Surrey Minerals and Waste Development Framework

# Surrey Minerals Plan 2011 Minerals Site Restoration

**Supplementary Planning Document** 

Part 2 (appendices to main document)

Adopted 19 July 2011



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Making Surrey a better place

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# **Surrey Minerals Plan 2011**

# Minerals Site Restoration Supplementary Planning Document

Part 2 (appendices to main document)

Date of adoption: 19 July 2011

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# **APPENDIX 1**

#### AFTER-USES

#### Introduction

There is a comprehensive range of literature produced by the minerals industry and environmental bodies providing technical advice and best practice on how to devise a restoration scheme for different specific afteruses. Appendix 2 provides a list of these guides. The purpose of this appendix is to consider the main group of after-uses

that are appropriate to Surrey and raise key issues that need to be resolved or addressed if that particular use is to be successful.

# AGRICULTURE AFTER-USE

#### Introduction

- A1.1 Agriculture has traditionally been the dominant after-use of mineral working in Surrey. However, there is now a trend away from agricultural restorations to pursue other after-uses. There will nevertheless be a continuing demand for agricultural restoration and agriculture after-use remains an important element in the restoration of mineral sites in Surrey. Where agricultural restoration is proposed applicants will be expected to demonstrate commitment to such a usage in their pre-application discussion and application documentation.
- A1.2 The following paragraphs identify the factors to consider before deciding on agriculture as an after-use and other considerations that influence the type of agricultural after-use scheme or that can be incorporated into a proposal.

# Is Agricultural Restoration Appropriate?

A1.3 In assessing a restoration proposal the MPA will need to assess whether an agricultural after-use is appropriate. Schedule 5, Section 4 (1(a)) of the Town and Country Planning Act 1990, requires DEFRA to state to the MPA whether agriculture is an appropriate after-use on all or part of the site. Applicants are therefore advised to consider the following factors in deciding whether to restore a site to agriculture.

CHECKLIST - Is agriculture restoration appropriate for the site?

- What is the Agricultural Land Classification (ALC) Grade or agricultural quality of the land?
- What is the existing use of the land?

- Was the site farmed in the past? If so what type of farming? (Mixed, arable, grazing, horticulture, dairy). If so, is it appropriate to recreate the use? Is it appropriate to the local landscape?
- > What is the current and anticipated future viability?
- Does DEFRA consider the site appropriate for an agricultural afteruse?
- What are the physical characteristics of the existing and proposed site such as local climatic conditions, soils and topography?
- > What is the access to the site like for farm equipment and livestock
- > What is the size of the site? Is it big enough to be practically farmed?
- Are there any environmental constraints such as land use designations close to the site?
- Has the land been designated for another land use in a statutory development plan or do any management plans or strategies suggest a particular use?
- What nature conservation benefits would the restoration to agriculture include?
- Would an agricultural after-use of the site be constrained by problems of trespass, crop damage or poaching of livestock?
- Would existing rights of way cause problems for an agricultural afteruse?
- Is agricultural restoration compatible with restoration methods proposed for the site? i.e. is the site to be filled and how? Is the site to be restored using controlled wastes? How will pollution control measures and drainage plans fit with an agricultural after-use?
- > What will the gradients of the restored land be?
- Will the filled shape and size be compatible with the needs of modern agricultural machinery?
- Are there sufficient soil resources of appropriate quality available for the agricultural after-use?
- Is the farmer / contractor experienced in growing the crops proposed?
- Is there a ready market for the crop?
- A1.4 If agricultural restoration is considered appropriate for a site applicants are advised to consult RPS Clouston & Wye College for the Department of Environment - Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture (1996).

# FORESTRY/WOODLAND AFTER-USE

# Introduction

A1.5 Forestry is defined in the 1990 Town and Country Planning Act as "the growing of a utilisable crop of timber." However as well as being a commercial use, productive woodlands can form a multi-functional land use combining timber production with recreation, nature

conservation and visual amenity.

- A1.6 Surrey is England's most wooded County and therefore restoration of mineral sites to primarily forestry or woodland uses is likely to fit with the landscape character of a number of sites in the County. However, forestry or woodland planting has not been a popular after-use in Surrey. This is primarily because commercial forestry is regarded as management intensive in the early years, and a use that will only provide economic returns for the long-term investor.
- A1.7 Given the diminishing need in Surrey to restore mineral sites to agriculture, the MPA are keen to encourage more forestry and woodland restorations, provided they are appropriate to the landscape and habitat character of the area. Forestry and woodland after-uses will be encouraged as the primary end use of a site and also as ancillary after-uses. The prospect of demand for biomass fuel, such as short rotation willow coppice, may encourage such afforested restorations.
- A1.8 In Surrey there is scope for afforestation of past landfill sites, in addition with a move away from landfill there are opportunities for the afforesting of mineral sites restored to a dry low level. One of the advantages of woodland planting as the after-use in these types of restoration schemes is that visually the woodland cover can hide sudden and unnatural changes in slope.
- A1.9 The following paragraphs outline the key considerations in deciding whether forestry/woodland is an appropriate after-use for a particular site and other issues which need to be considered in order to deliver a successful scheme.

# Where and Whether to Plant

- A1.10 It will not be appropriate to plant in all locations. The Future of Surrey's Landscape and Woodland provides guidance and advice on where, how and what species are most appropriate to plant. Applicants should also consult Surrey's Biodiversity Action Plan, in particular the Woodland Habitat Action Plan to see where there are any priority areas for woodland planting.
- A1.11 On all mineral sites, be they past, present or future working, operators are advised to assess the appropriateness of woodland planting against the following checklist.

CHECKLIST – Is woodland restoration appropriate for the site?

- > Was the site wooded in the past?
- > If so, is it appropriate to recreate the woodland?
- What is the local landscape character and species composition of existing local woodlands?

- Would the planting of woodland benefit other uses and activities that are proposed as part of the restoration scheme?
- Would the planting of the site or parts of the site help to provide habitat corridor linkages?
- Would planting of the site or parts of the site provide screening, mitigating future extraction on other parts of the site or on adjoining sites?
- What form of woodland planting would be appropriate to the site to secure the best landscape fit and reflect the character of the site's location? Restoration planting of woodland in the form of shaw, hedges, field and parkland trees should be guided by the typical form in which they appear locally. Detailed advice on the appropriateness and form of new forest / woodland planting for the different landscape character areas of Surrey is provided in the Future of Surrey's Landscape and Woodlands – Part 3 pp77-82
- What are the Forestry Commission's views on forestry / woodland as an after-use on the proposal site?
- What nature conservation benefits would the restoration to forestry include?
- > Does the site lie within an airport safeguarding area?
- Could woodland planting link up existing fragmented woodland blocks?
- A1.12 The following paragraphs outline key issues that any forestry/woodland restoration scheme must address

# Soil preparation

A1.13 The latest best practice guidance on soil preparation for woodland restoration is provided in the former DETR's "Soil Forming Materials their use in Land Reclamation" and further information can be found in the Forestry Commission Bulletin 110 "Reclaiming Disturbed Land for Forestry". The key principle for restoration for tree planting is to have no less than 1 metre of soil or soil forming material "loose-tipped". Ripping sites after compaction is no good. NB. If the site is compacted for some reason, it should be cultivated to 1 metre using a mechanical excavator.

# Species choice and planting design

- A1.14 A crop of non-native conifers is more likely to provide a financial return than native broadleaves. However, in Surrey the promotion of large areas of non-native conifers is unacceptable from both a landscape and habitat perspective. Mixtures including conifers, which are removed before they dominate the native broadleaved trees, are deemed acceptable if they are appropriate to the surrounding landscape.
- A1.15 The eventual aim in restoring to native broadleaved woodland is to create a habitat and feature which reflects the landscape character of the surrounding area, is composed of species found in mature woodlands of

the area and has a high degree of natural ecological functioning. Guidance can be found in Surrey County Council's "Future of Surreys Landscape and Woodlands" Parts 2 & 3 on species planting. However, to improve planting success and ecological functioning on "young" restored soils the use of a nurse crop of pioneer species may be appropriate.

A1.16 The seed origin of all the above species should be local or from southern or eastern England, as they are more adapted to drier conditions than plants of a northern or western provenance. The maximum distance between plants should be 3metres. If the site is located within airport safeguard zones, then both the species mix and planting spacing may need to be amended, having regard to other parameters. Up to 20% open space in the form of rides and glades should be allowed for and managed in accordance with Forestry Commission Bulletin 123 "Managing rides, roadsides and edge habitats in lowland forests."

# Protection and aftercare

- A1.17 Rabbits and roe deer are found throughout the county and are a serious threat to young trees. All planting should either be protected by fencing to the specification outlined in Forestry Commission Bulletin 102 "Forest Fencing." for roe deer/rabbits or by individual well staked tree tubes of a minimum height of 1.2 metres. All protective measures need to be inspected regularly, particularly fencing which should be checked at least weekly. All damage to protection measures should be rectified immediately. Because of this serious threat the aftercare period is likely to be a minimum of 10 years but more likely 15 years, and may require long-term management plans.
- A1.18 A 1 metre diameter spot should be maintained weed free around each plant for at least 5 years or until all the trees are growing at least 15cms/year. This may require a twice-yearly weed control. Control of vigorous shrubs such as gorse or broom may be required to prevent them swamping the new plantings.
- A1.19 When the oaks and beech have grown to approximately two metres in height, they should be formatively pruned to promote a single leading stem as outlined in Forestry Commission Handbook 9 "Growing Broadleaves for Timber" Particularly where conifers have been used in the 'pioneer' mix, the groups of 'mature' mix trees must be maintained with adequate light to grow. This will mean an occasional thinning of the 'pioneer' mix around them.

# NATURE CONSERVATION AFTER-USE

# Introduction

A1.20 There is considerable opportunity and scope for the minerals industry to

make contributions to conserving and enhancing Surrey's nature conservation interest through restoration led schemes.

- A1.21 New legislation and biodiversity action programmes aimed at species and habitat management and protection have raised awareness and created opportunities for mineral led restoration to contribute to nature conservation after-uses. PPS 9 requires developments, no matter what their stated end use, to demonstrate their contribution to biodiversity.
- A1.22 The RSPB's MIRO funded project 'Nature after Minerals' provides invaluable advice on its website www.natureafterminerals.com
- A1.23 This section indicates the types of species and habitats that are appropriate to nature conservation after-uses in Surrey.

CHECKLIST - Is nature conservation restoration appropriate for a site?

- > What is the existing use of the site?
- What are the characteristics of the existing site and proposed restored site?
- What habitats could be created on the site? Are these appropriate to the location?
- > Can the site provide an important link to existing habitats?
- > What are the land use designations on or adjacent to the site?
- Is the site on or near sites identified within a Local Biodiversity Action Plan or Habitat Action Plan or where the potential to meet habitat and species restoration targets is high?
- > Does the site lie within, or close to a BOA?
- Is the area currently lacking in wildlife sites and do local communities have few opportunities for direct contact with nature?
- Is the site designate for nature conservation restoration in a statutory development plan?
- What does Natural England and Surrey Wildlife Trust think of the scheme?
- > Does the site lie within an airport safeguarding area?
- A1.24 The following paragraphs outline key issues that any nature conservation restoration scheme must address

# Protection of Existing Important Habitats and Features

A1.25 At the start of the design process all existing important habitats and landscape features within the proposed development site should be identified and protection measures identified during working and restoration phases. Special efforts should be made to protect the most fragile, sensitive or threatened habitats or species and to ensure that no further fragmentation or impacts occur.

- A1.26 Translocation of habitats should be seen as a last resort and will only be justified if they are important habitats, and as such they should be retained. For European sites there is a statutory requirement for compensation for loss or damage and species protection to be gone through before development can be contemplated.
- A1.27 If loss of some habitats or features is unavoidable this should be compensated for, wherever possible by creating a similar habitat type or expanding a higher priority one already associated with the site.

# **Appropriate Habitat Creation and Species Selection**

A1.28 Consideration needs to be given to the appropriate type of habitats to create and species that are to be attracted. As a general rule new habitats should be designed to complement current habitats wherever possible, to ensure the right physical conditions for their establishment and maintenance.

#### Habitat Types in Surrey

A1.29 Certain habitats will be applicable to certain parts of the county as the table below summarizes.

Regional Landscape Character Areas	Woodland	Heathland	Farmland	Chalk Grassland	Wet Grassland	Marsh	Open Water
Thames							
Valley							
North							
Downs	_		_				
Wealden							
Greensand	-	-	-				
Thames							
Basin							
Lowlands							
Low							
Weald							

A1.30 The minerals industry has a significant contribution to make to the following habitats in Surrey:

**Woodland** - Schemes should consider whether there are opportunities to provide woodland planting to either bolster or link existing woodland habitats together. It would be expected that where existing blocks of woodland adjoin a site provision would be made. This provision could include both hedgerows and shaws.

**Wet Woodland or Carr** - Schemes should include wet woodland or carr, particularly in low level, flooded or silt lagoon restorations. **Heathland** - In the Wealden Greensand opportunities for heathland creation may exist. Lowland heathland in Surrey has declined by 85% since 1762. Consideration should be given to this form of restoration where the area was formally heathland, or where it adjoins or provides linkage to existing heathland.

**Chalk Grassland** - A number of chalk workings exist, mostly small scale and left abandoned. Workings at Betchworth and Oxted are in the process of restoration to chalk grassland habitats. Once sites are restored, there is a need for an appropriate post restoration grazing regime to maintain the chalk grassland habitat.

**Farmland** - More environmentally friendly farming regimes can be created on indent restored sites in terms of field boundaries, headlands, ditches and ponds etc

**Wet Grassland** - also known as floodplain grazing marsh, has declined to 40% in the last 60 years. There are considerable opportunities in the County, particularly in the Thames Valley and parts of the Greensand such as Nutfield Marsh for the creation of such habitat on the back of mineral restoration. Criteria are: -

- > Sites should have been floodplain grazing marsh in the past
- > Adjacent to existing areas of floodplain grazing
- Link fragmented areas of such habitat
- Be viable grazing units either in their own right or in conjunction with other land
- > Should not destroy other habitat such as fen marsh

NB. There is potential to use many of the Thames Valley grassland SSSI sites as seed sources for such grassland restoration schemes.

**Fen Marsh and Swamp** - Considerable opportunities exist to create fen marsh or swamp habitat, particularly as extensive fringes to lakes and lagoons. Silt lagoons can be used to promote the natural colonisation of such habitats. In addition, sites where fill material is scarce and the water table is high should also be considered for this type of habitat creation. These sites require long-term management to prevent successional colonisation by willow etc.

**Open Water (including large reed beds)** where mineral excavation takes place in areas of high water table in Surrey, open standing water type restorations and habitats are common.

The lakes and lagoons of flooded mineral workings across the county already make a major contribution to this habitat type. For example, in the Thames Valley, open water sites are of international importance and contribute to the South West London Reservoir and Gravel Pits SPA/RAMSAR designation of the area. Surrey open water sites are internationally important for two duck species, shoveler (anas clypeata) and gadwall (anas strepera) and are nationally important for pochard (aythya ferina), tufted duck (aythya fuligula), smew (mergus albellus), great crested grebe (podiceps cristatus), coot (fulica atra) and cormorant (phalacorax carbo).

Future open water restoration schemes will be expected to contribute to

the above mentioned strategy, designated sites and species, where possible. Surrey aim to create a complex of water bodies (lakes and lagoons) that fulfill a supportive role to each other, ideally filling gaps to create a corridor or chain of open water features.

There are also opportunities for reedbed creation as part of restoration schemes in Surrey. The Government's biodiversity targets for open water seek to create large reed beds of 20 hectares and above, principally located in South East England. Traditionally extensive reed beds of this scale do not exist in Surrey, but the creation of smaller (9-10 hectare) chains of reed beds may be more appropriate along river valleys.

**Bare Ground.** Is a much neglected habitat, but supports a range of specialist species, as well forming an important mosaic in association with other habitat types. By its nature, mineral extraction is uniquely placed to contribute here.

During the working of a site, various temporary or potentially transient habitats may be created. These can be managed appropriately during the operational life of the site, and on occasions it may be appropriate to incorporate such features into the final restoration design.

#### Species

Any nature conservation after-use scheme will not only need to consider the habitat that should be created or restored, but also the species that are suitable for that habitat and the area. The following paragraphs consider species selection criteria for Surrey.

**Species - Fauna** - It should be noted that there are a number of key species that are targeted both nationally and on a countywide level for specific action. These are detailed in the UKBAP, Surrey BAP, HAPS and SAPs. Nationally, individual companies are championing or sponsoring individual species and it is possible that this approach could also be undertaken at a local level.

**Species - Flora** - Wherever planting is undertaken it is expected that species selections will reflect species indigenous and appropriate to the area and that are also locally sourced. The UKBAP, Surrey BAP, HAPS and SAPs should be consulted to find out the appropriate species to plant for different parts of the County and for particular habitats and to ensure that inappropriate species are not used. Advice can also be sought from both Surrey County Council's Enhancement / Restoration Officer & Ecologist.

**Species - Alien -** Landowners and operators should control alien species at an early stage before both the problem and the cost escalate. Plantlife, the national charity concerned with the conservation of Britain's flora have produced a list of invasive alien plant species, while the Environment Agency also produce leaflets and guidance from both animal and plant species. Plant species of particular concern are:

Crassula helmsii (Australian SwampStonecrop/New Zealand Pygmy Weed) Azolla filiculoides and Azolla caroliniana (Water Ferns) Myriophyllum aquaticum (Parrots Feather) Fallopia japonica, synonym Polygonum cuspidatum (Japanese Knotweed) Impatiens Glandulyfera (Himalayan Balsam) Heracleum mantegazzianum (Giant Hogweed) Hydrocotyle ranunculoides (Floating Pennywort) Galega officinalis (Goat's Rue)

Operators will be required to avoid restoration designs that produce ideal habitats for introduced species such as Canada geese, particularly within airport safeguard zones. The control of terrapins, signal crayfish, some alien amphibians and American mink will also be supported. Published restoration handbooks provide guidance on how to avoid the creation of features to suit such species.

#### **Colonisation and Succession**

A1.31 A constant dilemma in land restoration for nature conservation purposes is just how far to restore, and how much to leave to natural processes of colonisation and succession. In Surrey, past restoration experience on sites that have been left partly unplanted, has been that the ecological value of natural colonisation has proved richer and more diverse than the species range that would have been chosen as part of a planted scheme. Therefore it may be appropriate through careful design, to leave areas to colonise. However it is recommended that areas that are left be effectively screened by frameworks of hedgerow or woodland planting to mitigate any adverse visual concerns, in the early stages of colonisation.

#### Design and Layout of a Nature Conservation Site

A1.32 The careful design and layout of a site restored to nature conservation are also important to the success of the scheme. Landscape features and informal green spaces should be designed in such a way that they have wildlife value wherever possible. Similar habitats can be linked to avoid fragmentation using green corridors such as hedges. A carefully designed layout can protect and discourage residents to reach important habitats and species that are particularly sensitive to disturbance. Buffers, boardwalks or informal paths can be used to protect areas and manage public access. The layout of the scheme should encourage public access to less sensitive areas. Access, interpretation and educational use should be planned positively so that the area adds to the quality of life of residents, but avoids conflict with the nature conservation after-use.

#### **Earth Science Conservation**

A1.33 A significant number of Surrey's protected earth science sites (both Geological SSSIs and RIGs) originate from mineral working. Consideration should be given to preserving suitable geological exposures or features. Whilst it is not appropriate to permanently preserve all exposures, opportunities for RIGs Groups and other interested parties (often academia) to record exposures as they occur during the working of a site, should be encouraged.

# **RECREATION AFTER-USES**

#### **Introduction Local Considerations**

A1.34 Surrey's proximity to London and its own densely populated area generate a high demand for recreation. Mineral site restoration, particularly around the urban fringe, provides considerable opportunity to meet both informal and formal recreational and sporting needs.

CHECKLIST - Is a recreational restoration appropriate for the site?

- > What is the existing use of the site and surrounding land?
- Is there a demand for the recreational activity? Consult Sport England, Rights of Way Officers, the district council leisure department on the demand for the particular after-use and the requirements of such an activity.
- What is the development plan policy regarding formal and informal recreational uses?
- > Will the after-use require built facilities?
- > Will the after-use generate traffic and demand for parking?
- > Will the after-use be noisy or visually intrusive?
- > Will the after-use be able to incorporate new rights of way?
- > Will the after-use be available to local people?
- Are there grants or funding available consult Sport England, Lottery officers, the district council and the National Playing Fields Association?
- Will the after-use require a particular landform to be created as part of the site restoration?
- > Will it conflict with other after-uses, such as nature conservation?
- A1.35 In Surrey mineral sites and their restoration tend to be located in the countryside, therefore the provision of recreation and sport as an after-use needs not only to consider the demand for the particular selected after-use, but also its suitability to the location and its environment. Sport and recreation provision in the countryside should have regard to and be promoted in harmony with the needs of the local community, other uses such as agriculture and forestry, and the need to conserve and protect the character and habitats of the very area people come to visit. In

the Green Belt, building or facilities associated with recreational afteruses must be essential and small-scale.

A1.36 In the Surrey Hills Area of Outstanding Natural Beauty recreation demand should only be met insofar as it is consistent with the conservation of the natural beauty and the needs of agriculture, forestry and other uses. Surrey Hills AONB Management Strategy should be consulted before any after-use is pursued in this designated area.

#### Identifying the Specific Recreation After-Use

A1.37 The restoration led mineral planning approach requires applicants to identify the specific recreational use for a site at the outset of the project so that the restoration scheme can be clearly targeted to meet that proposal. It is not sufficient to say that a wet restoration will be for a water recreational after-use because the creation of a water body for water borne recreation will vary in its design according to the specific use it is intended for. The requirements and design for a competitive rowing course are very different from that of sub-aqua diving.

#### Scope for Recreational After-Uses in Surrey

A1.38 The following tables consider the scope for providing various formal and informal recreational uses in Surrey, as part of restoration schemes.

Use	Scope for Provision	Issues
Playing	Some scope	More appropriately located in the
Fields	Consult District	urban area or urban fringe. Playing
	Council Leisure	fields have a high specification
	Departments	standard and can be expensive to
		construct. Consideration could be
		given to artificial surfaces on former
		sites particularly where amelioration
		or enhancement is required.
Golf Courses	Surrey is extremely	Opportunities for creating
	well provided with	challenging golf course designs exist
	such provision, to the	with mineral restorations.
	extent that courses are	
	now closing.	
	Consult District	
	Council Leisure	
	Departments, Surrey	
	County Council Golf	
	Guidelines and the	
	County Council's	
	Rights of Way Group	
Dry Ski	Limited	Usually requires a substantial site,
Slopes	Consult Sport	where preferably where there is a

# FORMAL RECREATION AFTER-USES ON DRY RESTORATION SITES

	England	significant topographical form. The visual intrusion of infrastructure and cabling required needs to be considered. Dry low-level restorations may provide this screening. Moves away from landfill may mean there are opportunities to provide such facilities, although the majority of sites in Surrey will not be excavated to a sufficient depth. This activity tends to generate high levels of traffic and parking and will need to be considered as part of the scheme.
Orienteering	Some scope Consult local clubs for need	This use can be operated on a site in association with a number of other uses and activities, although there can be potential conflicts with nature conservation.
Shooting	Some scope Consult Sport England and local clubs	Small bore and clay pigeon shooting are acceptable mineral site after-uses. Noise intrusion and safety are key considerations. Clay littering across the site is a particular problem, which can be visually unattractive. Low- level restored sites may provide particular opportunities.
Climbing	Limited scope. Consult Sport England and local clubs	Low-level restorations provide scope for the creation of climbing walls.
Cycle cross and BMX Course	Some scope Consult District council and Sport England and the County Council's Rights of Way Group	These activities historically have a bad reputation, with many unauthorised ad hoc courses set up in undesirable locations leading to problems and conflict. Opportunities to create formal courses may resolve these problems.

# FORMAL RECREATION AFTER-USES ON WET RESTORATION SITES

A1.39 With a move away from infilling where excavations take place below the water table, considerable opportunity is going to exist for the provision of wet recreation provision. Historically, mineral sites restored to a wet restoration use, particularly a wind borne recreational use have not paid sufficient attention to issues such as prevailing wind direction, the impact that landscape planting will have longer term in creating wind shadows on waters, or indeed the location or design of appropriate landing and launching areas. Watersports sites can also play a considerable educational role, in providing facilities as part of the sports curriculum.

Use	Scope for Provision	Issues
Wind Surfing	Some scope for provision. Consult local clubs, Sport England and District councils	
Dinghy Sailing	Some scope for provision. Consult local clubs, Sport England and District Councils	
Competitive Rowing	Unlikely to be much scope for provision. Existing provision already exists on the Thames and also with the creation of the new rowing lake at Eton as part of the Thames Flood Relief Channel	This activity has very specific site requirements.
Canoeing	Opportunities for the creation of more sinuous winding and exploratory routes exist. Opportunities may also exist for the creation of white water canoe course on sites in proximity to the Thames where falls in the river and the promotion of a head of water could be achieved.	Linkages between sites, using river systems could increase opportunities, as well as Lower Thames Flood Relief Channel proposals. White water facilities likely to prove prohibitively expensive to construct.
Water- Skiing	Little scope for provision. Water- ski provision is currently well catered for in the Thames and Blackwater Valleys. Consult local clubs and Sport England.	Due to their size, mineral sites do provide a good opportunity for water-ski provision. This use can also cause noise intrusion problems. Tow bar systems seek to obviate this constraint, but these in turn may generate a visual impact.
Jet Skiing	Current provision is limited across the County and there is limited scope for further facilities. Consult local clubs and Sport England.	Jet skiing tends to be incompatible with other more passive water borne recreational uses such as windsurfing, canoeing and sailing and can cause serious wake erosion and noise problems.
Diving/ Sub-aqua	Potential for facilities. Consult local clubs and Sport England.	There are no specific facilities on restored mineral sites. The diving requirement for benches at 5 metre intervals is compatible with mineral site restorations. Specific non-polluting infrastructure could be left behind by mineral

		companies as features of
		interest for diving.
Swimming	Some potential. Consult District Council.	Very few mineral sites are used for official swimming uses. This is
		due to safety and comfort issues, such as water
		temperature and
		turbidity. Beach areas in association with country
		park provision could be created with a safe
		swimming or paddling area on sandy sites.
Marinas & Moorings	Opportunities may arise for the creation of mooring or marina	Sites close to navigable rivers have had links
1100111160	provision where this would clear	created to them flooded
	navigation channels. District	and become marinas.
	Council Development Plans, together with strategies such as	Penton Hook and Fordbridge are two
	the Thames Strategy, have strict	examples on
	control policies and should be	the River Thames.
	consulted. Organisations such as	
	the Environment Agency are keen	
	to see on-river moorings removed	
	and should also be consulted early	
	on for their views on a particular	
Model	proposal. Limited scope for permanent sites.	Some mineral sites have
Boating	Elinited scope for permanent sites.	been utilised for such an
0		after-use, but this does
		tend to be more on an ad
		hoc temporary nature.
Fishing	There are few fly-fishing sites on	Fishing on wet restored
	mineral waters across the County.	mineral sites is
	There are no specific put and take	widespread, but can be
	facilities.	problematic. There can be conflicts between densely
		stocked fishing waters and
		nature conservation
		issues, particularly in
		relation to carp; such
		issues are documented in
		the ARC/Game
		Conservancy's "Wildlife
		after Gravel". There is
		also a need to provide adequate parking and
		sanitation facilities, to
		avoid past problems.
		Future sites needs to
		resolve issues of stocking

together with a
presumption against
further carp dominated
coarse fishery provision.
Existing sites provide
deep-water features, but
future sites should also
consider provision of
shallow areas and
marginal planting. These
would assist in both a
better fish habitat and also
a more challenging fishing
experience.

# INFORMAL RECREATION AFTER-USES

# **Public Open Space (POS)**

A1.40 In many parts of the county restored mineral sites actually provide very significant and important local public open space opportunities for local communities and can contribute to Green Infrastructure provision. Many sites just provide opportunities for walking, some have more formal country park status while others have been incorporated into local authority public open space- ownership. This varies from operator to operator, some operators may wish to retain their freehold and operate such provision expressly, conversely others may wish to divest themselves of the land to bodies such as local authorities.

#### **Rights of Way**

- A1.41 The MPA will seek to promote increased public access in appropriate locations. Priority will be given to securing links between the existing rights of way network and meeting express known local desire routes, particularly where these provide new off-road links for riders and cyclists. Mineral working often involves temporary or permanent diversion of rights of way which can be contentious. By including new links very early on as part of the overall restoration scheme, such problems may be avoided. Wherever possible routes should be reinstated to their original line.
- A1.42 It is also expected rather than providing permissive routes, these should actually be dedicated as part of the statutory rights of way network. This has clear benefits for both highway authority operator and landowner. Early provision of new routes within the working life of the scheme will also be encouraged. The Countryside and Rights of Way Act 2000 has introduced a duty for Highway Authorities to produce a rights of way improvement plan which applicants are advised to consult. Existing and

new rights of way should be constructed to a standard which makes them accessible to all. This includes the installation of gates rather than stiles, where land is to be used for agriculture.

### Cycleways

A1.43 Opportunities for the provision of cycle routes linking to existing routes should be given consideration as an integral part of restoration schemes. The National Cycle Route Network runs across the county and it is expected that there will follow a whole tranche of additional cycle way linkages to this network. Applicants should consult Surrey County Council's Cycling Officer - see Appendix 3.

#### Sculpture/Landmarks

- A1.44 Landmarks or an appropriate sculpture can be a way of recording for the future the fact that a particular site has been worked, and incorporated into part of an overall restoration package. Such a feature can provide a focus for people to walk to, a viewpoint, interpretation material, or be something to play on.
- A1.45 Equally, interpretation of the mineral extraction history of the site, or archaeology found on a site, can complement that for nature conservation.

**Note:** Detailed provision and specification for different sorts of recreational after-use are summarised in the former Department of Environment's text "Amenity Reclamation of Mineral Workings"

# **APPENDIX 2**

# RESTORATION AND ENHANCEMENT GUIDES AND FURTHER INFORMATION

#### Introduction

This appendix lists a series of reports and technical guides - it is not exhaustive. Some of the guides provide general information on restoration and enhancement and others give more technical advice either on restoration to a particular after-use or on specific issues associated with devising restoration schemes.

Nature after Minerals website guidance. www.afterminerals.com Reedbed Management for		
C J Hawke & P V JosÈ	<b>Commercial and Wildlife Interests</b> 1996. ISBN 0-903138-81-6	
RSPB/Environment Agency	<b>Thames Catchment Reedbed Study.</b> April 2001	
Environment Agency/ Broads Authority	<b>A guide to the restoration of nutrient enriched shallow lakes.</b> 1996. ISBN 0-948119-29-2	
English Nature, SAMSA, Quarry Product Association	<b>Biodiversity and Minerals.</b> <b>Extracting the benefits for wildlife.</b> ISBN - 0 9535400 06	
English Nature, SAMSA, Quarry Products Associates	The Potential Contribution of the Mineral Extraction Industry to the UK Biodiversity Action Plan 1998, ISBN 0967 876X	
P Williams, J Biggs, A Thorne, S Bryant, G Fox, P Nicolet	<b>The Pond Book - a guide to the</b> <b>management and creation of ponds.</b> The Pond Conservation Trust. 1999	
RSNC/The Wildlife Trusts	<b>Wetland Restoration Handbook</b> . April 2001	
P Kirby	Habitat Management for Invertebrates.	
J Andrews and D Kinsman	<b>Gravel Pit Restoration for Wildlife.</b> RSPB 1990	

The Wildfowl & Wetlands Trusts **Wetlands**, **Industry and Wildlife**. 1994. ISBN 0 900808 18 4

The Game Conservancy and ARC **Wildlife After Gravel.** 1992. ISBN 0 9500130 3 X

Surrey Biodiversity Partnership **The Surrey Biodiversity** Action Plan. www.surreybiodiversitypartnership.org

Biffa Waste Service **Biffa & Biodiversity**.

English Nature **Practical Solutions Handbook. 2nd Edition 2001** ISBN 185716-575-6

Grazing Animals Project	<b>The Breed Profiles Handbook 2001</b> ISBN-1-85716-570-5
English Nature	Wildlife and Fresh Water. An agenda for sustainable management 1997. ISBN-1-85716- 260-9
J S Rodwell (Ed)	British Plant Communities. Volumes 1-5 ISBN-0-521-79716-0
J Treweek, P JosÈ, P Benstead (Ed)	<b>The Wet Grassland Guide.</b> 1997. ISBN-0-903138-86-7
MAFF	The Soil Code. Code of good agricultural practice for the protection of soil. 1998
MAFF	The Water Code. Code of good agricultural practice for the protection of water. 1998
Nature Conservancy Council	A handbook of earth science conservation techniques Earth Science Conservation in
Nature Conservancy Council	<b>Great Britain. A Strategy.</b> 1990. ISBN-0-86139-689

A E Trueman Geology and Scenery in England and Wales. 1971. ISBN-0-14-02-0185-8

S W Wooldridge and F Goldring **The Weald.** New Naturalist Series No 26 D M Parker

Sir Dudley Stamp	Britain: Structure and Scenery. New
	Naturalist Series No 4
G Marley	Climate and the British Scene. New
	Naturalist Series No 22

Sir E John Russell	<b>The World of Soil.</b> New Naturalist Series No 35
Ecoscape Applied Ecologists	Wildlife Management and Habitat Creation on landfill sites. A Manual of Best Practice. 1998
Countryside Agency	Site Management Planning: A Guide. 1998
J C Baines & J M Smart	A Guide to Habitat Creation. 1991
O L Gilbert and P Anderson	Habitat Creation and Repair. 1998
D M Parker Habitat Creation English Nature 1995	. A Critical Guide
D Ward, N Holmes, P JosÈ ( <b>Wildlife Handbook</b> . 1994	Ed) The New Rivers and
C H Gimingham The Lo	wland Heath Management

Handbook. English Nature 1992

J Andrews and M Rebane Farming and Wildlife: A Practical Management Handbook 1994

SE England Climate Change Partnership **Rising to the Challenge**. **Impacts of Climate Change in the South East in the 21st Century**. November 1999

Department of the Environment/ Land Use Consultants Amenity Reclamation of Mineral Workings -Main Report 1992. ISBN-0-11 7525359

Department of the Environment/ Land Use Consultants **The Use of Land for Amenity Purposes - A Summary of Requirements.** 1992. ISBN-0-11 7525359

Dobson, M C & Moffat, A J **The Potential for Woodland Establishment on Landfill Sites** 1993. ISBN-0-11 7526789

Land Use Consultants/ Wardell Armstrong for Department of the Environment **Reclamation of Damaged Land for Nature Conservation.** 1996. ISBN-0-11-752057

Department of the Environment **Waste Management Paper 26B -**Landfill Design, Construction and Operational Practice 1995. HMSO ISBN 0-11-753185-5 RPS Clouston & Wye College for the Department of the Environment Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture 1996. HMSO ISBN 0-11-753113-8

English Nature **Horses, Grasslands and Nature Conservation** 2002 ISBN 1-15716-261-7 English Nature **Freshwater Fisheries and Nature Conservation** 2001 ISBN 1-85716-5721

Alexander M	Management Planning for Nature Conservation 2008 ISBN 978-1-4020-6580-4
White G. J & Gilbert J C	Habitat Creation Handbook for the Minerals Industry RSPB 2003 ISBN 1-901930-37-8
Haslam S M	Understanding Wetlands 2003 ISBN 0-415-25794-8
English Nature	Management of Bare Ground on Dry Grasslands and Heathlands 1996
	Briggs B SW London Waterbodies SPA, Oxford University Doctorate 2008
West Sussex County Council	Extracting the best for Wildlife – A practical Handbook for Promoting Biodiversity on mineral sites in West Sussex 2005
Ecoscope	Wildlife Management & Habitat Creation on Landfill sites. A Manual of Best Practise. 2000. ISBN 0-953189-0-4
Symes N C & Day J	A Practical Guide to the Restoration & Management of Lowland Heathland. RSPB 2003. ISBN 0-903138-86-7
SAND Project	A Vision of Floods, Nature and Mineral extraction. 2008 (www.sandproject.nl)

Department of the Environment Transport and the Regions **Soil Forming Materials - their use in Land Reclamation** 1999 HMSO ISBN 0117534897

Forestry Commission	<b>Creating New Native Woodland</b> - Bulletin 112
Forestry Commission	The Potential for Woodland Establishment on Landfill Sites

Forestry Commission	<b>Reclaiming Disturbed Land for Forestry</b> - Bulletin 110.
Forestry Commission	<b>Managing rides, roadsides and edge</b> <b>habitats in lowland forests -</b> Bulletin 123
Forestry Commission	Forest Fencing - Bulletin 102 "
Forestry Commission	Forestry Commission Handbook 9 "Growing Broadleaves for Timber"
MAFF	Good Practice Guide for Handling Soils
Land Research Associates	Evaluation of Mineral Sites Restored to Agriculture
MAFF	Landfill Gas and Leachate Control Applied to Arable After-use 1998
Sport England	<b>Planning for Water Sports</b> Sport England Planning Bulletin (Issue 9, Feb 01)

The Environment Council Good Practice for Stakeholder Engagement in the Aggregates Sector. 2004

Managing Aggregates Sites for Invertebrates - A Best Practice Guide. Buglife. ISBN 1-904878-91-1

DEFRA	Guidance for Successful Reclamation of Mineral and Waste Sites
DEFRA	Construction Code of Practice for the Sustainable use of soils on construction sites
MAFF	Good Practice Guide for handling Soils 2000
GOSE	South East Green Infrastructure Framework from Policy into Practice 2009
The Wildlife Trusts	A Living Landscape. Playing your part in nature's recovery 2010
The Wildlife Trusts	A Living Landscape. A call to restore the UK's battered ecosystems for wildlife and people
CEMEX	Building Biodiversity. The CEMEX UK Biodiversity Strategy 2010 – 2030
G. White, J. Purps, S.	The Bittern in Europe: a guide to species
Alsbury	and habitat management 2006
RSPB	Nature After Minerals: how mineral site restoration can benefit people and wildlife 2006 (see also
Mineral Products Association (MPA)	www.afterminerals.com) Building on our legacyrealizing our potential. The MPA Biodiversity Strategy 2011

R. Windspear & G. Davies	A Management Guide to Birds of Lowland Farmland 2005 ISBN 1901930572
N. Symes & F.Currie	Woodland Management for Birds. A guide to Managing for Declining
	Woodland Birds in England ISBN 2005
	1901930564
P. Williams et al	The Pond Conservation Trust Pond Book:
	A Guide to the management and creation
	of Ponds 2010 ISBN 13:9780953797110
S. Clarke, D. G. Green, N.	Woodland Management for Butterflies
A. Bim & D. J. Hoare	and Moths. A Best Practice Guide 2011
	ISBN 13: 9780956221681
RSPB	Futurescapes. Space for Nature, Land for life.

# **Further Information**

#### **Surrey County Council Documents:**

All available from

Surrey County Council, Environment, County Hall Kingston Upon Thames KT1 2DY

Tel: 020 8541 9429 www.surreycc.gov.uk

- Development Plan Index (published annually)
- Surrey Countryside Strategy (1998)
- Surrey Heritage Strategy (2000)
- Surrey Transport Local Plan 2006 07 to 2010 11 (2006)
- Surrey Mineral Local Plan (1993)
- Surrey Waste Plan 2008 (2008)
- Surrey Mineral and Waste Monitoring Report (published annually)
- The Future of Surrey's Landscape and Woodlands (1997)
- Waste Management Statement (2000)

#### Communities and Local Government documents:

All available from

Eland House Bressenden Place London SW1E 5DU 020 7944 3000

#### Minerals Policy Statements and Planning Guidance Notes

- MPS 1: Planning and minerals
- MPS 2: Controlling and mitigating the environmental effects of mineral extraction in England
- MPG2: Applications, Permissions and Conditions (1998)
- MPG3: Coal Mining and Colliery Spoil (1999)
- MPG4: Revocation, Modification, Discontinuance, Prohibition

	and Suspension Orders (1997)
MPG5:	Stability in surface Mineral Workings and Tips
MPG7:	The Reclamation of Mineral Workings (1996)
MPG8:	Interim development Orders (1991)
N/11/(-9·	Planning and Compensation Act 1991: Interim
	Development Order Permissions - Conditions (1992)
MPG10:	Provision of Raw Material for the Cement Industry (1991)
MPG13:	Guidelines for Peat Provision in England (1995)
MPG14:	Environment Act Review 1995: Review of Mineral Planning
	Permissions (1995)
MPG15:	Provision of Silica Sand in England (1996)

#### Planning Policy Statements and Planning Policy Guidance Notes

PPS1:	Delivering Sustainable Development (2005)
PPG2:	Green Belts (1995)
PPS3:	Housing (2006)
PPS4:	Planning for Sustainable Economic Growth
PPS5:	Planning for the Historic Environment
PPS6:	Planning for Town Centres (2005)
PPS7:	Sustainable Development in Rural Areas (2004)
PPG8:	Telecommunications (1992)
PPS9:	Biodiversity and Geological Conservation
PPS10:	Planning for Sustainable Waste Management (2005)
PPS12:	Local Spatial Planning (2008)
PPG13:	Transport (1994)
PPG14:	Development on Unstable Land (1990)
PPG16:	Archaeology and Planning (1990)
PPG17:	Planning for Open Space, Sport and Recreation (2002)
PPG18:	Enforcing Planning Control (1991)
PPG19:	Outdoor Advertisement Control (1992)
PPG20:	Coastal Planning (1992)
PPS22:	Renewable Energy (2004)
PPS23:	Planning and Pollution Control (2004)
PPG24:	Planning and Noise (1994)
PPS25:	Development and Flood Risk (2006)

### **Other National Policy Documents**

- National Forest Strategy
- Rural Strategy
- Transport Strategy
- UK Biodiversity Action Plan
- UK Sustainable Development Strategy

#### **EU Documents**

• Landfill Directive

# **Regional Documents**

• South East Plan. Regional Spatial Strategy for the South East of England May 2009.

#### Local Plans and Local Development Frameworks

These are available from district/borough councils - see Appendix 3 for addresses

# **APPENDIX 3**

#### LIST OF CONTACTS

#### COUNTY PLANNING AUTHORITY

#### Minerals, Waste and County Development Control Team

Alan Stones - Team Leader County Hall Kingston Upon Thames Surrey County Council KT1 2DY Tel: 020 8541 9426 or 020 8541 9383

#### Minerals and Waste Policy and Plans Team

**David Lamb** - Team Leader County Hall Kingston Upon Thames Surrey County Council KT1 2DY Tel: 020 8541 9456

#### **Environmental Specialist Contacts**

Restoration and Enhancement	
Environmental Impact Assessment	
Ecology	
Landscape	
Archaeology	
Rights of Way	

Simon Elson 020 8541 9421 Jessica Salder020 8541 7109 John Edwards 020 8541 9461 David Symonds020 8541 9427 Gary Jackson 01483 518773 Debbie Spriggs 020 8541 9343

Noise Historic or Listed Buildings Cycle Support Officer

To be advised Martin Higgins 020 8541 9416 Alan Fordham 020 8541 9939

#### **Highway Authority**

Transportation Development Control Team Surrey County Council, County Hall Penrhyn Road Kingston-upon-Thames KT1 2DY Tel: 020 8541 9334 www.surreycc.gov.uk

#### DISTRICT/BOROUGH COUNCILS

#### Elmbridge Borough Council

Civic Centre, High Street Esher Surrey KT10 9SD Tel: 01372 474474 www.elmbridge.gov.uk

#### Epsom and Ewell Borough Council

Town Hall The Parade, Epsom Surrey KT18 5BY Tel: 01372 732000 www.epsom-ewell.gov.uk

#### **Guildford Borough Council**

Millmead House Guildford Surrey GU2 5BB Tel: 01483 505050 www.guildfordborough.co.uk

#### Mole Valley District Council

Pippbrook,Dorking Surrey RH4 1SJ Tel: 01306 885001 www.mole-valley.gov.uk

#### **Reigate and Banstead Borough Council**

Town Hall Reigate Surrey RH2 0SH Tel: 01737 276000 www.reigate-banstead.gov.uk

#### **Runnymede Borough Council**

Civic Offices, Station Road Addlestone Surrey KT15 2AH Tel: 01932 838383 www.runnymede.gov.uk

#### **Spelthorne Borough Council**

Council Offices, Knowle Green Staines Surrey TW18 1XB Tel: 01784 451499 www.spelthorne.gov.uk

#### Surrey Heath Borough Council

Surrey Heath House Knoll Road, Camberley Surrey GU15 3HD Tel: 01276 707100 www.surreyheath.gov.uk

#### **Tandridge District Council**

Council Offices,Station Road East Oxted Surrey RH8 0BT Tel: 01883 722000 www.tandridgedc.gov.uk

#### Waverley Borough Council

The Burys, Godalming Surrey GU7 1HR Tel: 01483 861111 www.waverely.gov.uk

#### Woking Borough Council

Civic Offices,Gloucester Square Woking Surrey GU21 1YL Tel: 01483 755855 www.woking.gov.uk

#### NATIONAL BODIES AND ORGANISATIONS

# Communities and Local

Government Eland House, Bressenden Place London , SW1E 5DU Tel: 020 7944 4400 E-mail: upu@communities.gsi.gov.uk

# Department for Environment,

**Food & Rural Affairs (DEFRA)** Nobel House, 17 Smith Square London, SW1P 3JR Tel: 08459 33 55 77 E-mail: helpline@defra.gsi.gov.uk

#### **English Heritage**

Eastgate Court 195-205 High Street Guildford, GU1 3EH Tel: 01483 252000 Fax 01483 252001 E-mail: southeast@englishheritage.org.uk **Natural England** Victoria House London Square, Cross Lanes Guildford, GU1 1UJ Tel: 01483 307703 Fax: 01483 307704 Email: enquiries.southeast@naturalenglan

d.org.uk

#### **Environment Agency**

Swift House, Frimley Business Park Frimley Camberley Surrey, GU16 5SQ Tel: 01276 454300 www.environment-agency.gov.uk **Government Office for the Southeast (GOSE)** Bridge House,1 Walnut Tree Close Guildford, Surrey, GU1 4GA Tel: 01483 882255

www.go-se.gov.uk

#### **Highways Agency**

Federated House London, Dorking, RH4 1SZ 08457 556575 www.highways.gov.uk

#### Sport England

16 Upper Woburn Place London, WC1H 0QP Tel: 020 7273 1500 www.english.sports.gov.uk

#### **RSPB** National Contact

Conservation Management Advice RSPB, The Lodge Sandy Bedfordshire, SG19 2DL Tel: 01767 680551 www.rspb.org.uk

#### **RSPB – Nature After Minerals**

The Lodge Sandy Bedfordshire, SG19 2DL Tel: 01767 693585 www.afterminerals.com

#### Forestry Commission - SE England Conservancy

Alice Holt, Wrecclesham, Farnham, Surrey, GU10 4LF Tel: 01420 23337 www.forestry.gov.uk

#### LOCAL ORGANISATIONS

#### **RSPB** Regional Contact

RSPB South East England Office 2nd Floor Frederick House 42 Frederick Place Brighton BN1 4EA Tel: 01273 763603

#### Surrey Wildlife Trust

School Lane Pirbright Woking Surrey GU24 0JN Tel: 01483 488055 www.surreywildlifetrust.co.uk

#### Surrey Hills ANOB Officer

Rob Fairbanks Warren Farm Barns Headley Lane Mickleham Dorking Surrey RH5 6DG Tel: 01372 220653 www.surreyhills.org

Surrey Biodiversity Partnership www.surreybiodiversitypartnership.org Surrey RIGS group 36, Fromondes Road, Cheam, Surrey. SM3 8QR

# **APPENDIX 4**

# MECHANISMS FOR LONG TERM MANAGEMENT

- A4.1 How a company handles the long-term management of a site varies. Some wish to retain the freehold and the management, others will look to retain the freehold but provide a lease to a third party, such as an environmental body. Others will simply look to sell the site on. Whatever, the option, the concept of partnership working in terms of management boards and groups and involving as wide a cross section of organisations and individuals as possible, is more likely to be successful in achieving long-term management and excellence. A number of management mechanisms are appropriate for long-term management, but the four main options are:
  - > Management as a private commercial business
  - Management through leases, licences or agreements
  - Management by voluntary organisations / charities
  - Management by a Local Authority
- A4.2 The appropriateness of each mechanism will depend upon the actual end use being managed. On many sites it may be appropriate for different parts of the site to be managed by different mechanisms i.e. for multi-use sites.

# Management as a Private Commercial Business

A4.3 Sites that are in agricultural use or more commercial recreational use are likely to be managed as a private commercial business. Such management mechanisms tend to prevail where a private freeholder has offered a lease to the mineral company to work their land in the first place for minerals, which is then returned back to them, or where the site is sold on by a mineral operator to a commercial company.

# Management by Leases, Licences and Agreements

- A4.4 There are a number of leases, licences or agreements that can be entered into, and this form of management mechanism is the most commonly found on mineral sites where the mineral operator retains the freehold. There are a range of leases and licences that can be appropriate:
- A4.5 **Club leases -** These are appropriate for more formal sporting activities where a particular sports club will lease the site, with the club having responsibility for organisation and management of the land. Such leases will be for a specific time period and will vary in costs. Clearly the longer the timescale the greater the security over the long term management of

the site will be, and factors such as providing such security so the club may apply, and be successful, for grant aid towards equipment, facilities etc are more likely to be successful on such sites. In some cases lessees are required to pay a percentage of their club sporting profits to the landowner.

#### **Good Practice Example**

Papercourt Sailing Club, Papercourt, Send – the Sailing Club lease the main lake that has been restored by CEMEX at Papercourt for sailing purposes. Mercers Park, Nutfield Marsh. Sibelco owned site leased to Aquasports watersports company.

A4.6 **Management Leases / Licences -** such licences are entered into where a particular type of site management is needed. For example part of a site may be being restored to a nature conservation end use and such a management lease is entered into with a wildlife trust. Under such agreements, a conservation body agrees to manage the site normally in association with a management plan that has been prepared, and the operator will agree to provide funding, machinery, support etc as appropriate or as may be agreed. Such agreements are particularly good for nature conservation purposes and are most cost effective over a long timescale such as 20-25+ years. The Forestry Commission via their agency 'Forestry Enterprise' have entered into agreements to manage mineral sites restored to a forestry after-use.

#### **Good Practice Example**

The Surrey Wildlife Trust lease management of Papercourt Marshes within the Papercourt complex, Send, or Spynes Mere on Nutfield Marsh

A4.7 **Agriculture tenancies-** ensure the longer term agricultural management of the land, assisting often where the holding has been fragmented or its economic viability has been reduced during mineral extraction.

#### Good practice example

Award winning Laleham & Home Farm, Laleham. Brett/ Shepperton aggregates sites farmed by Branson family.

A4.8 **Agriculture Grazing/Mowing Licences** - These can be appropriate where parts of the site require grazing or hay cropping. Licences granted to the grazer for the purposes of grazing or mowing, but cultivation is specifically excluded, for a period of 364 days. Such licences provide flexibility to enable the owner of the land to specify for example precise stocking densities. However, such licences only tend to be short-term arrangements and do not offer graziers long-term incentives to undertake other improvements on the land. Such licences nevertheless provide an effective implementation on bringing neglected sites back into a use where grazing or mowing is a specific requirement. It is recommended that issues such as vegetation development monitoring be undertaken.

#### Good Practice Example Grazing licence let on the Moors, Nutfield Marsh

- A4.9 **Management Agreements** Like leases and licences there are a variety of management agreements that can be entered into:
  - Management Agreements Under Section 39 of the Wildlife and Countryside Act 1981 local authorities can make management agreements for conserving and enhancing natural beauty or amenity. These can impose restrictions on the use of the land, place obligations on the landowner to carry out works or may give local authority power to carry out these works themselves. Such agreements are normally made between local authority, site owner and third party, such as a nature conservation trust or amenity body.
  - Section 15 Agreements Under Section 15 of the Countryside Act 1968 Natural England can enter into a management agreement with the owner of a SSSI for the purpose of safeguarding the interests of the site.
  - Nature Reserve Agreements Agreements can be made to declare sites; Local Nature Reserves (LNRs), which may apply to sites that have not particularly outstanding nature conservation interest but whose designation is close to large centres of population where nature conservation interest of a site is of particular educational value, or National Nature Reserves where clearly the site needs to be of significant nature conservation interest.

# Management by Local Authorities

A4.10 The days of local authorities taking over the management of land have generally gone, but some local authorities may remain interested in acquiring mineral sites to provide recreational open space and also to stop future development pressures on key sites.

# Management by Voluntary Organisations and Charities

A4.11 Particularly where sites are going to an amenity or nature conservation use, mineral operators can look to voluntary or charity organisations to take these on through leases. These can either be with specific organisational bodies already established or they can be undertaken by the creation of specific groups to deal with specific management of that site.

#### **Good Practice Example**

#### Surrey Wildlife Trust at Papercourt Marshes, Send; Betchworth Quarry, Betchworth; and Spynes Mere, The Moors

Where groups are specifically established for a specific site, these can take the form of one of four constitutional establishments:

- A4.12 **Unencorporated associations** the simplest form of legal structure. Such a body cannot hold land or property without appointing trustees to do so on its behalf. Such associations are useful for clubs using a specific site for a specific purpose but unsuitable for where they wish to become closely involved in the management of the land.
- A4.13 **Trusts** this creates a structure for an organisation to hold and manage money, land or property for a specific, clearly defined purpose. This creates a clear relationship between the donor of the land or money, the trustees in whom the property or money is vested, and the beneficiaries. These are particularly suitable structures where a small group or number of individuals is involved, with trustees personally responsible for the trust and liable to any losses. Trusts are not suitable structures where an organisation is also a charity for technical and legal reasons. Trusts can be a suitable mechanism for managing land for charitable purposes, but if the land is to be owned by that organisation then it is recommended by the National Council for Voluntary Organisations that a company limited by guarantee is the preferred form, in which case trustees would not be personally liable.
- A4.14 **Company Limited by Guarantee** this is a corporate body and has a legal identity of its own. This is suitable where a fairly substantial budget is involved and where individuals wish to minimise the risk of personal loss. It has the advantage that such a company can hold or own property without appointing trustees to do so on its behalf, and it can enter into contracts and take legal action in its own name. A company limited by guarantee can also be a charity.
- A4.15 **Charities** to become a charity an organisations purpose must be recognised as charitable and must be for the benefit of the public or an appreciable section of the public. The charity needs to register with the Charity Commissioners. Information on establishing a charity can be provided by them. However, many umbrella organisations such as the National Council for Voluntary Organisations, British Trust for Conservation Volunteers, Civic Trust, National Playing Fields Association, etc, provide their own specimen or model documents which can be followed.

# **APPENDIX 5**

#### FUNDING SOURCES

#### Introduction

A great range of sources of funding is available. Although many funding schemes will not fund aspects of restoration that are a requirement pursuant to the original granting of planning consent to work mineral. Proposals (i.e. enhancements) going above and beyond that, or for longer-term management and aftercare are invariably eligible. This appendix provides a list of the main sources of funding available.

#### **Lottery Funding**

A range of projects may be eligible from recreational through to heritage, under the Heritage Lottery Fund (HLF) process. Contact: Heritage Lottery Fund, 7 Holbein Place, London SW1W 8NR Tel: 020 7591 6042 www.hlf.org.uk

#### Landfill Tax

Was introduced in 1996, and payers of the tax (landfill companies) may allocate up to 20% of their landfill tax to environmental projects. Projects have to be within 10 miles of a site paying landfill tax at the time of the project (Note: some companies have their own stricter distance rules) and the support of the landfill tax paying company is required. The system is regulated by ENTRUST and needs to have both a registered environmental body to handle the project and the project itself approved by ENTRUST.

Contact: www.emtrust.org.uk or www.ltcs.org.uk or E-mail information@entrust.org.uk

#### **European Funding**

A range of European funding is available. For further information on European Grants visit www.europa.eu.int/comm/secretariat\_general/s gc/aides/dgs/env\_en.htm Contact: Directorate - General Environment, D.1 BU 9 2/01, Rue de la Loi 200, B-1049 Brussels

# Agriculture Stewardship

A range of countryside management/environmentally friendly practices are eligible for funding, under the Environmental stewardship administered by Natural England Contact: Regional NE Office (www.natural england.gov.uk) A range of other agricultural payments are also available through schemes such as single payments scheme etc. Contact: Rural Payments Agency Office (www.rpa.gov.uk)

#### Forestry

The Forestry Commission supports the creation of new woodland and the management of existing woodland by offering: free advice, grant aid through the Woodland Grant Scheme and by working in partnership. Contact: See Forestry Commission details in Appendix 3.

#### Nature Conservation

Depending upon the designation of the site, grant funding for works is available through Natural England. Grants are available for: -

- new projects enabling the safeguarding, management and enhancement of sites and species of nature conservation importance and their enjoyment by the public;
- projects enabling local communities to participate more fully in conservation activities;
- proposals designed to encourage the development of management for wildlife within natural areas of the countryside;
- innovative projects demonstrating new initiatives which are likely to have a wider relevance and further the practice of nature conservation;
- imaginative proposals which implement the concept of integrating nature conservation with other interests and potentially competing activities.

Grants for wildlife projects must contribute to Biodiversity Action Plans (BAPs).

Contact: Natural England see Appendix 3 for details

#### Recreation

Formal sporting activities may be eligible for funding from Sport England through lottery funding, individual sporting federations or through the District Council. Contact: Sport England see Appendix 3 for details

#### Other

Various specialist or local charities/organisations will fund projects within their topical/geographical areas. For example, a Gatwick Airport scheme uses fines from noise/night flying violations to fund local environmental projects around the airport.

# **APPENDIX 6**

#### AFTERCARE SCHEMES AND MANAGEMENT PLANS

#### AFTERCARE SCHEMES

The MPA expects applicants to submit draft aftercare schemes as part of a planning application for mineral extraction and restoration. The aftercare information scheme submitted as part of the planning application should provide a draft of the outline strategy for aftercare and a summary of the annual programmes of work. If planning permission is granted for a proposal, the permission granted will normally, via condition, set out compliance with the details submitted or the need for more details to be made to and approval by the MPA.

Provided below are examples of the format for:

- outline aftercare schemes for agriculture, forestry and nature conservation
- a summary of the annual programmes of work for agriculture and forestry
- a detailed annual programme of work for agriculture, forestry, nature conservation/recreation.

#### AGRICULTURE AFTERCARE SCHEME

#### **Outline Strategy for Agriculture**

The outline strategy should provide information on the aims, objectives and management of the land in agricultural aftercare. It should provide detail of the steps to be carried out in the aftercare period and their timing within the programme. It should cover the main items as set out below, plus any other information as required by the MPA in discussions:

The basic cropping pattern and timing (grass and the likely length of time under grass or arable)

Soil analysis to be undertaken

Details of cultivations, fertiliser applications, seeding, spraying etc., as are necessary to maintain the after-use

Commitment to consider to install drainage and irrigation Commitment to undertake other reasonable improvement measures such as subsoiling.

Details of proposed aftercare meetings.

**NB** Box 5 of MPG7 also provides a summary of the main items to be covered within an outline strategy. An example of an outline strategy for an agricultural aftercare scheme is provided in Appendix 3 of the DETR Report on the Restoration of Mineral Workings to Agriculture (RPS Clouston and Wye College 1996a).

#### Typical Issues Covered in an Agricultural Aftercare Scheme

A five year aftercare scheme for agricultural aftercare will include provisions for soil cultivation, analysis, fertilizer applications and appropriate stocking or cropping regimes described on an annual basis as follows:

Year 1 – Details of start date, grass crop, management issues (soil sampling, cultivation, stock proof fencing, details of any cereal crops, management of weed growth etc).

Year 2 – Details of sheep grazing, mowing for hay / silage, spring fertilizer application, agreements with NE, management of weed growth, monitoring of performance of reinstated surface, discussion between MPA, NE, the applicant and landowner regarding drainage or other remedial drainage works.

Years 3 and 4 – Soil analysis and making good deficiencies, implementation of agreed cropping / grazing regime.

Year 5 – management of the site in accordance with agreements approved by the MPA

# Detailed Annual Programme of Work for Agricultural After-use

This should cover the details for the forthcoming year of aftercare including:

- a. Amplify the outline strategy for work to be carried out in the forthcoming year
- b. Confirm that steps already specified in detail in the outline strategy will be carried out as originally intended
- c. Include any modifications to original proposals due to difference between actual and anticipated site conditions See BOX 6 of MPG7

Any aftercare scheme will need to be agreed by the applicant, landowner, MPA and NE.

#### FORESTRY AFTERCARE SCHEME.

# **Outline Strategy for Forestry**

The outline strategy should provide information on the aims, objectives and management of the land in forestry aftercare. It should provide detail of the steps to be carried out in the aftercare period and their timings within the programme. It should cover the main items as set out below, plus any other information as required by the MPA in discussions:

The basic pattern of vegetation and timing of planting and establishment, including ground cover planting;

Soil analysis and management;

Details of fertilised and herbicide applications;

Weed and pest control;

Details of drainage; and

Details of proposed aftercare meetings

# Typical Issues Covered in a Forestry Aftercare Scheme

A five-year aftercare scheme for forestry will include provisions for the above described on an annual basis as follows

Year 1 details of start date, seed mix, details of planting, tree numbers and preliminary survival,

Year 2 observation on the condition and growth of trees, survival and replacement programme, details of any natural colonisation,

Year 3 and 4 observations on condition and growth of trees, survival and replacement programme, maintenance scheme focusing on weeding requirements,

Year 5 observations on condition and growth of trees, and maintenance scheme carried out, final site report reviewing progress and proposals for management during period year 10

The aftercare scheme will be agreed between the MPA, applicant, the landowner and Forestry Commission.

# **Detailed Annual Programme of Work for Forestry**

This should cover the details for the forthcoming year of aftercare including:

The range of cultivations to be undertaken, including depth and timing of operations, and type of plant to be used.

The choice of understorey vegetation (if any) including species composition, density of cover and timing and method of establishment.

Tree species, stock, type and size, spacing (density), timing and position of planting.

The application of herbicides or other methods of weed control such as mulch mats.

The intended frequency of application and type of herbicides.

The application of fertilisers and method of determining fertiliser requirement.

Forest management, including maintaining tree stocks to agreed densities, and commitment to investigate and remedy abnormal tree failure.

The maintenance of all drainage and wetland features.

Arrangement for submission of a report detailing an annual programme of procedures to maintain the plantation.

Arrangements for consultation with landowners or tenants.

Source: The Forestry Commission Bulletin 110 (Moffat and McNeill 1994)

# NATURE CONSERVATION OR RECREATION/AMENITY AFTERCARE SCHEMES

Nature conservation, recreation, amenity schemes or a multi after-use scheme usually include a mix of habitat types or a number of different land use areas. A convenient way of presenting the aftercare scheme is to divide the site into a broad series of habitat types and after-uses and describe the aftercare strategy for each of the types of area e.g. woodland, scrub, heathland, wetland, footpaths, public open space etc.

#### **Outline Strategy for Nature Conservation / Amenity**

The outline strategy should provide information on the aims, objectives and management of the land in aftercare, and how they relate to the relevant Biodiversity Action Plan (BAP). It should provide detail of the steps to be carried out in the aftercare period and their timings within the programme. It should cover the aftercare steps as set out below, plus any other information as required by the MPA in discussions:

Habitat management

Species management

Study and Research

Education and interpretation

General Access and Recreation

Monitoring

For each habitat type the strategy should provide information on:

#### How the habitat will be established, including details of:

- > ground preparation, cultivation methods, weed control and timing.
- new planting method of planting, including species mixes, size, amount of planting, spacing, their source, timing of plantings and how they will be established.

#### Management Plans

It is current practice for the MPA to require a management plan to be prepared where the after-use of the site will take a significant period of time to establish. Set out below is an example format of a management plan prepared for a nature conservation after-use.

#### MANAGEMENT PLAN FOR SITE X FOR PERIOD Y-Z

#### 1 GENERAL INFORMATION

- 1.1 After-use
- 1.2 Management Plan Period
- 1.3 Location and site description
  Site name
  Local Authority County, District, Parish Designations
  Grid Ref.
  OS Maps
  Area (ha)
- 1.4 Tenure
  Owner (contact name, address)
  Tenant
  Managing Organisation
- 1.5 Key Services (electricity, water etc)
- 1.6 Emergency Access Plan
- 1.7 Key Contacts

#### 2 **RESTORATION PROPOSALS**

2.1 After-use

#### 3 SITE DESCRIPTION & EVALUATION

- 3.1 Site description. Physical (includes location, natural areas, geology, soils, topography) hydrological ground, surface water, rainfall, climate change biological cultural (present& past use incl. educational)
- 3.2 Site Evaluation
  - Size
  - Diversity
  - Naturalness
  - Fragility
  - Typicalness
  - Recorded History
  - Ecological position
  - Potential
  - Intrinsic appeal
- 3.3 Identification of Important Species, Habitats and Features of Cultural and Social Interest Chart showing whether features are of National, Regional or Local Importance

#### 4. MANAGEMENT OBJECTIVES

A general list of management objectives and any site / topic specific objective.

#### 5. OPERATIONAL MANAGEMENT

Setting out how the management objectives will be; implemented, including specific actions relating to areas of the site.

- 5.1 Achieving a Management Mechanism and Resources
- 5.2 Site monitoring
- 5.3 Access
- 5.4 Interpretation and Education
- 5.5 Management Plan Review
- 5.6 Compartment Management Prescription

#### 6. BIBLIOGRAPHY

#### 7. APPENDICIES

Maps &Plans	Planting plan and species
Timescale work plan	Species lists (incl. comments on selected observations)

# EXAMPLE OF AFTERCARE COMPLIANCE LETTER

Dear Sir/Madam,

Site reference

I write further to the annual aftercare meeting that took place on??/??/?/ in accord with the requirements of the Aftercare Scheme (reference), dated ??/??/??. Please find enclosed a copy of the report dated ??/??/?/ from (title) of the (relevant organisation - i.e. Farming and Rural Conservation Agency / Forestry Enterprise Commission / Natural England).

As a result of the satisfactory report from (title) on behalf of (organisation), we are now able to discharge you from any further (agricultural/woodland/nature conservation) aftercare responsibilities to this Authority on this site. The requirements of the planning permission and the legal agreement have now been complied with. Should you need clarification on the above, please do not hesitate to contact me.

Yours sincerely, Principal Enforcement Officer

# **APPENDIX 7**

#### LIST OF CONDITIONS

Set out below is a list of the key subject areas where the MPA usually attaches conditions to a mineral extraction scheme involving restoration and aftercare. The Surrey Minerals Plan Core Strategy DPD contains specific policies for the control of mineral developments.

#### General

- Implementation of the scheme in accordance with the approved planning application documents, unless otherwise agreed in writing by the MPA
- Implementation of the scheme within 5 years of the date of planning permission
- Duration of the Scheme final extraction date

#### **Restriction of Permitted Development Rights**

• To protect amenity

#### **Production Limits**

• To protect amenity or monitor site output

#### Hours of Working

• Conditions setting out when operations may and may not occur

#### **Depth of Working**

• An Ordnance datum level will be stated

#### Safeguarding Adjacent Land

• Conditions to protect adjacent land from slope instability.

#### **Importation of Waste Material**

• Conditions to limit or prevent the importation of waste materials.

#### Highways

• Conditions to ensure safety and environmental impact

#### **Rights of Way**

• Conditions to divert and reinstate rights of way

#### Access and Routeing

• Site Access

- Surfacing of Access
- Drainage of Access
- Vehicle Cleaning
- Vehicle Numbers

#### Dust

• Implementation of measures to suppress dust

#### Noise and Vibration

- Noise limits at night and daytime
- Noise control on vehicles, plant and machinery
- Noise monitoring measures
- Details of bunding or acoustic fencing required

#### Drainage and Pollution

- Prevention of damage to ground water resources, watercourses and off site drainage; to safeguard agricultural irrigation facilities
- To prevent pollution of watercourses aquifers and soils

#### Archaeology

- Archaeological investigation and recording on site
- Conditions to enable archaeological watching of soil stripping
- Protection of identified archaeological interest

#### Landscaping

- Retention and protection measures for existing vegetation
- Details setting out any advance planting or screening requirements

#### Ecological

- Conditions required to retain and protect existing species and habitats
- Timing of works to prevent disturbance

#### Site Maintenance

• Weed control

#### Soil Management

- Stripping of soils to prevent loss or damage of soil, storage of soils to prevent mixing of soils
- Depth of topsoil and subsoil stripping
- Retention of soils on site and use for restoration
- Movement of plant or vehicles to prevent damage to soils
- Prior notification to the MPA of soil stripping, and various stages of soil replacement during restoration to allow MPA to inspect and check that operations do not occur under unsuitable conditions

# Soil Stripping

- Prevent of soil stripping until any standing crop or vegetation has been removed.
- Setting out the conditions when soil stripping may occur

#### Soil Storage

• Setting out the way soils should be stored, e.g. height of mounds, separate storage mounds for different layers of soil, management including weed control and seeding of mounds

#### Restoration

• Restoration to be carried out in accordance with the approved application documents

#### Soil Replacement

- Setting out the conditions when soils can be replaced
- Soil leveling requirements
- Removal of large objects from the soil
- Depths of soils to be replaced
- Machinery to be used
- How settlement should be managed

#### Landscape and Surface Features

- Installation of fencing, ditches
- Hedge and tree planting

#### Aftercare

- Duration of aftercare period
- Submission of aftercare scheme
- Submission to the MPA of a detailed annual aftercare programme
- Requirements and conditions for an annual site meeting during the aftercare period
- Implementation of aftercare in accordance with the submitted aftercare scheme, unless otherwise approved by the MPA

# **APPENDIX 8**

#### CHECKLIST TO ENSURE GOOD STANDARDS OF RESTORATION

Issue	Implementers	
	MPA	Applicant
Pre-Application Stage		
Agree restoration vision		
Agree restoration objectives		
Pre-appplication discussions		
Baseline surveys		
Draft a restoration scheme		
Planning Application Stage		
Submit planning application including		
restoration and aftercare details		
Assess planning application		
I legal agreement required draft heads of		
agreement		
If planning permission granted attach	-	
appropriate planning conditions that can be		
monitored and enforced		
Post Planning Stage		
Submit soil restoration scheme to MPA if		-
required by condition		
Submit aftercare management plan to MPA	-	-
and NE		
Ensure all staff involved in the extraction,		-
restoration and aftercare of site are aware of		
the agreed provisions and are supervised.		
This should particularly apply to contractors.		
Keep records of restoration and aftercare agreed	_	
Hold aftercare meetings to discuss work		
which has been carried out and agree		
proposals for following season / period of		
management		
Regularly inspect site		
Notify MPA of any problems with approved		
restoration or aftercare schemes or problems		
with on site management		

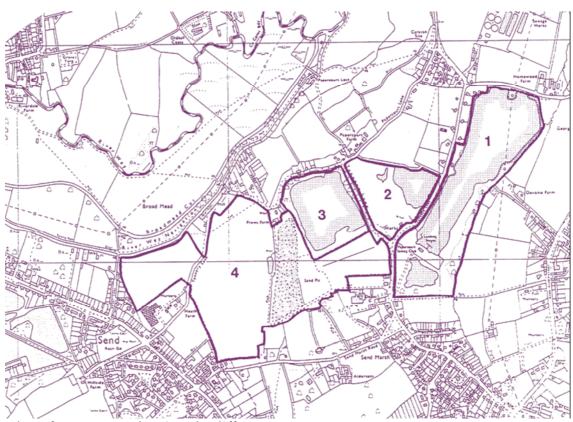
# **APPENDIX 9**

#### CASE STUDIES HIGHLIGHTING GOOD PRACTICE MEASURES

The following case studies highlight a number of good practice measures that the MPA would like applicants/operators to include in site enhancement measures and mineral led restoration schemes.

Case Study	Description
1	Papercourt Quarry, Send
2	Molesey Reservoirs
3	Laleham & Home Farms, Laleham
4	Church Lammas, Staines
5	Nutfield Marsh (Spynes Mere)
6	Nutfield Marsh (The Moors)
7	Nutfield Marsh (Patteson Court)

# CASE STUDY NO1. PAPERCOURT QUARRY, SEND



Plan of Papercourt showing the different zones.

# Summary

Mineral Type: Sand & gravel Operator: CEMEX (Formerly RMC Aggregates (Greater London) Ltd Site Area: After-use: A good example of zoned multi use restoration. Agriculture, Nature Conservation & Formal Watersports, and Informal Recreation.

# Introduction

For over 60 years, RMC extracted sand and gravel from this large site in the Wey Valley. The site has now been restored to agriculture, recreation (both informal and formal) and nature conservation. Whilst the site was subject to a rolling programme of successive restoration over time, the site was identified in the Surrey Minerals Local Plan 1993 as one of several sites in need of enhancement. As a consequence the Mineral Company worked with the MPA to secure a high standard of restoration and enhancement for the site.

This included:

• an extensive programme of hedgerow and copse planting, (including the involvement of local school children & residents) to restore the hedgerow character and appearance of the area.

- enhancement works with the Environment Agency along the West Clandon Stream, which runs through the site. Since the works have been carried out water vole have been seen the stream.
- improvements to the local footpath network. New links were identified and created to fill gaps in the existing network, in consultation with the County Council Rights of Way Group and local residents.
- establishment of a local liaison group to act as a forum for discussion & involvement. The group included representatives from the Minerals Company, MPA, Borough & Parish Councils, local residents, sailing, angling & wildlife interests,
- revisions to the restoration scheme to prevent the former silt lagoons, known as Papercourt Marshes SSSI from being infilled. Planning permission had been granted to fill the lagoons, but the site was subsequently designated an SSSI. The Company agreed to amend the original infilling and restoration plans to agriculture and restore the site to a nature conservation end use. The site is now leased to Surrey Wildlife Trust who manages the site. Today, the site has recorded over 100 bird species, 8 botanical species of county rarity, and is strategically placed to act as a 'stop over' sanctuary for the return of the otter to the river Wey. The Wildlife Trust has since acquired adjoining third party land to expand its reserve interest in this part of the Wey valley.

# **Specific Points of Interest**

Good example of multi use zoning and management.

The site is a good example of a zoned multiuse, where conflict between different users has been avoided through good management.

# Zone 1 - Papercourt Lake

Restored to a wet restoration. Used as a sailing and angling lake with informal access around edge. Designated a SSSI for its wintering waterfowl interest.

# Zone 2 - Plant Area

Former sand processing area. Plant and kit dismantled and land infilled and restored to species rich grassland, woodland and amenity use.

#### Zone 3 - Papercourt Marshes

Former settlement lagoons (where sediment from sand processing deposited). Restored to a nature conservation end use, and leased to the Surrey Wildlife Trust. Designated a SSSI for its wetland habitats.

#### Zone 4 - Prews Farm and Tannery Lane

Area worked and filled with commercial & industrial waste materials. Restored to agriculture. Some experimentation with short rotation coppice for biomass fuel production.



Racing on the lake.

# CASE STUDY NO2. MOLESEY RESERVOIRS



Molesey Reservoirs - Reflooded basin to maintain wetland habitats for wildlife.

# Summary

Mineral Type: Sand and Gravel Operator: Island Barn Aggregates Ltd (a joint venture between CEMEX & Lafarge Aggregates) Site Area: 54 ha After-use: Nature Conservation

# Introduction

The redundant Thames Water owned reservoirs of the Chelsea & Lambeth Group at Molesey were granted planning consent for sand & gravel extraction in September 1998. On completion, currently expected to be 2013, the site will have been restored to a wetland nature reserve to complement and reinforce the adjoining SW London Reservoirs & gravel pits SPA& Ramsar designations at Knight & Bessborough operational reservoirs, as well as linking into the river Thames corridor.

A principal element of the design is to create an undisturbed sanctuary for wildlife, principally the SPA wintering waterfowl species, utilising the existing basin walls; but at the same time affording public access and viewing This is achieved in a way which does not compromise the sanctuary concept. The site is being worked on a phased approach which has enabled habitat to be maintained over parts of the site whilst being worked.

#### **Specific Points of Interest**

Molesey is the classic example of 'restoration led mineral planning', with the end use targeted through pre application discussion three years before the submission of the planning application. In addition to the end targeted restoration a whole array of enhancements have been undertaken , many of which have economically benefited the operating company as well as the wildlife.

These have included:

- draw down of water in the redundant reservoirs, to exempt them from the Reservoirs Acts as part of the decommissioning, lead to the establishment of a relatively rich swamp community flora developing in the base of the basins. Much of this plant material was rescued and stored in a specifically prepared holding nursery on site, and the material reused in the restoration. Not only has provided temporary habitat in the holding nursery, and guaranteed the use of indigenously sourced plants, but it has saved the company the cost of buying in more expensive planting material.
- Clearance of willow scrub and reflooding of some reservoir basins to maintain open water habitat whilst awaiting sand & gravel extraction. . Not only did this have benefit to the wintering waterfowl, but again by removing the colonizing wall to wall willow scrub when small have saved on clearance costs at a later date, when the shrub would have grown into woodland. Provision of artificial otter holts, in partnership with Surrey Wildlife Trust, in preparation for this species recolonisation of Surrey.
- Provision for sand martin nesting colonised. To discourage these birds from using the operational faces or stockpiles to nest in, thereby disrupting working, sand faces were cut each year ideal for these birds to nest in. Permanent artificial nesting provision, to accommodate this species on cessation of extraction is now being made.
- Utilization of old redundant pipework in the reservoir walls to create a 'bat cave'.
- Monitoring ecological matters to assess and guide restoration and enhancements. This includes all year round bird counts, dragonfly, flora and bat surveys.
- Interpretation of the industrial history of the site provided in the publicly accessible part of the site, and transfer of artifacts to local museums.

A very effective liaison committee operates on the site, including representatives from both County & District Councils and Thames Water as well as residents' groups. Regular open days are held, and the site has been involved with a number of local schools. The site hosted the launch of both the Surrey Biodiversity wetland Habitat Action Plans (HAPs) and the RSPB's habitat creation handbook for the minerals industry.

# **Molesey Reservoirs - Restoration**



# Residents' Open Day



# CASE STUDY NO3. LALEHAM & HOME FARMS, LALEHAM



Home Farm, Laleham - loose tipping.

# Summary

Mineral Type: Sand and Gravel Operator: Shepperton Aggregates (A joint venture between Brett Aggregates and Tarmac) Site Area: After-use: Agriculture

# Introduction

Laleham Farm was worked for sand & gravel from the late 1960's until the mid 1990's. the site was back filled with waste materials back to agriculture. It received the Mineral Industry's top restoration award, the Cooper-Heyman Cup in 1984. The site was extended northwards into Home Farm in the mid 1990's, again being progressively worked infilled and restored to agriculture, but using inert infill material only. The Farming operation is run by the Bransden family, growing herbs & oriental vegetables for the restaurant trade.

The site has also been awarded numerous farming accreditations (LEAF Marque & FWAG Silver Lapwing) for its environmentally friendly practices. Laleham Farm is a demonstration farm for LEAF. It won the English Nature Farming for Wildlife Award in the NFU's Farming Excellence competition in 2003. In 2009 the Minerals industry in celebrating 40 years of its restoration awards, voted Laleham Farm 'the best of the best' of all the past winners.

#### **Specific Points of Interest**

Laleham & Home Farms are a role model example of agricultural restoration, and particularly on the handling and placement of soils and the site's aftercare. The role of the Bransden family, as farming managers, is also pivotal to the site's restoration success.

# **Restoration and Soil Placement**

The site is a good example of restoration to high quality agricultural land. The operators have followed FRCA guidance on soil placement and restoration. As a phase is restored drainage pipes are laid and installed, the soils are then been placed using loose tipping methods. Once soil placing has been completed in any year, a representative soil sample is taken from the area restored and the sample is tested to determine the levels of the main soil nutrients. Any deficiencies of nutrients likely to adversely affect crop growth are added to the land prior to seedbed cultivations.

After soils are replaced cultivations are carried out. Care is taken to keep farm traffic on soils to a minimum to avoid creating compaction. Each year's restored area is sown to a temporary grass mixture in the early autumn. Any weed growth that appears is controlled by cultivation or spraying. In the spring of the year following restoration the land is available for a range of crop options. The land surrounding the extraction phase has continued to be in agricultural use.

# Aftercare

This includes MPA information on management, drainage, soil sampling and fertilising, cultivation and cropping, fencing, water supply and annual aftercare. The annual aftercare meetings are held in October on site between the operator, FRCA and SCC. The meetings review the past year's progress, inspect the cropping on the ground and agree next year's plans. The applicant submits a progress report prior to the meeting, which provides detailed aftercare proposals for the coming year.

The citation for winning the 'Best of the Best' Award read: " Laleham Farm is an outstanding example of how minerals can be extracted from top quality agricultural land and the restoration can achieve an overall enhancement of the quality of the replaced soil. The resultant restoration by its quality and landscape features enhances the visual quality of the locality" George McDonic, Chairman of the Judges Panel. A. Home Farm, installation of drainage





Home Farm, soil stripping

# CASE STUDY NO 4: CHURCH LAMMAS, STAINES



Accessing the restored site

# Summary

Mineral Type: Sand and Gravel Operator: Brett Aggregates Site Area: 8.8ha After-use: Nature conservation, informal public access & flood alleviation.

# Introduction

Church Lammas is a small site on the north side of Staines, worked in the 1990's and restored without the importation of waste materials to create three small lakes for nature conservation with public access through the site, given its common land status. This site also serves as a flood alleviation route from the Wraysbury River to the North to the Thames to the south. The site forms the southern gateway to the Colne Valley Regional Park.

With the advent on new disabilities legislation in 2004, Church Lammas was used as a demonstrator site to show what provision could be made for disabled visitors to restored sites. This includes wheelchair useable paths, disabled friendly gating& bird hide screen & brail interpretation boards. This was developed in association with local disabled individuals & groups.

In 2005 the site won the Mineral Industry's top restoration Award the Cooper Heyman Cup.

#### **Specific Points of Interest**

Church Lammas is an example of:

- Compatible differing restoration (nature conservation, flooding & informal recreation) uses in a small area
- Provision for the disabled
- The role a small site can play in the wider context, like a piece in a jigsaw.



#### NUTFIELD MARSH

This covers an area of some 4 square km east of Redhill, which has been intensively worked for mineral extraction of fuller's earth & sand, for a considerable period of time. In 1996 the County Council created a restoration & enhancement Project called the Nutfield Ridge & Marsh Project, with the then 4 mineral & waste companies, Environment Agency, local resident groups and the Surrey Wildlife Trust.

It is a good example of how a wider area approach can benefit restoration by setting the framework, within which to deliver an integrated approach working in partnership with a range of organisations.

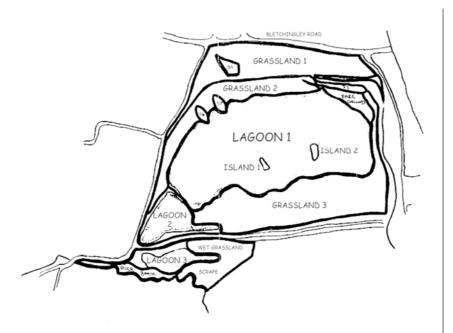


Information Board at Nutfield Marsh

Three case studies come from this project Area:

Spynes Mere, the Moors & Patteson Court.

#### CASE STUDY NO 5. SPYNES MERE, NUTFIELDMARSH



Spynes Mere - layout of the lagoons.

# Summary

Mineral Type: Silica Sand Operator: Sibelco Site Area: 14ha After-use: Nature Conservation

# Introduction

Spynes Mere lies in the northeast corner of Nutfield Marsh, some 3km east of Redhill. Historically the site formed part of the Nutfield Marsh and experienced seasonal flooding and waterlogging. Prior to sand extraction the site was characterised by a hedgerow enclosed pattern of agricultural land in pasture and arable usage. The sand quarry was to be restored to a recreational after-use, for a golf course, but following over provision of such facilities, the Company was granted planning permission to change the after-use to nature conservation. The restoration for this site could not involve any waste infilling due to the need to protect the quality of the underlying aquifer, and was flooded and restored to a nature conservation after-use in the mid 1990's. The site now comprises three open water and swamp lagoons, surrounded by grassland and a network of hedges, with footpath access

The restored site is now leased to Surrey Wildlife Trust, and subject to a Management Plan and Steering Committee (made up of representatives from the mineral company, Parish Council, MPA, local residents, Surrey Wildlife Trust and Environment Agency.

# **Specific Points of Interest**

- The site forms one piece of a wider wetland habitat jigsaw for Nutfield Marsh and acted as a catalyst to create the Wildlife Trust's nature reserve stretching along the Redhill Brook eastwards to the Moors. The Wildlife Trust has subsequently purchased adjoining third party land to extend and round off the reserve.
- Although some planting of woody, marginal and grass species were undertaken, the majority of the site's ecological interest is being left to natural colonisation and succession. Monitoring has demonstrated those areas left to natural colonization have proved ecologically richer and more diverse than those which were planted or seeded.
- Provision was also made for sand martins by retaining an existing nesting colony sand face, and bare ground for solitary wasps and bees, of which the site now boasts six national rarities, and the first UK record of a continental bee species.
- A Biodiversity Action Plan has been produced for all Sibelco's holdings in the area, in addition to the site's Management Plan.
- The site is flanked by public footpaths and the National Cycle Route, and permissive paths link to provide a circular path route around the reserve. Interpretation boards & a leaflet, together with regular guided walks promote the value and awareness of the site.
- The site retains an operational use, being used as a repository for silt disposal from nearby sand workings. This silt is being used to enhance the nature conservation value of the site by creating further shallows and bays.
- The adoption of the name Spynes, the site operationally went under a different name, retains old historical names and cultural associations which might otherwise be lost from the landscape.
- Whilst the wetland features are not natural, the site's restoration visually fits well into the landscape, has enhanced its biodiversity value and is proving extremely popular with walkers & bird watchers.



Spynes Mere - Restoration

# CASE STUDY NO 6 THE MOORS, NUTFIELD MARSH



# Summary

Mineral Type: Sand Operator: Biffa Waste Services & Sibelco Site Area: 21 ha After-use: Nature Conservation

# Introduction

The Moors is a long thin area straddling the Redhill brook between Biffa's Patteson Court site and Sibelco's Holmethorpe sandpit (now the Watercolour housing development). As such its ownership was split between the two companies, either side of the brook, and formed a non-operational margin to both their sites, the land largely never having been worked for mineral extraction. By brining the two halves together under the Ridge & Marsh Project, a £300,000 enhancement scheme, funded by Biff award landfill tax money, was put together to create a wetland nature reserve, improve access & interpretation, and visually enhance the area. The works were undertaken from 2001 on, and the Moors was formally opened as a nature reserve by the Surrey Wildlife in 2009. The site comprises a series of pools which seasonally flood the wider grassland area which is grazed under license in accordance with the Management Plan for the site.

#### **Specific Points of Interest**

- The Moors is a classic example of the type of enhancements (separate from and over & above restoration) that can be achieved on non-operational land.
- It would not have been achieved without working in partnership and taking a wider area approach. The partnership approach enabled the pooling and triggered the release of further resources which otherwise would not have been made available. For example the Environment Agency undertook enhancement works to the Redhill Brook, because of the wider improvements going on.
- the impact of the habitat improvement has been dramatic. For example the number of wintering snipe has increased over fifteen fold, and the site supports some 16 species of Damsel & Dragonfly (17 species is the benchmark for a site of SSSI quality in Surrey).
- The enhancement simply involves ensuring the floodplain acts as exactly that, with the site being used to store floodwater. Three years of detailed hydrological study was involved in the site design, and its role in helping flood alleviation of Redhill town centre is now being recognized through the Local Development Framework.
- The site is flanked by two public footpaths and the National Cycleway, and the scheme involved linking these up to provide a circular route around the perimeter of the nature reserve.
- The Moors is the westernmost end of the Wildlife's Trust's larger nature reserve mosaic being created along the line of the Redhill Brook. The scheme has also inspired the designers of the new adjoining Watercolour housing development to follow the wetland theme, extending the nature reserve.
- The grazing of the site by Sussex cattle, themselves an attraction is a key and very effective tool to the successful longer-term management of the site.

# CASE STUDY NO 7. PATTESON COURT LANDFILL



Patteson Court landfill, Redhill.

# Summary

Mineral Type: Fullers Earth & overlying Building Sand Operator: Biffa Waste Services (previously Laporte Industries) Site Area: 66 ha After-use: Agriculture & Nature Conservation

# Introduction

Patteson Court lies on the northern slope of the Greensand Ridge, to the east of Redhill. Planning permission for fuller's earth working was granted in 1954. The site has been worked and was then sold on to a waste company, (Biffa) to be restored by infilling with controlled waste. The southern and western part of the site has been restored to final levels comprising a network of hedgerowed grazing fields. The remainder of the site will be infilled and restored by 2030. And is now Surrey's largest landfill site.

#### **Specific Points of Interest**

- This is the first landfill site in Europe to be awarded EMAS certification (EU Environmental Monitoring and Auditing System), a more rigorous system than ISO14001. This provides added reassure and confidence to both regulatory bodies and local residents alike.
- It is the only waste site in Surrey to have its own site specific Biodiversity Action Plan (BAP).
- The restoration of this site has also provided extensive enhancements of non-operational land including the creation of a community orchard planted with traditional local apple varieties. The site has also provided

£300,000 landfill tax funding for a wetland habitat and floodplain grazing scheme on the Moors (see separate case study).

- The restoration of the site has been amended and enhanced from both a landscape and biodiversity viewpoint, following the Ridge & Marsh Project Initiative. This has added to and helped knit the wider habitat & landscape feature mosaics together.
- The site runs a very effective Liaison Group, comprising County, District & Parish Councils, the Environment Agency, & local residents and their associations.
- The issue of birdstrike is addressed through a bird management plan, involving Falconry. The birds of prey are however flown in a way to deter gulls & corvids from the site, but not cause disturbance to other bird species on the adjoining nature reserve areas.

# **APPENDIX 10**

# GLOSSARY

# Α

**Aftercare** – Steps taken after restoration i.e. soil replacement to bring the land up to the required standard for the after-use.

**Aftercare Scheme** – Scheme imposed by the MPA requiring up to 5 Years management of the land after restoration.

After-use – The intended use of the land after mineral working.

**Aggregates** – Minerals used in construction.

**Agricultural Land Classification** – the process used to determine the quality of agricultural land.

Alien – Plant or animal not native to a representative country.

**Amenity** – Amenity use includes recreation, landscape and nature conservation.

**Ancient semi-natural woodland** – Woodland which has been in existence at any given site prior to 1600 AD.

**Applicant** – A person who has or intends to apply to the local planning authority for planning permission fro development.

**Aquifer** – A permeable geological stratum or formation that is capable of both storing and transmitting water in significant amounts.

**Arable** – Land being or capable of being tilled for the production of crops. **Area of Outstanding Natural Beauty (AONB)** – Designated by Natural England under the National Parks and Access to the Countryside Act 1949, to conserve and enhance the natural beauty of the landscape.

# B

**Biodegradable** - Capable of being decomposed by bacteria or other biological means

**Biodiversity** - The variety of life on earth. Not only rare, threatened or endangered species and habitats, but also all life regardless of status **Biodiversity Action Plans (BAPS)** – A framework for achieving the conservation of biodiversity based on the targeting of resources towards priority habitats and species.

Biodiversity Opportunity Area (BOA) – Areas of land identified by the SE England Biodiversity Partnership, where opportunities for large biodiversity large landscape scale provision exists

**Birds Directive** - A European Union Directive that put in place an obligation to identify Special Protection Areas across the EU Member states.

**Birdstrike** - Damage caused to an aircraft by birds striking the fuselage or entering an engine

**Boundary features** - field boundaries and associated margins comprising hedges, grass or grass/wildflower strips, fences, walls, ditches, banks, rivers and streams

**Buffer zone -** a strip of land, of specific width, used to separate different land uses.

С

**Chalk** - A soft fine textured limestone of marine origin and consisting almost wholly of calcite.

**Contaminated land** - Land is identified as contaminated if: significant harm is being caused or there is a significant possibility of serious harm being caused or controlled waters are being contaminated.

**Controlled landfill -** where wastes are deposited in an orderly planned manner at a site licensed under the Control of Pollution Act 1974

**Controlled Waste** - Controlled Waste is defined by both the Control of Pollution Act 1974 and the Environmental Protection Act 1990 as household, industrial and commercial waste or any such waste.

**Controlled waters** - include all watercourses, canals and water contained in underground strata (groundwater)

**Contours** - a line on a map joining land of equal height

**Corridor** - in ecological terms a linkage between habitats that allows species dispersal and the transfer of genetic material.

**County Planning Authority (MPA)** – The authority responsible for determining planning applications for mineral site working and restoration. In the case of this guide Surrey County Council.

# D

**DEFRA** - Department of Environment, Food and Rural Affairs **Development Plan** - Local Development Framework prepared by local planning authorities in accordance with the Planning and Compensation Act 1991, to describe the policies and proposals for the development of the area. **Diversity** - The quality of having variety, as in the variety of species and habitats

# E

**Ecology** - The study of how living things relate to their environment and the surroundings

**Environment Agency** - Non departmental government body, set up under the Environment Act 1995 to take an integrated approach to environmental protection and enhancement in England and Wales

**Environmental Impact Assessment** - a process of assessing the environmental implications of a proposal.

**Environmental Impact** - the total effect of any operation on the environment **Enhancement** - Environmental improvement of a site

F

**Forestry** - The growing of an utilisable crop of timber (1990 Act) **Floodplain** - all land adjacent to a watercourse over which water flows or would flow but for flood defences during times of flood **Futurescapes** – term used by RSPB to describe large / landscape scale biodiversity initiatives. G

**Gravel** - Naturally occurring aggregate of more or less rounded rock fragments which are coarser than sand ie. 2-64 millimetres in diameter, and used as a building and construction material and in drainage works.

**Green Belt** - predominantly open land around urban areas which have a strategies role of checking the unrestricted sprawl of the town, safeguarding the surrounding countryside from encroachment, assisting in urban regeneration and providing areas where outdoor recreational activities can take place and wildlife habitats maintained.

**Groundwater** - all subsurface water as distinct from surface water. Generally groundwater is considered to be that water which is below the zone of saturation and contained within porous soil or rock stratum

# Н

**Habitat** - an ecological unit comprising all the species, populations and communities within a local environment

**Habitat Action Plans (HAPS)** - all priority habitats as identified by the UK Biodiversity Action Plan to receive their own costed plan, intended to ensure remaining habitat is appropriately managed and all opportunities for expansion explored.

Hydrology - the study of water and its dynamics

# I

**Informal recreation** - an activity in which participants require no specific skills or equipment

**Inert materials** - materials that will not physically or chemically react or undergo biodegradation

# L

**Landfill** - The deposit of waste onto and into land, and through restoration, to provide land which may be used for other purposes.

**Landfill Gas** - An end product of the degradation of biodegradable waste in a landfill site

Landscape - "refers primarily to the visual appearance of the land, including its shape, form and colours. It also reflects the way various components combine to create specific patterns and pictures that are distinctive to particular localities. However, the landscape is not a purely visual phenomenon, because its character relies closely on its physiography and its history. Hence, in addition to the scenic or visual dimension of the landscape there are a whole range of other dimensions, including geology, topography, soils, ecology, archaeology, landscape history, land use, architecture and cultural associations." (Countryside Commission CCP3 423 1993)

**Leachate** - Liquid, which seeps through landfill, and by doing so extracts substances from the deposited waste

**Legal agreement** - An agreement made between a local planning authority and any person interested in land in their area.

**Living Landscape –** Term used by Wildlife Trusts to describe large / landscape scale biodiversity initiatives.

**Local Plans** - statutory land use plan for a local area or a specific topic concerned with the detailed implementation of the policies of the structure plan.

**Local Nature Reserve (LNR)** – Locally important wildlife site designated for protection by the local authority.

**Loose Tipping -** Direct replacement of soils, whereby soils are sequentially stripped and transported across the site by dump truck and tipped directly in the correct sequence in the area to be restored, and re-spread with a backacter. **Low Level Restoration -** the re-establishment of land following mineral extraction without in filling with waste material

# Μ

Marsh - a more or less permanently wet area of mineral soil

**Meadow** - grassland cut for hay or silage

**Minerals Planning Policy Statement and Planning Guidance -** Government advice on mineral planning in England and Wales

**Mineral development** – development consisting of the winning and working of minerals or involving the depositing of mineral waste

Mineral Void - the hole or space left following mineral extraction

**Mineral Working** - the preparation of the ground and extraction of minerals. **Multi-Use Site** - The accommodation of different uses on one site

# Ν

**National Nature Reserve (NNR)** – Statutory designation that is of national or international importance to nature conservation

**Natural Areas** - a concept devised to define areas of geological and ecological homogeneity

**Natural regeneration** - a term describing the process of secondary succession on an abandoned site previously managed by human activity

**Non-statutory** - an organisation or status that does not confer legal duty and/or protection

# 0

**Overburden** - Material overlying the mineral deposit, which must be stripped prior to extraction and can be utilised in the restoration.

# Р

**Planning designations** - land or features identified and protected (locally, nationally, internationally) in development plans from development or harm. **Planning Policy Guidance** - guidance issued by government setting out Government's policy on planning issues such as housing, transport etc **Planning Permission** - Formal permission given by local planning authority to develop and use land.

**Phased Working -** Method of working minerals in phases enabling progressive restoration

**Pre-application discussions** - Discussions held between the applicant and other interested parties, usually including the local planning authority, concerning a proposed development.

**Progressive Restoration** - Method by which a site is worked and restored progressively on a phased basis, minimising the area of land worked at any one time.

# R

**RAMSAR Site** - A wetland SSSI designated under the Ramsar Convention for being of international importance

**Representations** - Written letters sent into the local planning authority from the public regarding a planning proposal.

**Restoration led mineral planning** - implementation of a restoration vision from pre-application stages through to establishment of the after-use.

**Restoration** - Process of returning a site or area to its former or future use following mineral extraction

Regionally Important Geological or

**Geomorphological Site (RIGs)** - an area of earth science interest that is of county significance

# S

**Sand** - Mineral, rock or soil particles that range in diameter from 0.06 to 2 millimetres.

**Sand and Gravel** - Naturally occurring materials which are formed as a result of the disintegration of rocks through the weathering process and are transported by wind, water and ice.

SANGS – Suitable Alternative Natural Green Space. Term used to describe an area of land that is identified for recreational use to offset recreational pressure arising from new housing development on the Thames Basin Heaths SPA complex.

**Scheduled Monuments** - an archaeological site of national importance **Site of Nature Conservation Importance (SNCI)** - a non-statutory designation attributed to sites of regional and local wildlife and/or geological importance **Site of Special Scientific Interest (SSSI)** – A site that is important on account of its flora, fauna, geological or physiographical features.

**Soil** - The naturally occurring material on the surface of the earth which serves as the growth medium for plants (see also topsoil, subsoil, overburden)

**Soil Restoration** - Operations after the winning or working of minerals has been completed, using subsoil, topsoil or soil making material to restore the site.

**Soil structure** - The arrangement of solid (or mineral) soil particles and pore spaces.

**Soil stripping** - The removal of soil from the land prior to mineral extraction **Special Areas of Conservation (SACs)** – areas designated under the EU Habitats Directive

**Special Protection Areas (SPAs)** – sites identified by UK government under the EU Directive on the Conservation of Wild Birds (79/409/EC)

**Species** - a group of organisms that resemble one another closely and one or more groups of individual that can interbreed within the group but cannot exchange genes with other groups.

**Species Action Plan (SAP)** - all priority species included in the UK Biodiversity Action Plan will be in receipt of their own SAP.

**Statutory** - implies a legal role

**Stockpile** - A pile of material, overburden, mineral stored during mineral extraction and restoration phases

**Subsoil** - The soil material beneath the topsoil and overlying the bedrock. Composed of weathered parent material, low in organic matter.

**Succession** - The gradual and predictable process of progressive community change and replacement in vegetation, leading towards a stable climax plant community

**Supporting Statement** - A written statement submitted to the local planning authority by an applicant in support of a planning application

# Т

**Top Soil** - The biologically active, organic-rich surface layers of a soil, which provide a medium for plant growth.

# W

# Waste Management Licence

Water table - level below which the soil/rock is permanently saturated

# Ζ

**Zoning** - method of achieving multiple uses on a site by separating out conflicting uses and locating them on different parts of the site.

