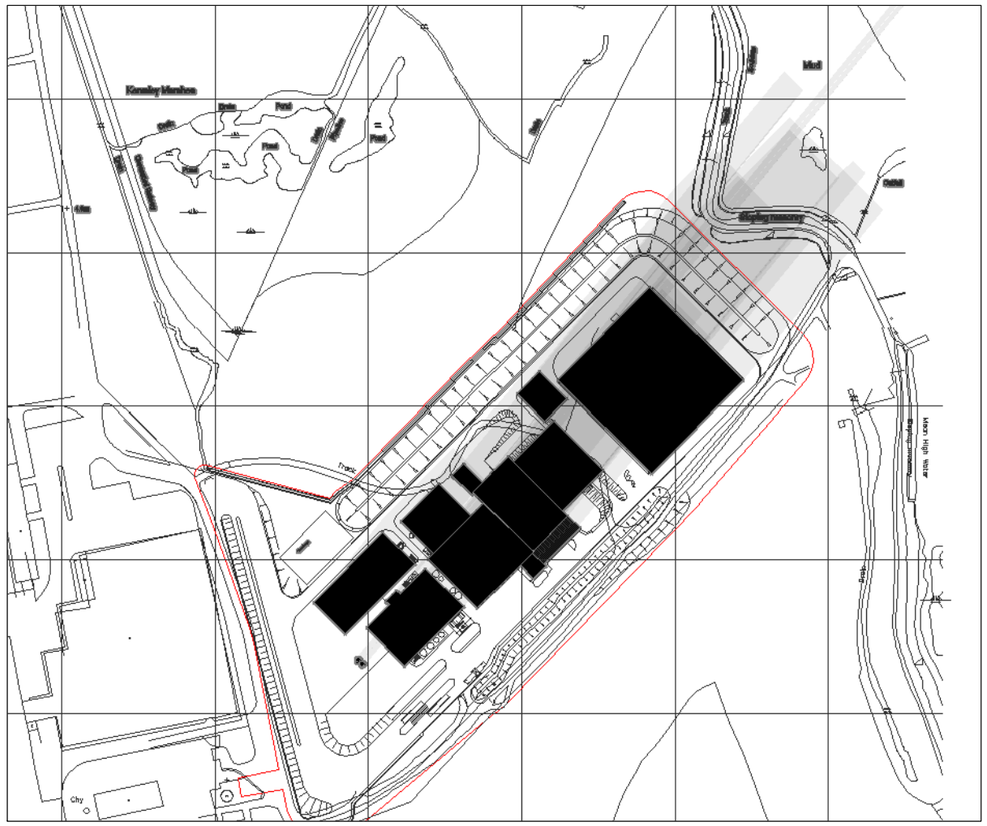
Figure 9 Bi-monthly SEP shadows



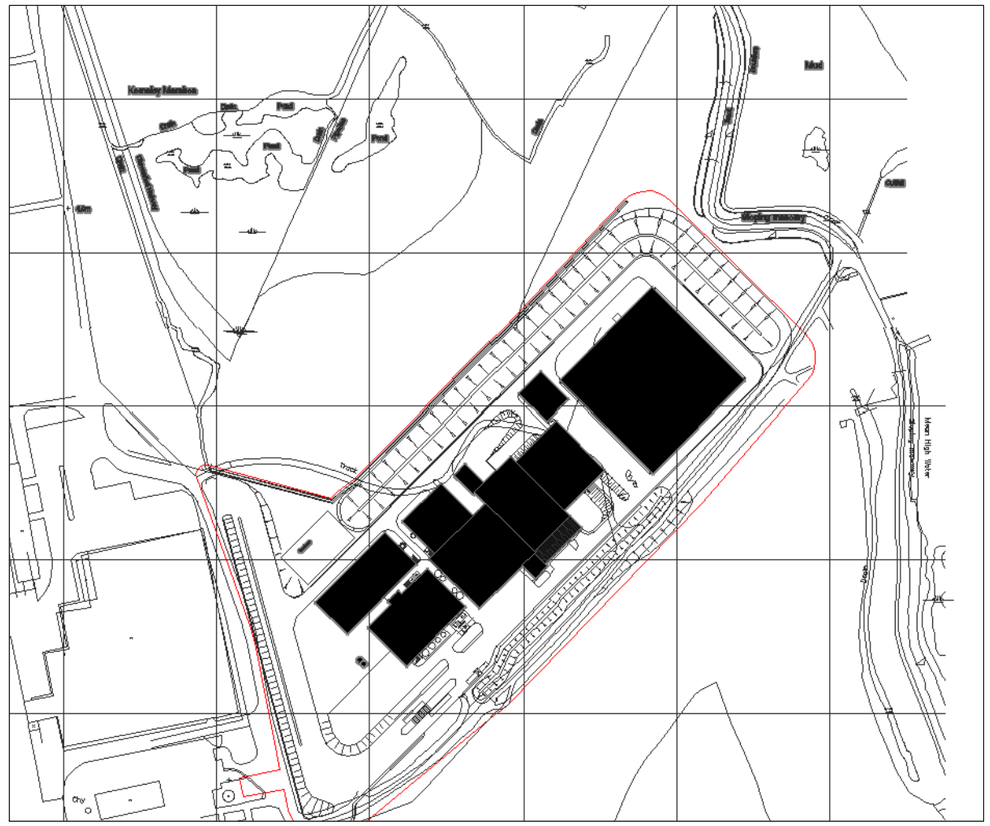
January 15th @ 09:00hrs (GMT)



January 15th @ 12:00hrs (GMT)



January 15th @ 15:00hrs (GMT)



January 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

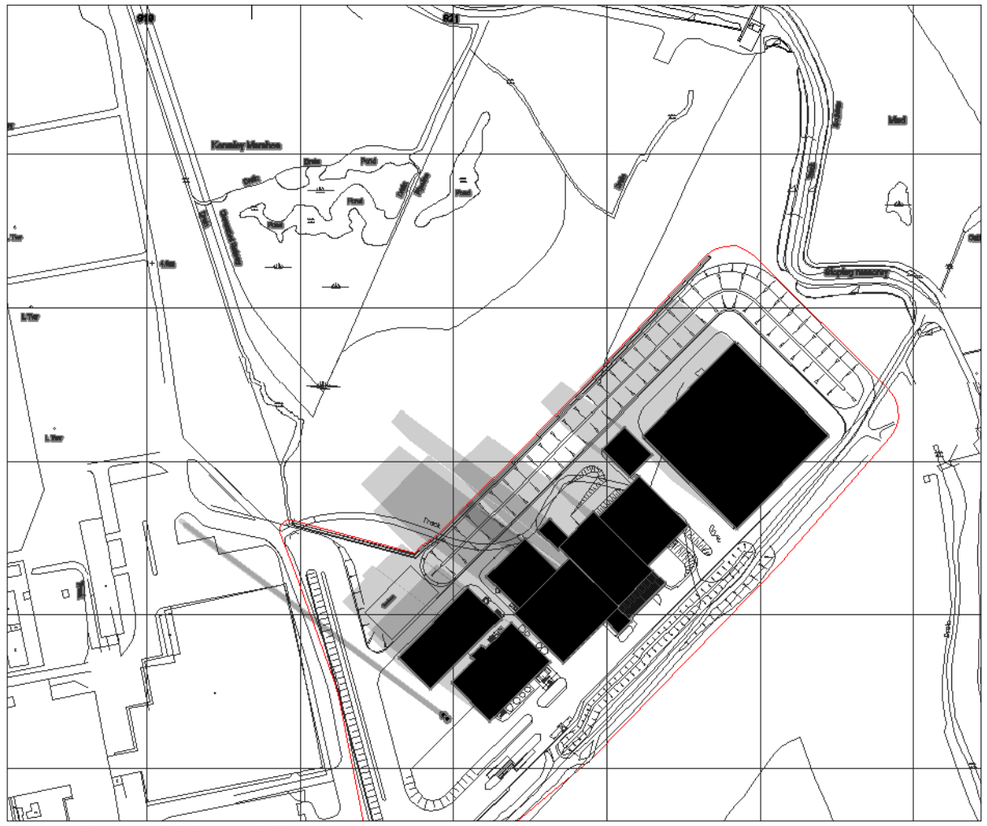
Title: SHADOW PLAN
Based on: January 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

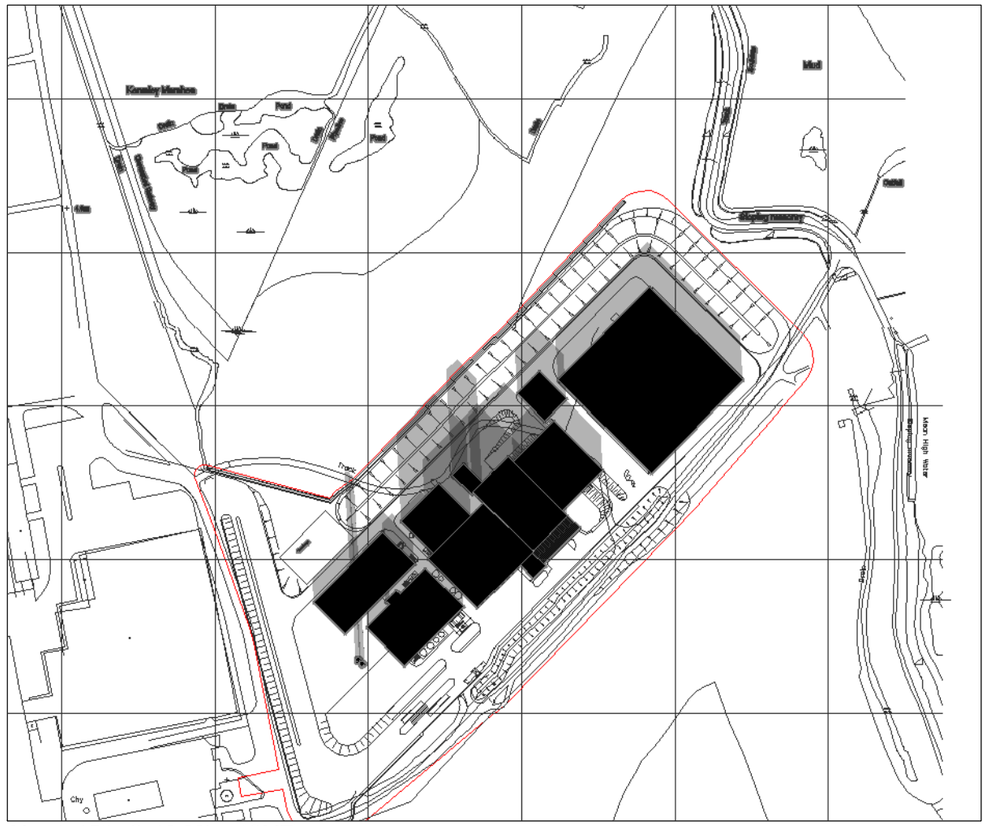
Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9a Rev: -

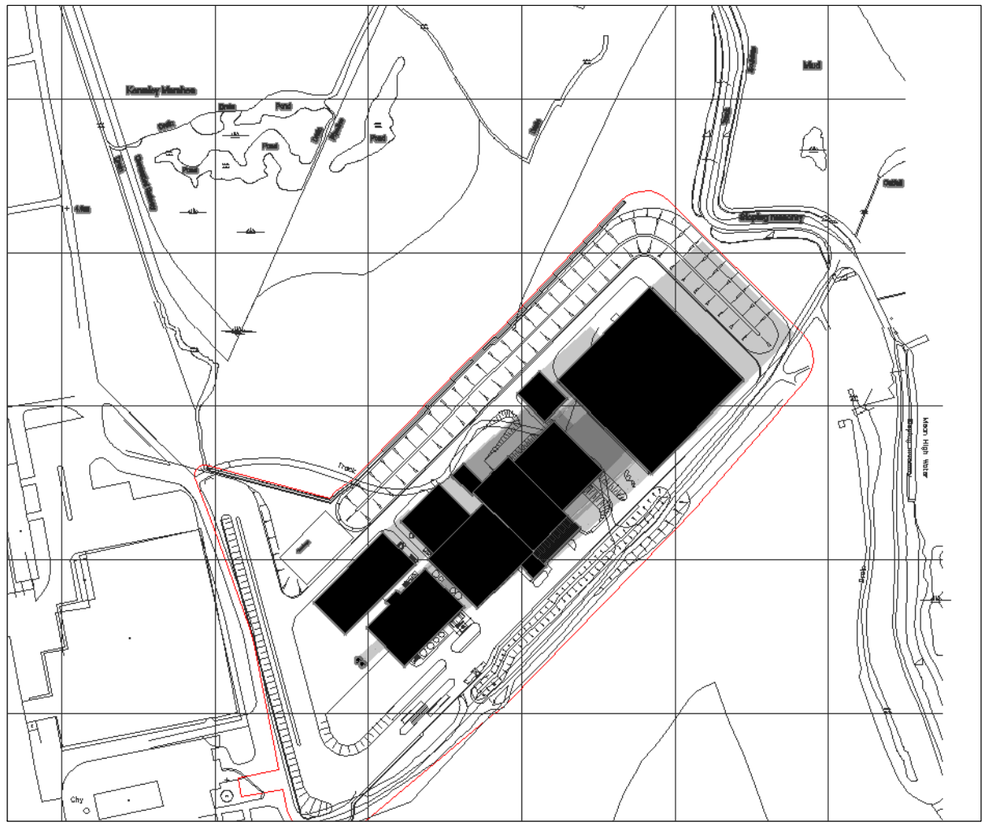
Drawing Ref: P:\1700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:22 AM



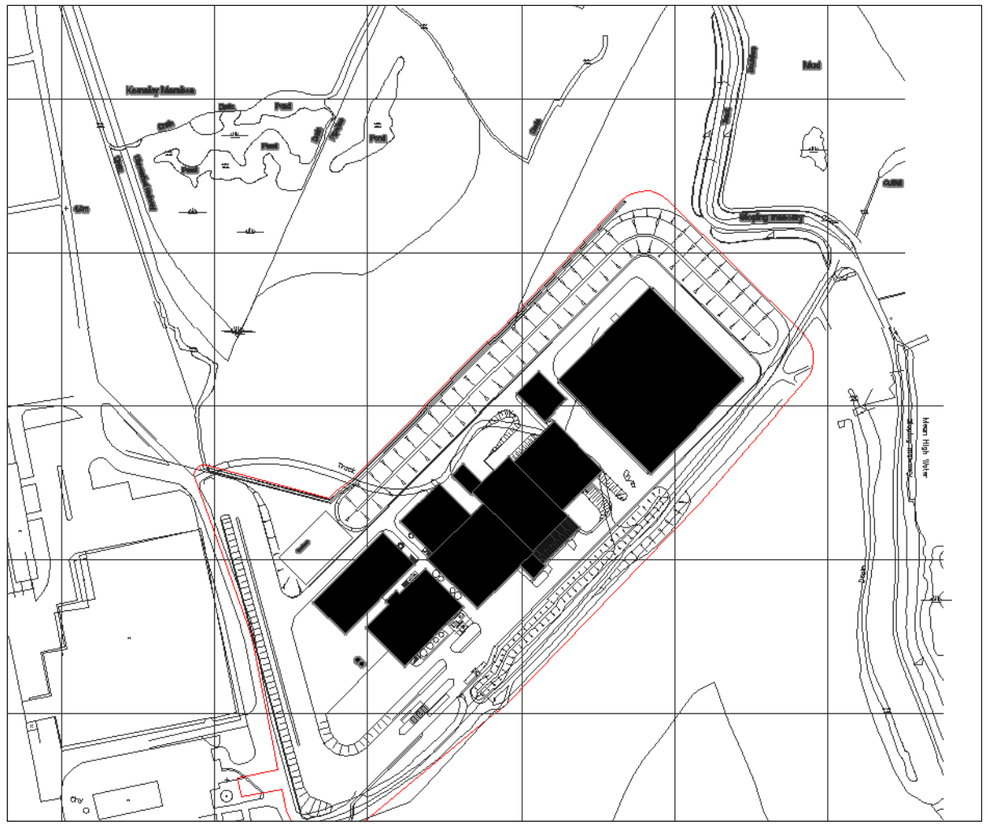
March15th @ 09:00hrs (GMT)



March 15th @ 12:00hrs (GMT)



March 15th @ 15:00hrs (GMT)



March 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

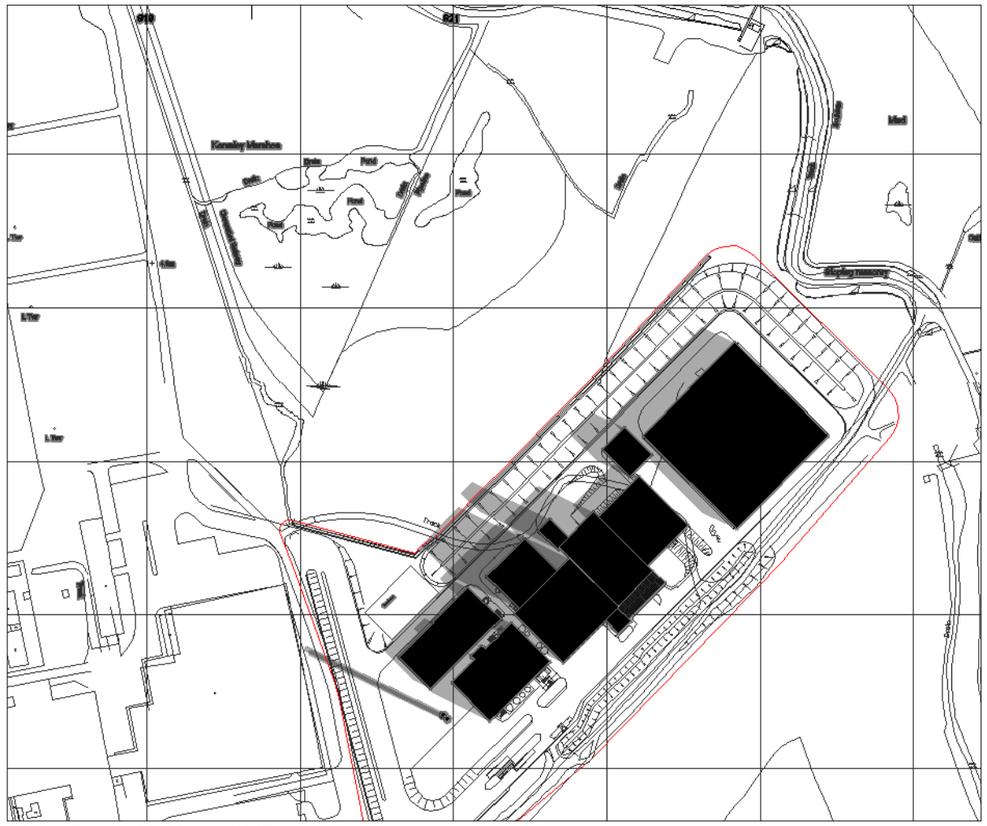
Title: SHADOW PLAN
Based on: March 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

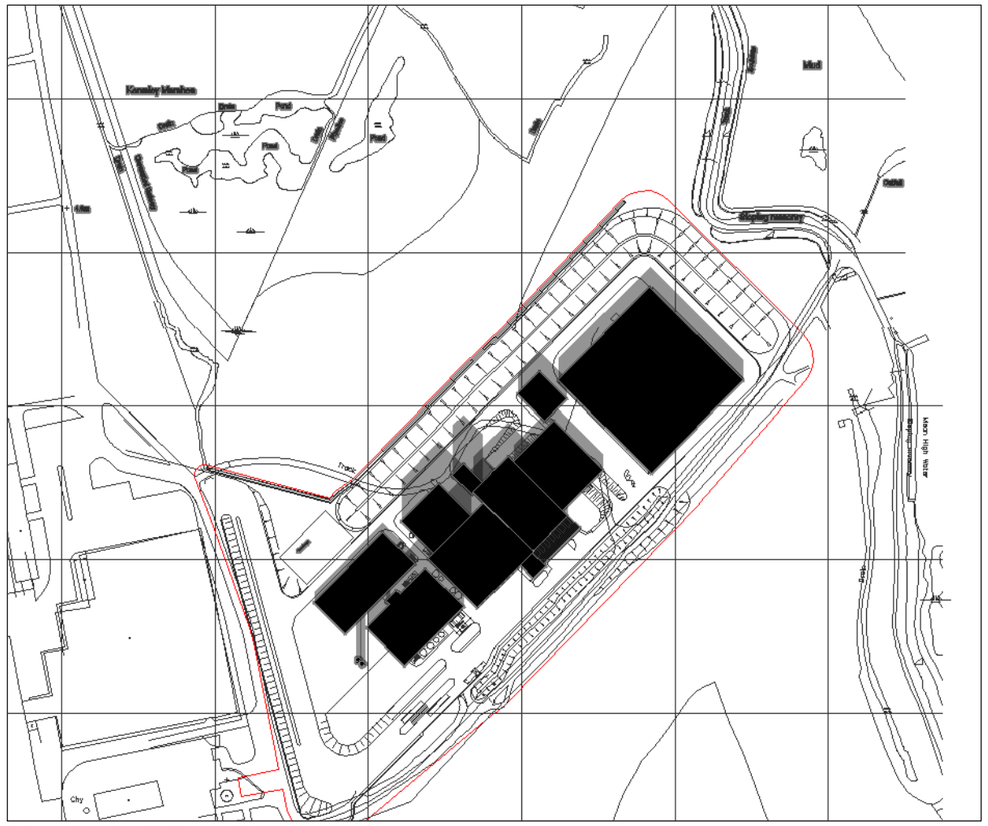
Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9b Rev: -

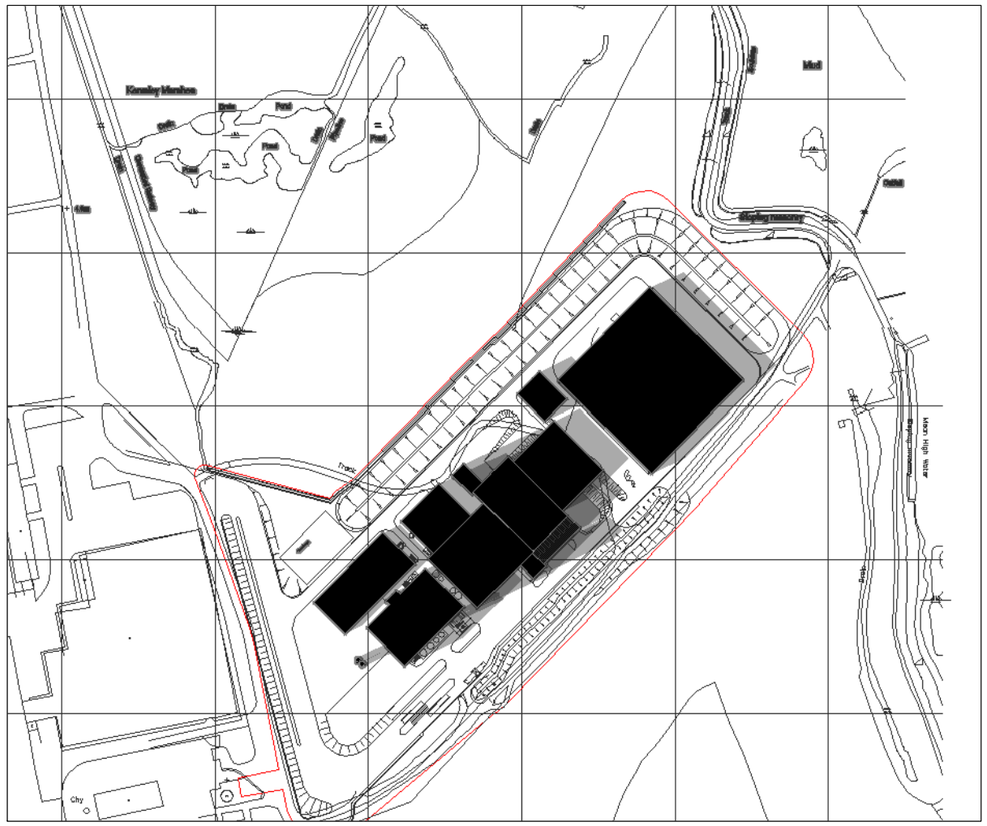
 Drawing Ref: P:\1700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:22 AM



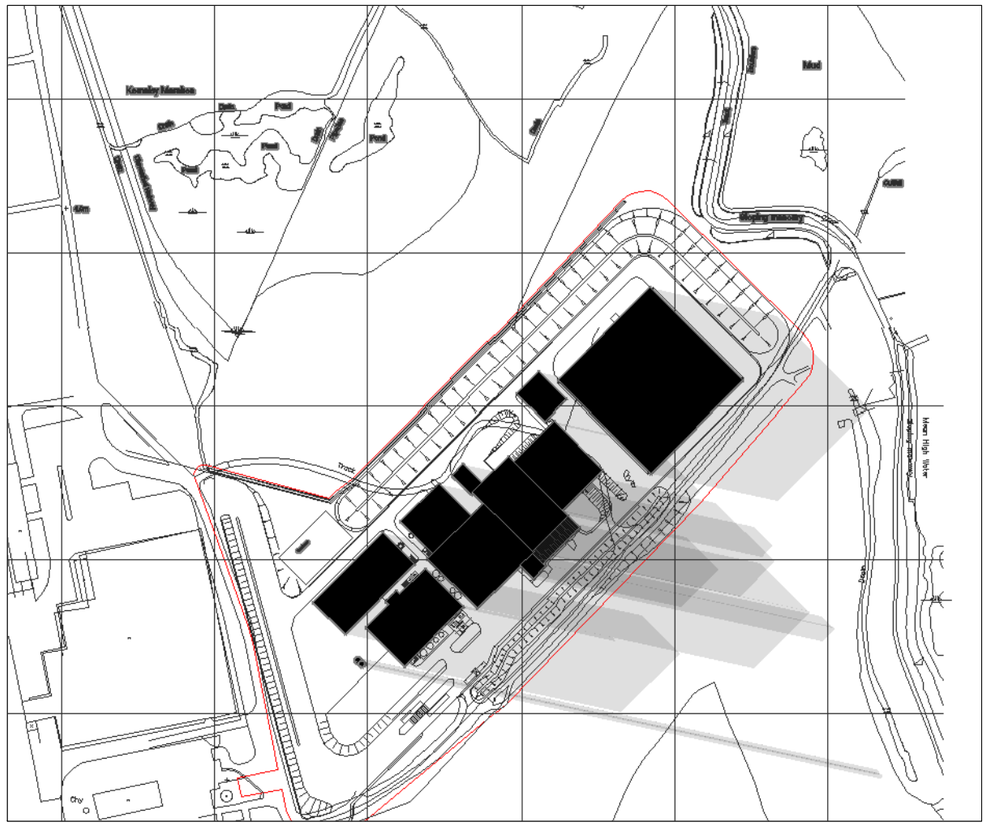
May 15th @ 09:00hrs (GMT)



May 15th @ 12:00hrs (GMT)



May 15th @ 15:00hrs (GMT)



May 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

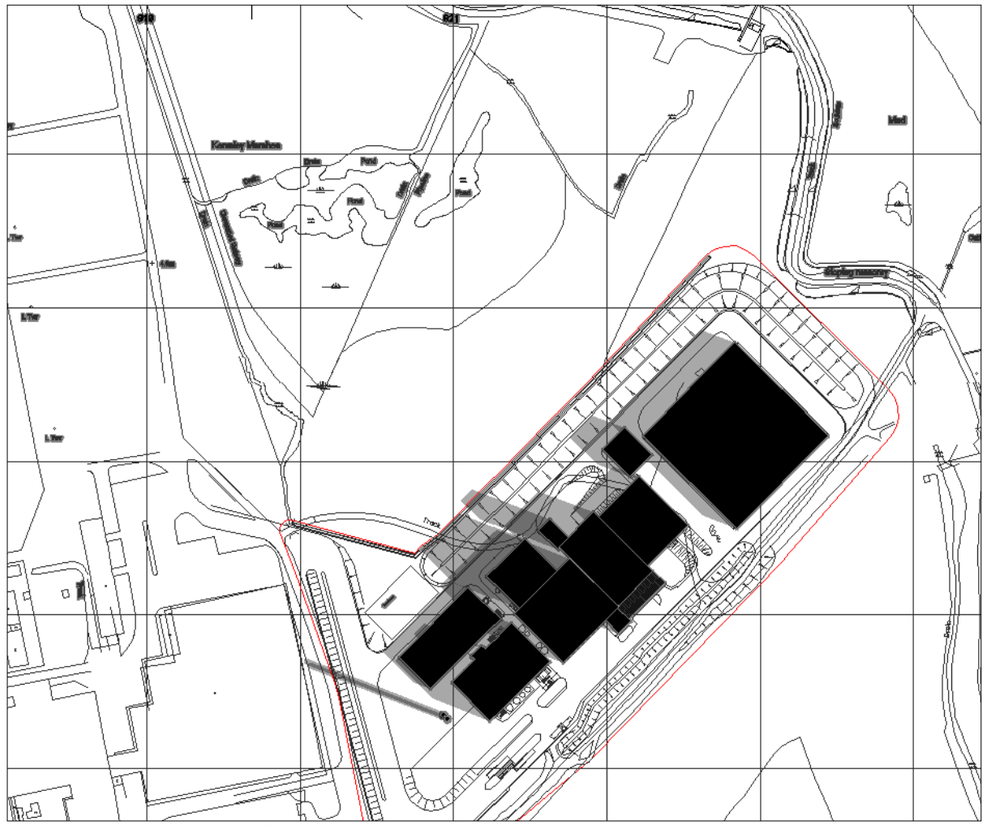
Title: SHADOW PLAN
Based on: May 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

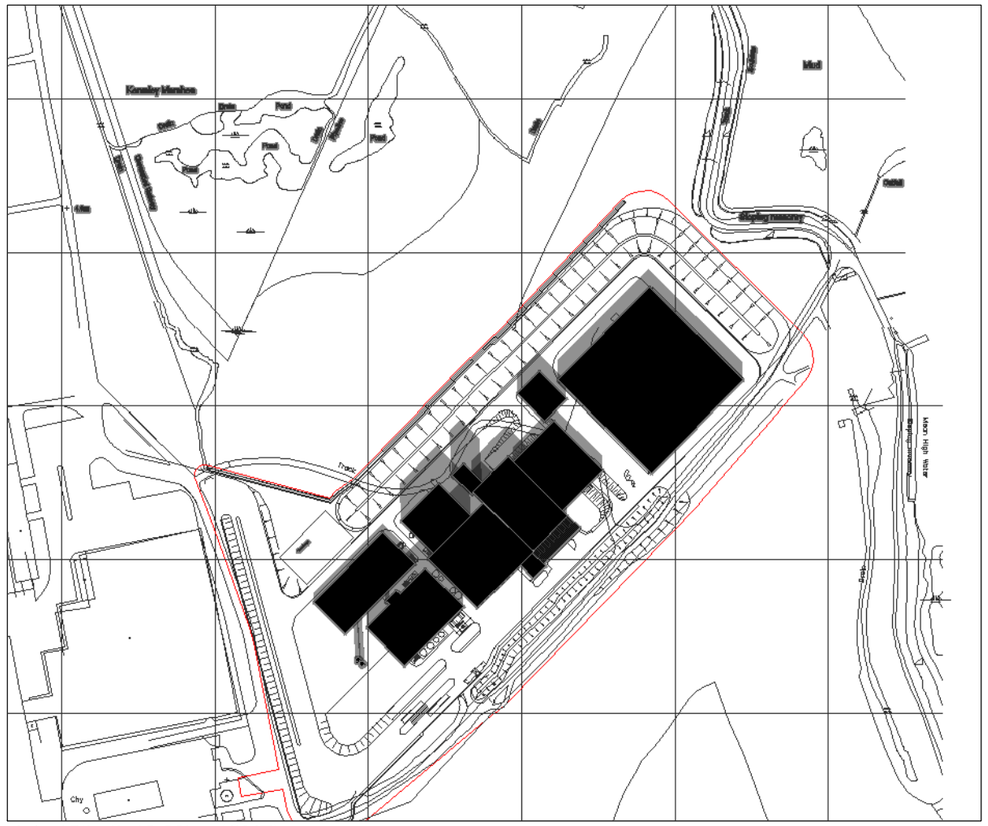
Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9c Rev: -

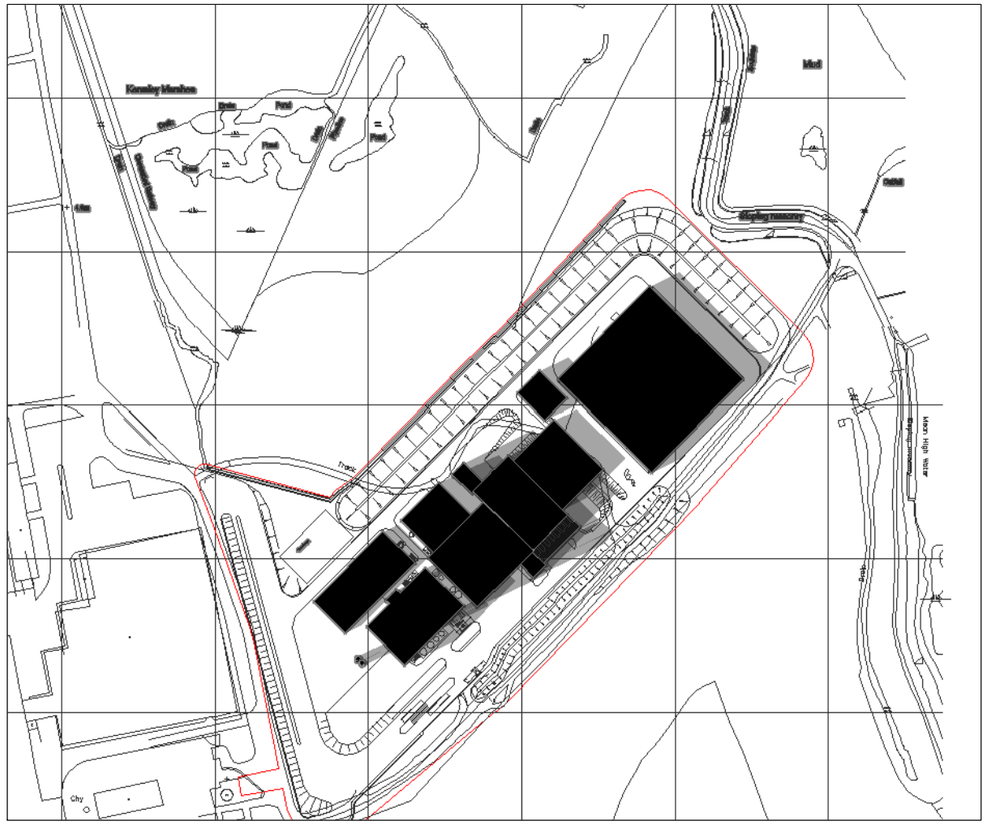
 Drawing Ref: P:\1700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:23 AM



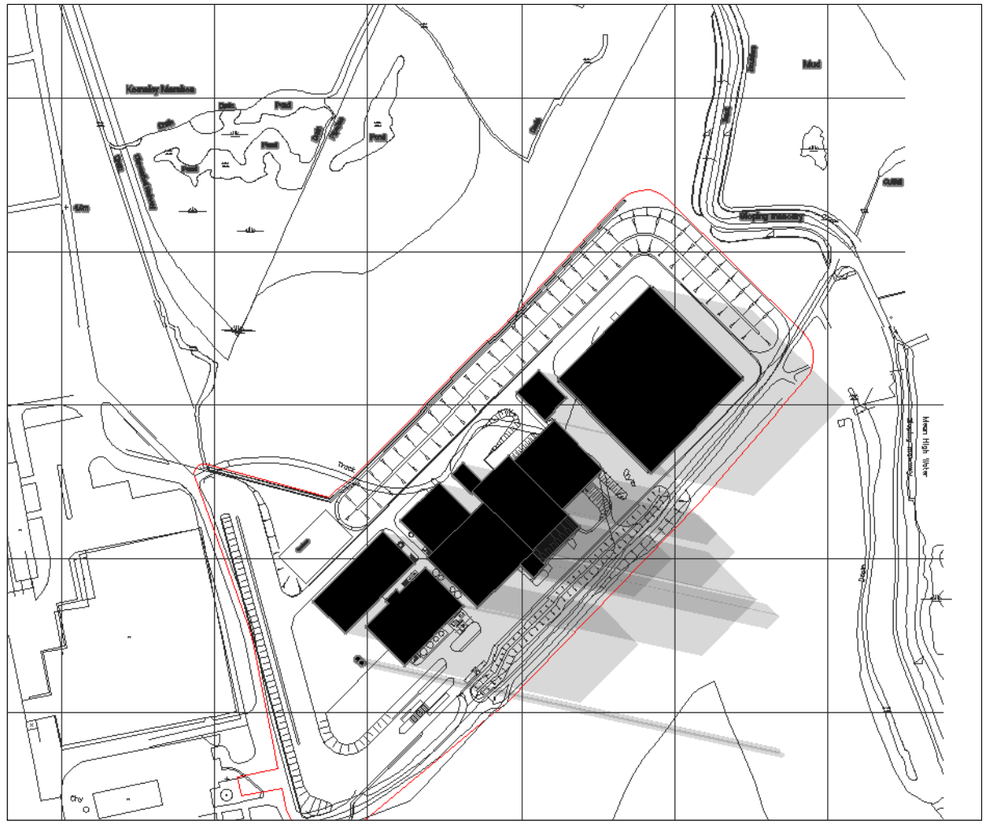
July 15th @ 09:00hrs (GMT)



July 15th @ 12:00hrs (GMT)



July 15th @ 15:00hrs (GMT)



July 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS

Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

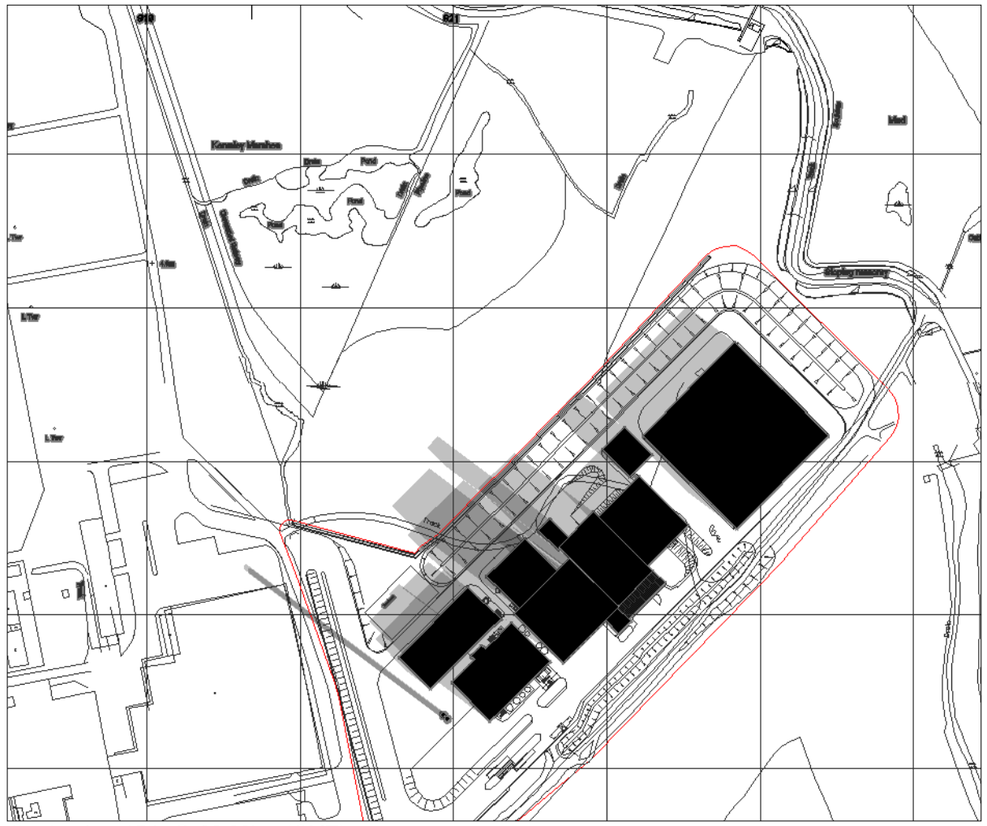
Title: SHADOW PLAN
Based on: July 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

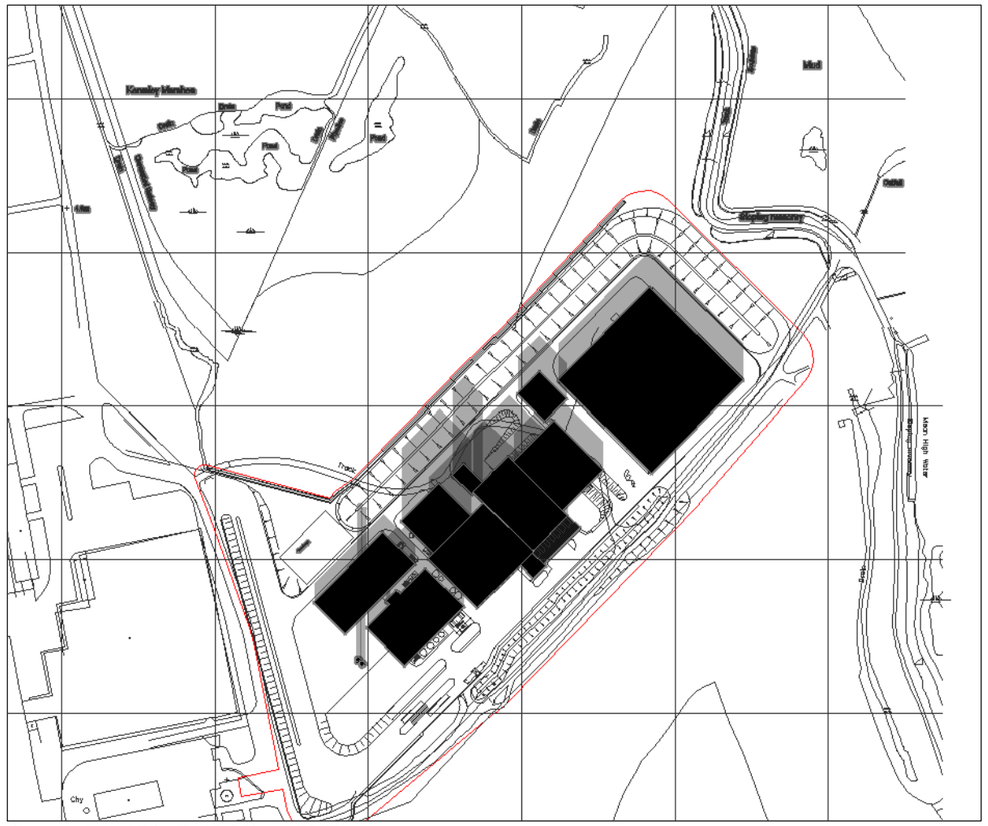
Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9d Rev: -

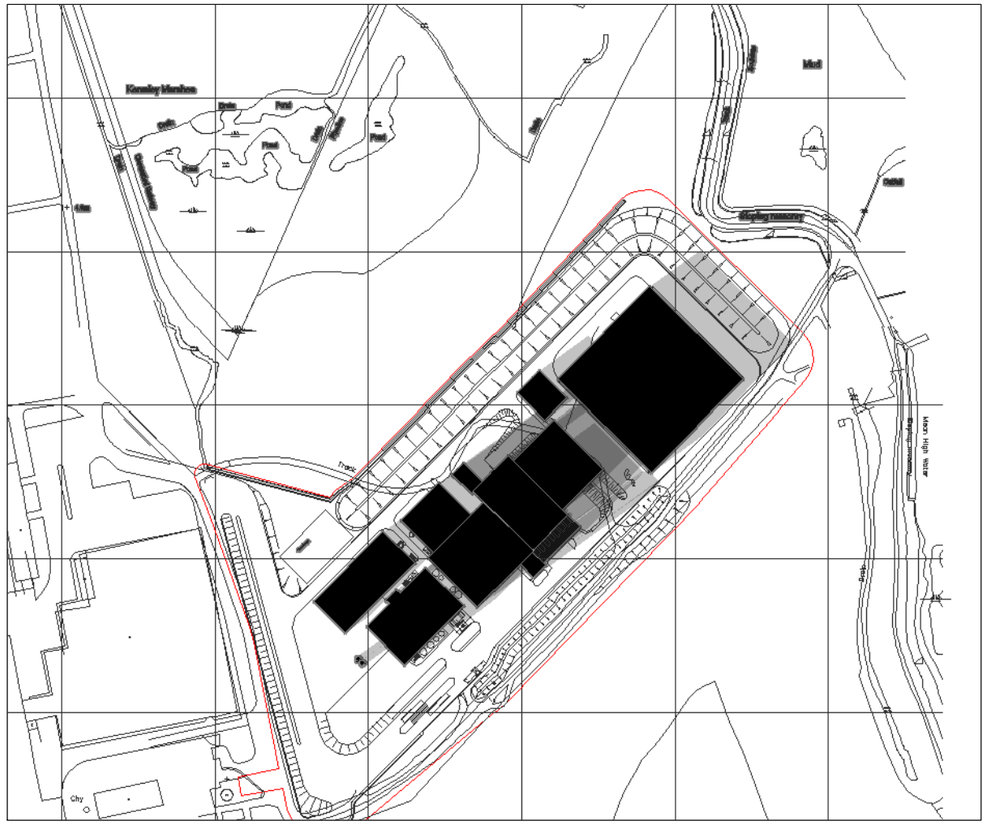
Drawing Ref: P:\1700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:23 AM



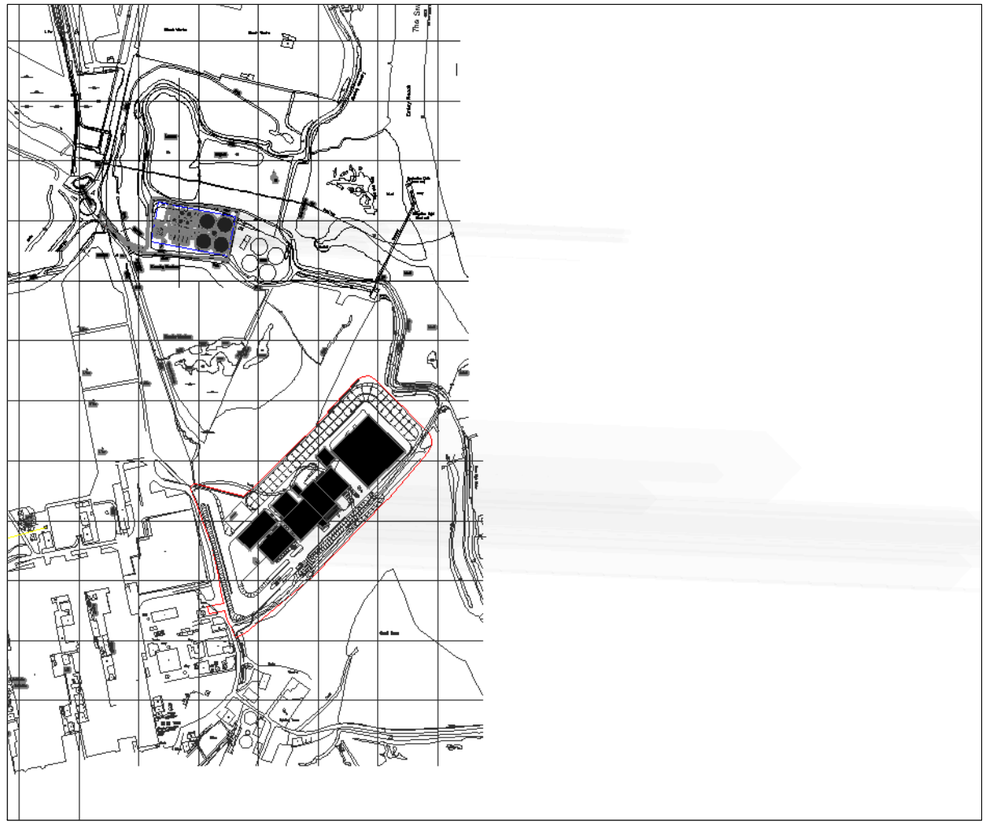
September 15th @ 09:00hrs (GMT)



September 15th @ 12:00hrs (GMT)



September 15th @ 15:00hrs (GMT)



September 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

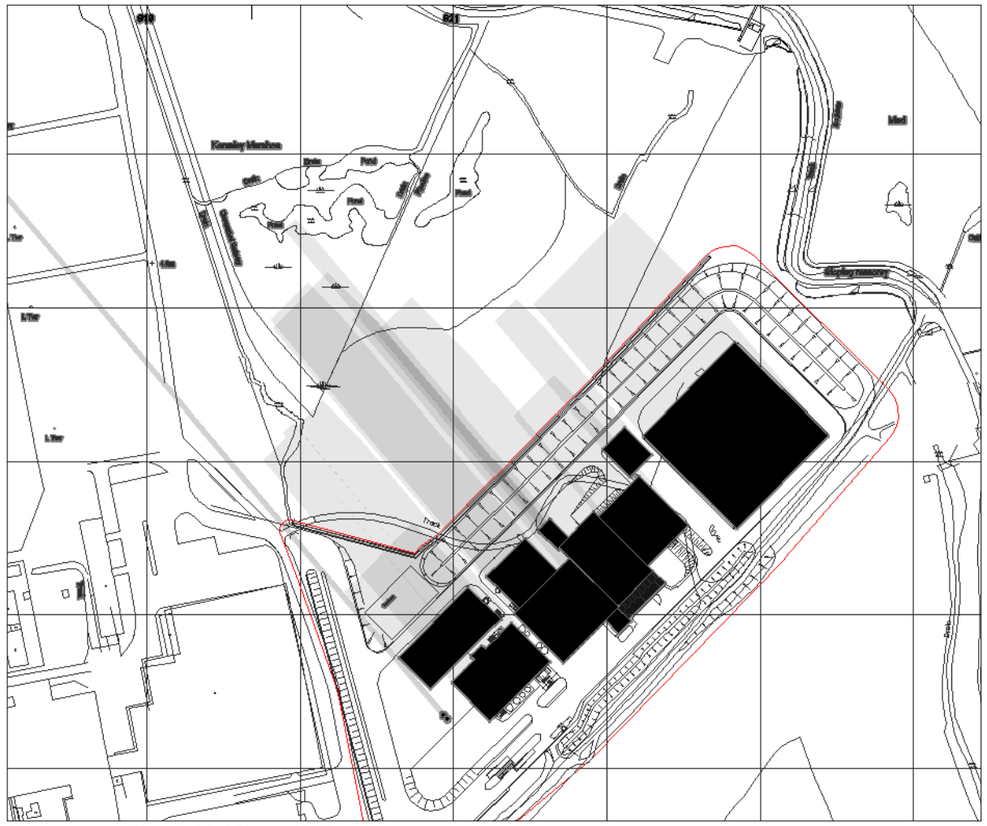
Title: SHADOW PLAN
Based on: September 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

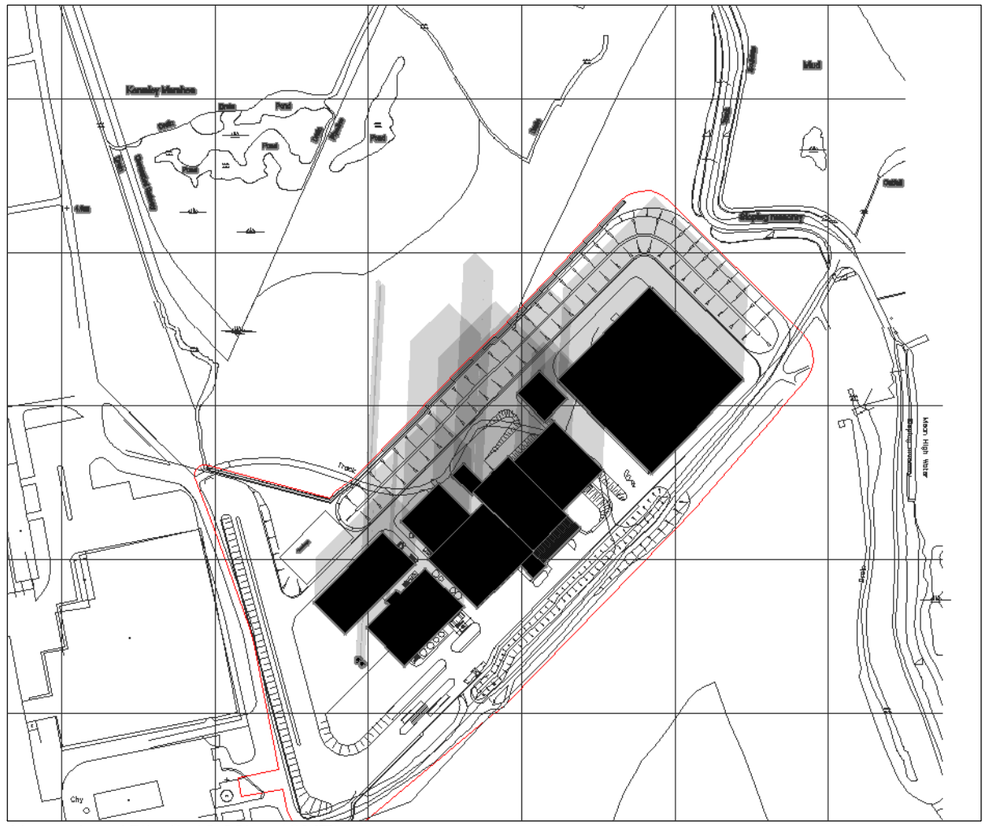
Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9e Rev: -

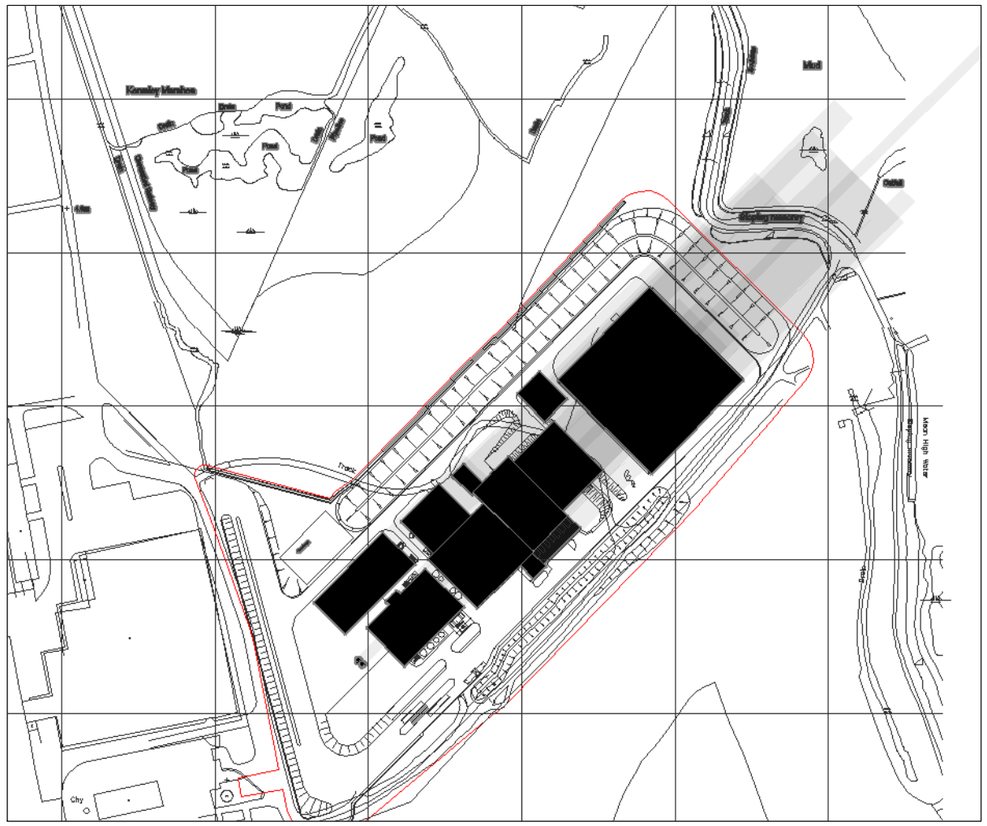
 Drawing Ref: P:\1700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:23 AM



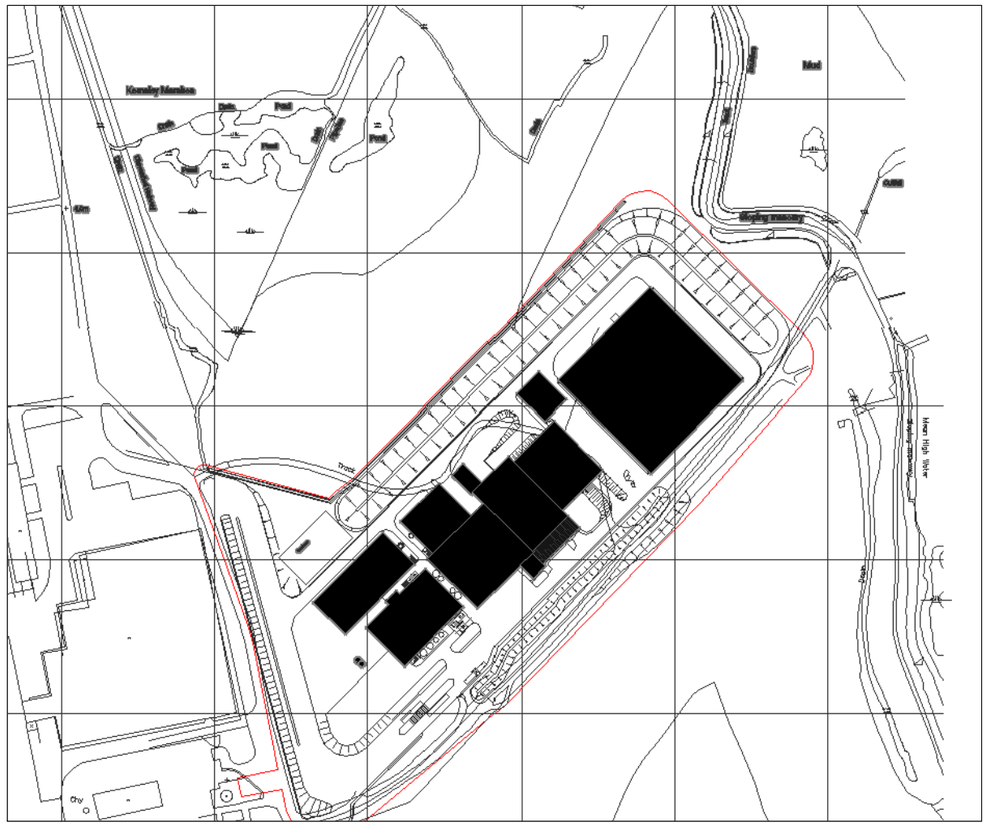
November 15th @ 09:00hrs (GMT)



November 15th @ 12:00hrs (GMT)



November 15th @ 15:00hrs (GMT)



November 15th @ 18:00hrs (GMT)

NORTH

Rev:	Date:	Amendment:	Name:	Checked:
.	.	.	.	.

Drawing Based Upon: OS data

Status: Information

Notes: Contractors are not to scale from this drawing. All dimensions to be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information given elsewhere must be reported to this office.
If in doubt, ask.

RPS
Lakesbury House Hiltingbury Road Chandlers Ford Hampshire SO53 5SS
T 023 80810440 F 023 80810449 E rpsso@rpsgroup.com W www.rpsgroup.com

Client: St Regis

Project: Kemsley Mill

Title: SHADOW PLAN
Based on: November 15th 2010

Date: Aug 2010 Scale: NTS Paper Size: A3

Drawn: SH Checked: NB Job Ref: JSL1744

Figure Number: 9f Rev: -

Drawing Ref: P:\11700 SERIES\JSL1744 - KEMSLEY AD EIA\SHADOW PLANS\1744_SHADOW PLANS.DWG Plotted Date: 9/7/2010 10:23 AM