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(NATURAL ENVIRONMENT RESEARCH COUNCIL)

SECOND INTERIM REPORT TO THE NATURE CONSERVANCY COUNCIL ON BRITISH RAIL LAND - BIOLOGICAL SURVEY

(NCC/NERC CONTRACT NO F3/03/80 : ITE PROJECT NO 466)

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BRITISH RAIL LAND - BIOLOGICAL SURVEY

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INTRODUCTION

In our first Interim Report dated March 1977 proposals were made for the work to be undertaken in the contract year 1977/78. The methods paragraph, which foresaw the division of the work into a resource survey and a special sites survey, together with the continuing of archival and historical studies, and liaison with British Rail, was subsequently agreed. This second Interim Report describes the outcome. All the fieldwork was confined to the Eastern Region of BR.

RESOURCE SURVEY

The resource survey was divided in two parts:

A. Recording of random sites

B. Recording of cutting and embankment sites orientated east-west or north-south. An equal number of each sort was taken.

Sixty random and sixty cutting/embankment sites were selected, representing sixty days' fieldwork, all of which were completed.

SPECIAL SITES SURVEY

The special sites survey was undertaken on an opportunity basis. Information about the location of possible sites of Biological Interest was obtained from a number of sources, principally the Regional Offices of the NCC, and from descriptions of localities of plant records in County Floras. Some others were visited speculatively, and in all 55 sites were recorded. In addition, some of the sites in the resource survey were judged to be of biological interest, and files on these will be added to the dossier of special sites to be prepared.

HISTORICAL AND ARCHIVAL STUDIES

Historical and Archival studies have been continued. Whilst the main effort has been confined to the Eastern Region of BR, it has not been possible to deal with the Region exclusively because of the complexities of development of the railway system and interwoven nature of the network. As a result, the data presented in this report are fragmented, and we do not expect to be able to give a comprehensive account until a later stage in the contract.

Liaison with British Rail has been developed as opportunities have occurred, and we are very grateful to BR staff for the help and co-operation that we have received from them at all times.

HISTORICAL STUDIES

By the 1920s, the railway network had reached its greatest extent of 23,400 miles. Through agreements and amalgamations between railway companies, a reasonably unified network had evolved. It is of interest now to see whether the surviving network covers representative samples of each major type of landform, rock, soil and habitat in the United Kingdom and, in particular, to test the hypothesis that the railway provides a microcosm of the natural environment.

In the words of the Nature Conservation Review, 'railways tend to follow the low ground and valleys: they traverse a wide variety of geological formations, and their verges have a correspondingly wide range of soils'. These observations may be assessed in the context of Eastern Region by reference to Figures 1 to 3. There is a clear relationship between the routes chosen for the railways and areas of relatively low relief (Figure 1). For example, by taking advantage of the Vale of York, it was possible to build an almost straight and level track for 30 miles to the north of York, and gradients were negligible over a length of 100 miles between Retford and York. The route to Scotland used the comparatively narrow coastal lowland north of Morpeth, whilst the lines through the Pennines used the Tyne valley, and the one through the Chilterns exploited the Lee-Stour. The bias toward low-lying areas was complicated, however, by the need to avoid, where possible, areas prone to flooding and ground-instability. For this reason, the line to Skegness kept well to the north of the coastal marshes, and similarly the railway north of Hull skirted the western edge of the Vale of Holderness.

Figure 2 relates the railway network to the generally north-south strike of the sedimentary rocks, and shows lengths of line which might include samples of habitats associated with particular rock formations. Considerable lengths traverse the comparatively young formations of the Norwich Red Crags, and the London and Oxford Clays. Many strata are, however, covered by drift, which usually considerably modifies any effects of the underlying rock on vegetation. Figure 3 takes the form of a generalised soils map of the Region and, for example, illustrates the variety of soils that has developed on the drift overlying the chalk; soils range from Rendzinas on the Wolds to the Brown Sands of the Breckland and Calcareous pelosols of the Chilterns. Where the surface of the railway cuttings and embankments include mixed samples of the local rock, drift and consequent soils, it may be particularly difficult to interpret the resulting pattern of habitats.

In order to appreciate the array of factors which led to the choice of a railway-route, an example may be given of one phase in the selection of a route from London to York. When Joseph Locke was commissioned in 1844, he tried to balance three attributes: the easiest route from an engineering point of view, the most direct route, and the possibility of access to as many flourishing centres as possible. The weight given to each factor varied along the route. Between London and Potters Bar, there was no choice but to adopt a route which involved a tunnel of a mile in length and large earthworks through London Clay. The route between Potters Bar and Hatfield was 'easier', but primary consideration had again to be given to engineering constraints between Hatfield and Hitchin. Even on the course 'best adapted to the surface of the country', there would have to be viaducts, deep cuttings and short tunnels. There was a relatively direct and easy route from Hitchin to Huntingdon, from where two possible routes were proposed, either via Peterborough, Deeping, Bourne, Folkingham, Sleaford, Lincoln and Gainsborough, or through Stilton, Wansford, Stamford, Grantham, Newark and Tuxford. Locke pointed out that Peterborough, Lincoln and Gainsborough contained three-quarters of the population and potential goods traffic in the towns of the first alternative, and that the optimum route would attempt to incorporate these three towns on a line which would otherwise follow the second alternative. He believed that this could be achieved by linking Newark and Lincoln to the main line by short branch lines which would, in themselves, become part of an east-west network of routes. Locke's proposals were only a few amongst many made during the long promotion of the Great Northern Railway, and the eventual line was markedly different in some parts from that which he had proposed.

Any detailed geograhical and historical analysis of the railway network soon underlines the fact that no national master-plan was ever conceived, and that there were considerable variations in the density of routes in different parts of the country. Since the early part of this century, the length of track has now declined from its maximum by at least a half, to about 11,300 miles, causing the network to shrink in particular from upland areas. Nevertheless, extensive line closures have been experienced even in West Yorkshire and the industrial North-east. In addition, although such lengths as the Peterborough-Retford line may provide cross-sections of a wide range of country, other areas are unrepresented; for example the North York Moors and Lincolnshire Wolds are two of many types of landform and scenery which are now devoid of operational railways.

In its assessment of their ecological significance, the Nature Conservation Review laid stress on the value of the railway verges as 'relatively undisturbed habitats in which plant communities have developed under a fairly stable

management regime'. It is for this reason that conservationists would regret any major change in their use and management. But how far is this interpretation historically valid, and therefore relevant to future vegetation? From the archival studies now in progress, it is clear that the history of the verges is much more complex than previously supposed, reflecting the extended period over which the lines were constructed and the incidence of subsequent track-widening and re-alignment programmes. Although Figure 4 may give the impression of long lengths of line of similar age in Eastern Region, almost every section has experienced later engineering works. Thus, in order to accommodate increasing traffic, considerable lengths of the Great Northern Railway track had to be tripled and quadrupled during the late nineteenth century. In some cases, this amounted to a virtual rebuilding of at least one side of the railway, as cuttings and embankments were widened, a new drainage system installed, and fresh grass sods were laid or seed was sown on the new earthworks. As the author of the 'History of the Great Northern Railway' wrote, the original contractors 'would probably fail altogether to recognize their own handiwork'.

This pattern of frequently piecemeal reconstruction and disturbance has continued, and its significance for wildlife conservation is referred to later in this Report. In the case of the major routes, especially near London and other important centres, the habitats which occur beside the permanent way are likely to be both recent in origin and complex in the manner in which they have developed.

Lastly, in studying the ecological processes taking place in such artificial ecosystems, and their implications for wildlife conservation, detailed reference must be made to the creation and management of the earthworks and the consequent development of wildlife habitats.

For these reasons, studies are being undertaken of the age and extent of the railway network, the way in which the railways were constructed and managed, and their impact on the physical landscape. When completed, these studies should complement and expand on those reported in the First Interim Report. The creation of the five Regions of British Rail is recent in terms of railway history, and it has proved more efficient to carry out these studies within the context of the entire railway network rather than for each Region in turn. Accordingly, the studies on the whole network are still in progress and we shall not report in greater detail at this stage on the Eastern Region.

RESOURCE SURVEY

Random Sites (Appendix 2)

a. Description and aim. These sites were distributed randomly on a geographical basis, with the hope of covering a wide range of railway features. From this survey it was expected that it would be possible to develop a general picture of the railway resource in rural areas, with some indication of the relative proportions of the different features.

Three major urban areas as defined on a map of the Eastern Region provided by BR, were excluded from the survey. One of these, the West Yorkshire conurbation, is the subject of a general ecological survey that includes railway land undertaken by the Unit of Comparative Plant Ecology at Sheffield. We are hoping to be able to make use of their data for that area. The other two conurbations excluded were London and Tyneside. The reasons for these exclusions were:

1. Large urban areas represent rather specialised situations that we could not do justice to with our available resources.
2. They contain dense networks of track which would give undue weight to urban areas if site selection were based on strictly proportional sampling of track mileage.
3. In a random sampling scheme, the chances of selecting localities of dereliction with little or no vegetation would be unacceptably high. Sampling of such sites in a very limited survey such as ours would reduce the opportunities for recording the more urgent situation in rural areas.

The decision to exclude conurbations was not taken without consideration of the counter-arguments about the importance of railway land in these areas for wildlife habitats. Especially for the intrinsic interest of populations of ruderal, adventive and alien species of plants, and for the wide range of animals for which urban and railway land provides a habitat and a refuge.

b. Methods. Having excluded the three main urban areas, the Eastern Region of BR was divided into five approximately equal land areas (Fig. 5). It was found that these areas coincided reasonably with the Divisional boundaries of the railway in the north of the country, which were therefore taken for administrative convenience as our boundaries. In the south our areas 1 and 2 were arbitrarily decided by a line drawn from west of Kings Lynn on the Wash, to Clacton-on-Sea on the Essex coast. The King's Cross, Stratford and Norwich Divisions of the railway were included, but no attempt was made to adjust these boundaries.

The track mileages in the five areas thus drawn were measured on a map of 8 miles : 1 inch provided by BR, and the 60 sites apportioned between the areas in proportion to the track mileage (Fig. 5).

Location of individual sites was obtained by the use of random numbers (within the range required) to give co-ordinates of 10 km squares of the national grid. These were then searched on the appropriate maps of the 1:25000 series for access points to railway lines closest to the centres of the squares. Where there was any doubt, the search was conducted in a clockwise direction from grid north. If a particular 10 km grid square did not mark a railway, adjoining squares taken in clockwise order from the north were scanned in the same manner.

Sites were related to access points, as previous experience had shown that this was unlikely to produce any observable physical or biological bias. The precise location of a site was indicated by taking the closest railway quarter mile post to the access point, providing that it was not part of it, or clearly influenced by it. The quarter mile post was taken as the beginning of a 100 yds (measured by pacing because of the physical difficulty of managing long tapes in over-grown areas and around obstructions) plots for detailed recording on both sides of the track.

Records were made of the physical characteristics of each site, vegetation and some zoological observations, using purpose designed proformas (Appendix I). These data consisted of:

1. General plot descriptions.
2. Four quadrat records, taken at the ends of each plot and either side of the track.
3. Overall species lists for each side of the track.
4. Animal sightings and habitat records for the plot as a whole, and the immediately surrounding area.

In addition, photographs were taken to provide general and detailed pictures of the plots. These photographs were regarded primarily as supplementing the written records, but some of them will be useful for display and other purposes.

The detailed vegetation records were taken from square plots of area 50 m^2 using a quadrat design advocated by (and indeed provided by) Shaw and Bunce. First described in 1971 and subsequently used by them, by Hill and by others in a variety of situations, this consisted of a central post with four strings radiating diagonally to posts at the corners of the square. Coloured markers

at intervals along diagonals marked the corner locations of concentric squares of $1m^2$, 4 m^2, 25 m^2 and 50 m^2. The whole quadrat was located by placing the centre post at the measured centre of the railway verge, with one side of the square parallel to the track. In some instances, the full extent of the quadrat took in flat and sloping areas. In other places, the verge was too narrow to accommodate the whole width of the quadrat, and records were only possible from parts of it. Normally, however, the quadrat fitted onto the main landform (slope or flat).

Once the quadrat was laid out, the procedure was to record all species in the centre marked 1 m^2, and then the additional species occurring in the successively larger marked squares, recording on the proforma the square (1 m^2, 4 m^2, 25 m^2 and 50 m^2) in which the species was first recorded. At the completion of this process, the individual species were then scored for their estimated cover of the entire quadrat, as a percentage. No attempt was made to reduce the total percentage cover figure for all the species to 100% as the vegetation was usually highly structured. In 1977 (mainly woody) species that were rooted outside the quadrats, but overhung them, were recorded as if they occurred in the quadrat at the first position where their projection was noted. Climbers and stragglers such as Clematis, Convolvulus and Galium aparine were treated similarly. However, in 1978, we shall probably make a distinction between species rooted in the quadrat, and those outside although overhanging. Only vascular plants were recorded, but, if there was a significant moss carpet, the cover value for this under the entry 'mosses' was made. Similarly, cover values for bare ground and plant litter were recorded.

On some occasions, plants of particular interest were seen on the approach to the plot, or at some other location nearby. Notes on these were made.

Some results of the preliminary assessments and analyses from these data are given below with the data from the cutting/embankment sites.

Cutting/Embankment Sites (Appendix 3)

a. Description and aim. Associated with the random sites, an equal number of cutting and embankment sites were selected, 30 orientated east-west, and 30 north-south. In the ideal situation the two formations were continuous, in the expectation that material from the cutting would have been used in the formation of the embankment at the time of construction. Neither this ideal nor the exact orientation east-west or north-south were always possible, but it was felt that the 60 sites recorded conformed to the spirit of the requirement. The

general aim was to test the hypothesis that the aspect and nature of the contrasting formations would have a significant and detectable influence on the vegetation.

b. Methods. In choosing a method for the selection of these sites, a guiding principle was that they should be close enough to the random sites that a pair should constitute a convenient day's work. As a consequence, a system was adopted whereby, once a random site had been located (see above), the same map was then searched in a clockwise direction for the first occurrence of a section of contiguous cutting and embankment orientated in the correct direction. In the majroity of cases, it was possible to find a suitable site within five miles, but in some of the flatter areas of Norfolk, the Fens, Holderness and the Vale of York, this selection was not possible and greater distances were involved.

It is recognised that this method did not produce a random sample of the total populations of east-west and north-south orientated cuttings and embankments in the Eastern Region of BR. To have undertaken a map search to list the total populations from which a sample could then have been taken was considered impracticable. It is contended, however, that the sites were selected objectively from a wide range of random geographical locations, and that, given the constraints of our survey, they represented a reasonable sample of the variation. Nevertheless, the method of selection of these sites is being re-examined with a view to any practical improvements that can be made for future field seasons.

On arrival at the access point to these sites, a 100 yd long section was chosen for the recording plots with reference to some available artefact; if a quarter mile post was present it was usually chosen. At these sites, only one pair of quadrats was recorded, one on each side of the track, for the cutting and the embankment respectively. The quadrats were located at the mid-point of the 100 yd plots and at the measured centre point of the slope. Only vegetation on the slope was recorded, and any overlap of the quadrat onto flat areas at the top or bottom was ignored. Where grassland was represented on each side of the track, and the first quadrat was in grassland, an adjustment might be made to the exact location of the quadrat on the other side if it happened to fall unrepresentatively in the deep shade of an isolated bush, or the middle of an isolated bramble patch. The quadrat recording procedures were the same as for the random sites.

Records of four kinds were made separately for the cuttings and for the embankments, using the same proformas as for the random sites, with the exception of the site descriptions themselves, for which a separate form was used (Appendix 1).

Overall species lists were made for the sloping areas only, with the separate addition of any other species of particular interest that might occur in the general area of the plot. Photographic records were also made to supplement the written data and descriptions (Appendix 7).

Accumulation of data

Data from a day's work would typically consist of:

a.	Random site data	Site description	1
		Quadrat records	4
		Animal record form	1
		Species list (one per side of track)	2
		Photographs	
b.	Cutting/Embankment site	Site description (combined)	1
		Quadrat records (two per formation)	4
		Animal record forms	2
		Species lists (two per formation)	4
		Photographs	

to give for the season:

Random sites	60 site descriptions
	240 quadrat records
	120 species lists
	c40 animal record forms
Cutting/Embankment sites	60 site descriptions
	240 quadrat records
	240 species lists
	c80 animal records (some combined)

The animal habitat and sighting record form was introduced about a third of the way through the season to formalise the notetaking that had been used earlier. Collation and interpretation of the observations are presented below under 'Results of animal recording.

Results of botanical recording

The quadrat data from the random sites, and those from the cutting/embankment sites have been separately subjected to Indicator Species Analysis using programmes developed by Hill and Evans to produce hierarchies of five divisions. In the case of the random data, the initial split in the hierarchy has been to

separate off two quadrats where there was no data (because there was no vegetation) from the remainder. The subsequent four divisions have given rise to 16 final groups. With the cutting/embankment data, the initial split has been in effect at the same level as the second division of the random data, with the result that the five divisions have generated 32 final groups.

The results of the two analyses have been examined in relation to the site characteristics of the original data, and two dichotomous field keys based on Evans, Hill & Ward (1977) (A dichotomous key to British submontane vegetation) have been constructed using the indicater species for the end groups. As might be expected, there are some differences between the results of the two analyses (random sites, and cutting/embankment sites), and the field keys are not entirely compatible to the extent that particular quadrats do not necessarily key out in the same end groups in both keys. To some extent this is the result of there being 32 end groups in the cutting/embankment data compared to 16 in the random data; and to some extent to expected differences in the data sets themselves. Further analyses are now being made to extend the random data to 32 end groups, and to combine the two sets of data in one analysis. In the meantime, the dichotomous key based on the random data (Figure 6) is being used to make further tests of the usefulness of keys to describe railway vegetation. It seems likely that this use of a key will be possible, and that, if so, a reproducible method will be available for more extensive assessments.

In Figure 6, individual quadrat species records are examined and compared with List A. The occurrence of species in List A is then marked off in column 1 as + or - as indicated (species that do not occur in column 1 are ignored at this stage). The pluses and minuses are totalled and subtracted and the result entered in the 'T' box at the foot of the column. Depending upon whether the result in equal to or less than 0, or more than 0, the instructions at the foot of the key are followed, and the procedure repeated in further columns until an end group (indicated in roman numerals) is reached. Care should be taken to include the threshold weightings in columns 4, 5, 6, 7, 10, 12, 13 and 15. In column 1, at the first level of the dichotomy, if the score is greater than 0 the user is referred to List B, where exactly the same procedure is followed. It will be noted that in this key, based on analysis of the RANDOM sites, there are 16 end groups. It is anticipated that this will be extended to 32 by means of further analysis (see above) to produce the next level of the hierarchy. However, this does not necessarily mean that the vegetation will be divided into this number of groups in the final interpretation. It

is quite likely that amalgamations will be made of some of the smaller or less well defined groups.

Broadly end groups I toVIII (List A) represent permanent mixed grasslands, with quite consistent occurrence of 25% Arrhenatherum elatius, 5% Festuca rubra, Dactylis glomerata and Poa pratensis. These are generally undisturbed sites, with little invasion by woody plants. Of the 132 quadrats contributing to these end groups, 49 were on cutting and 14 on embankment (the remainder were low banks or flats). End groups IX to XVI (List B) represent disturbed ground and woody vegetation with consistent occurrence of bramble, nettle and Galium aparine. Of the 106 quadrats contributing to these end groups, 54 were on embankment and 10 on cutting.

Further subdivisions of these two lists bring together quadrats with common attributes of occurrences in different geographical areas within Eastern Region; of pH; of geology (chalk/limestone sites versus clays versus sandstones and alluvia); of moisture; of altitude; of degree of disturbance; of species richness; of dominance by particular species or of shading by trees. Unfortunately none of these provide a basis for selection of criteria that can be identified from existing maps, and whose populations can be measured, for use in a programme of random stratified sampling.

Whilst procedures such as those described above may be useful in other contexts for mapping vegetation, there is little prospect of being able to map vegetation on railway land throughout the UK, except on a detailed scale for discrete sites. In general, there are discernable gradients in the vegetation across most railway formations that in other situations would be recognised as distinct vegetation types; and also rapid linear changes in major vegetation types (fine herb rich grassland, coarse grassland, bramble and tall herb, scattered scrub, closed scrub, woodland) along the track associated with changes in the formation, past management and recent disturbance. In fact, these changes both along and across the railway verges are so rapid that the 50 m^2 quadrats frequently represent a segment of the vegetation gradient and therefore a heterogeneous situation, rather than the homogeneous population advocated by Hill. In this way, it will be seen that railway vegetation can be described as a complex variable mosaic, sometimes fine and sometimes coarse, rather than a succession of discrete and identifiable zones.

Figure 6. Dichotomous key based on RANDOM sites data.

Species list A		1	2	3	4	5	6	7	8	Column
					--	+++	++	+		Threshold Weighting
Achil mil			+					--		
Agrop rep			--							
Agros ten							-			
Antho odo					+					
Arabi tha				+						
Arrhe ela	>25%	+			+		+	+		
Brach pin				-		--		-		
Brach pin	>5%					-		--		
Centa nig					+					
Cirsi arv									--	
Dacty glo		+								
Daucu car					+					
Epilo ang			-				-			
Epilo ang	>5%						-			
Festu rub		+								
Festu rub	>5%	+		+						
Galiu apa		--								
Geran dis				-						
Holcu lan									-	
Holcu mol							-		+	
Holcu mol	>5%						-		+	
Knaut arv								-		
Lamiu alb				--						
Leuca vul	>5%					-				
Lotus cor						-				
Plant lan					+					
Poa ang									-	
Poa ang	>5%			+						
Poa pra s.s.		+	+							
Poten rep				-			+			
Primu ver						-		-		
Ranun rep				--						
Rubus fru s.l.	>5%	-								
Rubus fru s.l.	>25%	--								
Rumex acetosa									+	
Sonch asp			+							
Trise fla								--		
Urtic dio		-		-		+				
Urtic dio	>5%	--		--						
Vicia cra			-							
Vicia sat ang			+							
Vicia sep			--							
Viola hirta						--				
Viola riv							-		+	
bare ground					--		-			
bare ground	>5%				--		--			
litter			--							
litter	>5%		-							
T =										
If T <=0 go to :		9	6	5	II	IV	8	VI	VIII	
If T >0 go to :		2	3	4	I	III	7	V	VII	

Figure 6 (cont.)

Species list B		9	10	11	12	13	14	15	Column
			--		-	-		-	Threshold Weighting
Anthr syl							+		
Arrhe ela			+						
Arrhe ela	>5%		+						
Arrhe ela	>25%	-						+	
Arum mac					-				
Bromu ste								+	
Cirsi arv							-		
Convo arv							-		
Crata mon		+							
Crata mon	>5%	+		+					
Dacty glo			+						
Epilo ang		+	+	-					
Epilo ang	>5%		+	-					
Equis arv					+			-	
Filip ulm	>5%					-			
Galiu apa							-		
Glech hed		-						-	
Glech hed	>5%							-	
Herac sph							+		
Iris pse								+	
Lamiu alb		-				-		+	
Lathy pra					+				
Poa pra s.s.		-							
Poten rep							+		
Prunu spi					-				
Querc rob			-						
Ranun rep			-						
Rosa can s.l.				+					
Rubus fru s.l.					+	+			
Rubus fru s.l.	>5%				+				
Rubus fru s.l.	>25%		+						
Salix cap				-					
Salix cap	>5%			-					
Salix cin ole					+				
Urtic dio	>5%	-		+					
Urtic dio	>25%	-				-	-		
bare ground		+				+			
bare ground	>5%					+			
litter						+			
bryophytes			-						
bryophytes	>5%		-						
T =									
If T $\leq$ 0 go to :		13	12	X	XII	15	XIV	XVI	
If T > 0 go to :		10	11	IX	XI	14	XIII	XV	

Bearing these problems in mind, we are now running an additional analysis, using the data from the 4 m^2 segment of the quadrats, to see if we can detect homogeneous facies of the vegetation by using the smaller quadrat size. If this is successful we shall use the 4 m^2 quadrat size for grassland situations in future. Similarly, we shall use either a 16 m^2 or 25 m^2 quadrat for coarse bramble, scrub and woodland types, but in this case we shall record separately the centre 4 m^2 (including separate cover assessment) to ensure comparability between all quadrats. Thus, the size of quadrat to be used will necessarily be a compromise, dependent upon the practical needs of the fieldwork programme, and upon the nature of the vegetation. Results to December 1977 indicate that the groupings generated so far are recognisable and sensible, and will provide information about the total variation of plant communities, together with detailed information about sections or sites of particular interest.

In addition to the quadrat data, the total species list data for the sites are being processed. It is anticipated that these data will give additional information about the distribution of species.

Table 1 shows the average number of species for the centre 1 m^2 of the nested 50 m^2 quadrats, and the average increment for the 4, 25 and 50 m^2 segments, for the random, cutting and embankment sites.

Table 1 Average numbers of species in successive segments of the 50 m^2 nested quadrats

Site	1 m^2	4 m^2	25 m^2	50 m^2	Whole
Random	7	4	7	4	22
Cutting	10	5	7	4	25
Embankment	6	3	6	4	19

The table indicates a greater total number of species occurring per unit area on cuttings than embankments, with the random sites (a high proportion of which were on the flat or low banks) occupying an intermediate position. The variability of the vegetation in general is indicated by the increase in numbers of species with increasing size of quadrat, and is demonstrated in the graph (Fig 7) by the upward trend of the species/log area curves.

Table 2 compares the average total number of species per quadrat for the different aspects of the cuttings and embankments.

Table 2 Average total species per 50 m^2 quadrat on different aspects of cuttings and embankments

	North	South	East	West
Cuttings	21	25	27	27
Embankments	16	19	20	20

The table indicates a 20-30% decrease in species on embankments for all aspects compared to cuttings, with north facing cutting or embankment slopes supporting fewer species than the other aspects.

Results of animal recording

This section is freely based on a report written by Mr. A.R. Laws of UWIST, Cardiff, who assisted with the survey in 1977 as part of his industrial training.

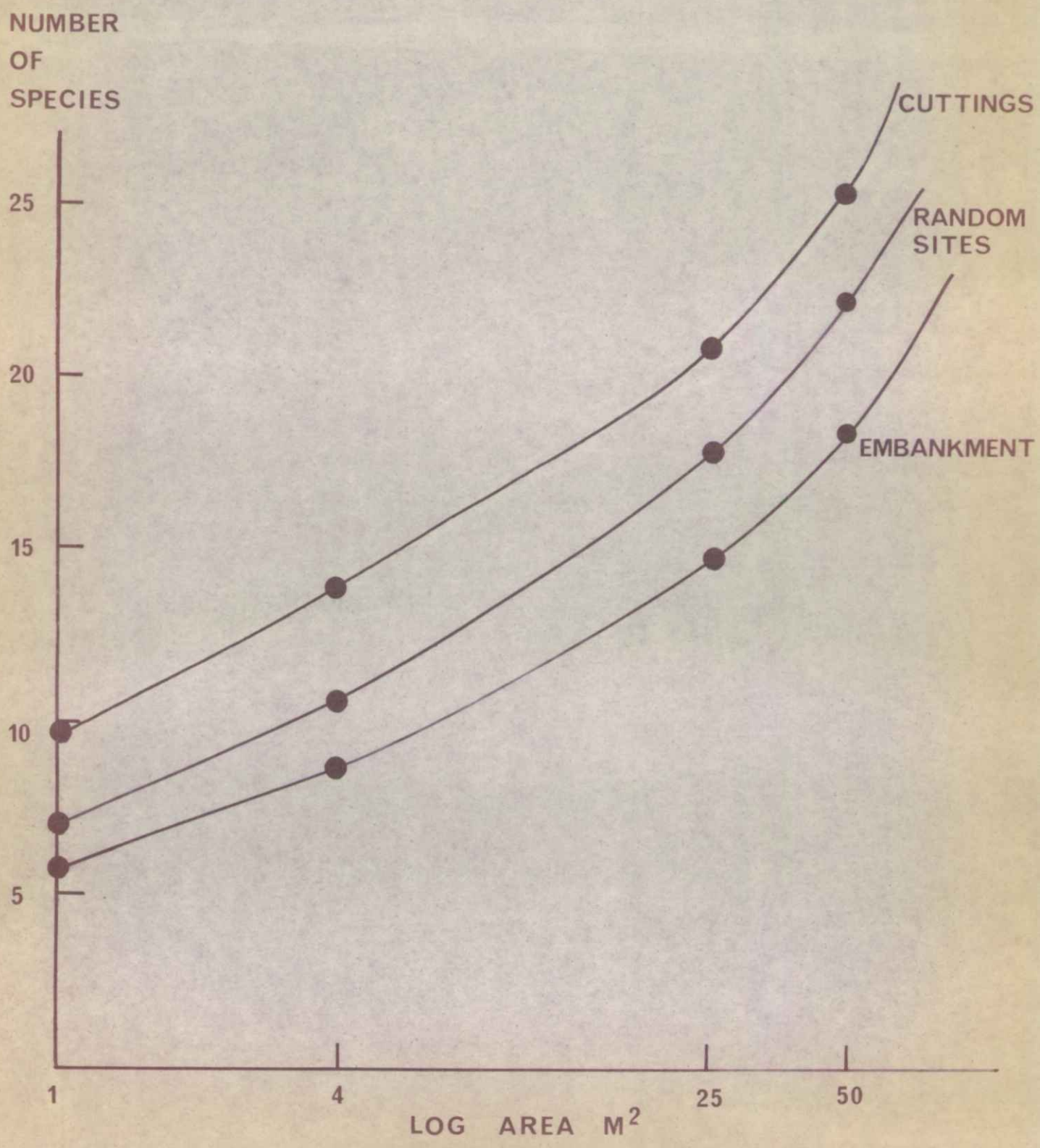
a. Methods. An example is given at Appendix 1 of the proforma used to record sightings of animals, and for the description of animal habitats at random, cutting and embankment sites. The proforma was introduced at the beginning of June 1977, and was completed for 38 random sites, two combined cutting/embankment sites and for 37 individual cuttings and embankments. In all 114 sites were recorded this way, whilst information in note form for sites visited before the introduction of the proforma exists for a further 42, making 156 records in all.

The time spent at each site varied, but was generally one to two hours. This time restricted the number of species seen but allowed time for assessments of the sites to be made, taking into account habitat types, neighbouring land use, traffic disturbance, together with latitude and time of year of the visit. The weather and time of day influenced the number of sightings, especially of insect species. In general the area south of the Humber was surveyed in the period May-June, while the area north of the Humber was worked in the period July-August. However, none of the species of animals encountered were notable for any restriction of their distribution within the Eastern Region.

b. Observations. Railway land was found to provide a wide range of habitat types, as noted previously, and it became apparent that the major habitat types,

Figure 7

Species/area curves
for cutting sites, random sites
and embankment sites



usually associated with the different land forms, supported different animal communities. The importance of the various habitats to birds, insects and other animals is discussed below.

c. Birds. A complete list of birds seen, or reported, on British Rail land in the Eastern Region is given in Table 3. Additional species seen on neighbouring land but probably using the railway were also recorded. It will be seen that the most frequently recorded railway species were whitethroat, blackbird, goldfinch and linnet. The presence of the first two, which were both found to nest on the railway land, was probably a reflection of the increase of scrub on the banks and cuttings. Goldfinches and linnets on the other hand used the railway mainly as a feeding area, attracted by the large numbers of seed bearing plants such as thistles (Cirsium spp.), knapweeds (Centaurea spp.) and the mouse-eared chickweeds (Cerastium spp.).

Table 3. Birds seen or reported on railway land in the Eastern Region of British Rail.

Common name	Scientific name	No. of sightings
Blackbird	Turdus merula	46 N
Blackcap	Sylvia atricapilla	4
Bullfinch	Pyrrhula pyrrhula	9 N
Bunting - Corn	Emberiza calandra	1
Reed	E. schoeniclus	23 N
Chaffinch	Fringilla coelebs	11
Chiffchaff	Phylloscopus collybita	4
Coot	Fulica atra	1 N
Crow - Carrion	Corvus corone corone	8 N
Cuckoo	Cuculus canorus	3
Dove - Collared	Streptopelia decaocto	3
Rock	Columba livia	1
Stock	C. oenas	1 N
Turtle	Steptopelia turtur	5
Dunnock	Prunella modularis	24 N
Flycatcher - Spotted	Muscicapa striata	2
Goldfinch	Carduelis carduelis	51
Grebe - Gt Crested	Podiceps cristatus	1
Greenfinch	Carduelis chloris	6
Gull - Herring	Larus argentatus	1
Jackdaw	Corvus monedula	1
Jay	Garrulus glandarius	6
Kestrel	Falco tinnunculus	
Magpie	Pica pica	7
Mallard	Anas platyrhynchos	3 N
Martin - Sand	Riparia riparia	1
House	Delichon urbica	Numerous N
Moorhen	Gallinula chloropus	3 N
Nuthatch	Sitta europaea	1
Partridge - Grey	Perdix perdix	1
Red-legged	Alectoris rufa	2 N

Pheasant	Phasianus colchicus	9 N
Pigeon - Wood	Columba palumbus	12 N
Pipit - Meadow	Anthus pratensis	2
Redpoll	Acanthis flammea	12
Robin	Erithacus rubecula	13
Rook	Corvus frugilegus	1 N
Skylark	Alauda arvensis	10 N
Sparrow - House	Passer domesticus	30 N
Tree	P. montanus	2
Starling	Sturnus vulgaris	1
Swallow	Hirundo rustica	Numerous N
Swift	Apus apus	Numerous N
Thrush - Mistle	Turdus viscivorus	3
Song	T. philomelos	14 N
Titmouse - Blue	Parus caeruleus	21 N
Coal	P. ater	2
Great	P. major	8 N
Longtailed	Aegithalos caudatus	1
Willow	Parus montanus	2
Twite	Acanthis flavirostris	1
Wagtail - Pied	Motacilla alba yarrelli	9 N
White	M. alba alba	1
Warbler - Garden	Sylvia borin	1
Sedge	Acrocephalus schoenobaenus	7
Willow	Phylloscopus trochilus	22 N
Whitethroat	Sylvia communis	50 N
Lesser	S. curruca	4
Woodpecker - Green	Picus viridis	1
Wren	Troglodytes troglodytes	18 N
Yellowhammer	Emberiza citrinella	50
Linnet	Acanthis cannabina	44
Kingfisher	Alcedo atthis	Report

Additions seen on neighbouring land:-

Goldcrest	Regulus regulus
Nightingale	Luscinia megarhynchos
Tufted duck	Aythya fuligula
Wheatear	Oenanthe oenanthe

(N = evidence of nesting on railway land)

The distribution of these and other bird species, and an assessment of the importance of the various habitats to birdlife may be further examined by broadly dividing the sites into (i) Flat verges, (ii) Cuttings, (iii) Embankments and (iv) Specialised Habitats, e.g. woodland, borrow pits and industrial land.

i. Flat verges. Thirty-four (68%) of the fifty random sites for which information was available were classified as flat, i.e. without major earth formations, but including minor banks and ditches. This high proportion reflected the large area of agricultural lowland in the Eastern Region,

especially in the southern areas. The most frequent vegetation type was a rough Arrhenatherum elatius grassland with coarse herbs such as Heracleum sphondylium and Anthriscus sylvestris, and scattered low scrub. These open verges supported little bird life, especially where more attractive habitats in the form of spinneys and hedgerows existed in the surrounding countryside. Yellowhammer, reedbunting, skylark and meadow pipit were typical, whilst whitethroats were to be found where scrub existed. However, in the more intensively cultivated regions where many hedgerows had been removed, the railway verges were of some importance as nesting habitat for game birds and other species. Nests of pheasant, mallard, skylark and reedbunting were all found in such areas, while the large number of casualties on the track and the presence of dusting places suggested that railway land provided attractive living areas for pheasants and partridges.

Narrow open verges, usually in the form of a minor embankment, were a particular feature of railways passing through agricultural fenland in Cambridgeshire and Lincolnshire, and in similar country south of the Humber. The species mentioned above were usually present with the notable addition of sedge warblers, common in the dykes on either side of the line. However some of the fenland sites visited proved to be of great ornithological significance. The site near Leake, Lincolnshire, was notable for the presence of the remnants of a hawthorn boundary hedge on either side of the line. This hedge provided excellent shelter, feeding and nesting habitat not available in the surrounding open land. Eleven species of birds were recorded including great-tit, dunnock and a nesting song thrush, none of which are usually associated with fen land. Similarly, a site visited on the Goole-Thorne line in the Humber lowlands was characterised by a line of crack willow (Salix fragilis) growing along the railway bank, providing a dominant feature in an otherwise treeless landscape. The railway line acted as a focal point for bird life, which included willow-tit, tree sparrow, wren and blue-tit.

ii. Cuttings. The presence of a cutting usually meant a comparatively large area of land with characteristic grassland vegetation, often herb rich, and with varying amounts of scrub. This often predominately open habitat, provided little cover, although it might be of value as a feeding area for birds from neighbouring habitats. Thus, ant hills were found to be common on many of the slopes, providing food for green woodpeckers and young game birds. Cutting slopes with a herb rich flora, especially where burning or rabbit grazing had resulted in communities including Plantago

lanceolata, Cerastium spp. and Hieracium spp., were seen to be frequented by seed-eating goldfinches and linnets.

However, the number and species of birds present at cutting sites was seen to depend to a large extent on the amount and type of scrub present. For instance, at one site, scattered low hawthorn supported yellowhammers and whitethroats. At another site, taller and denser ash and sallow on the lower slopes of a tunnel cutting was frequented by blue-tits, great-tits, willow warbler and wren, although it was probably being mainly used as a feeding area by birds from neighbouring woodland.

Some cuttings were seen to provide excellent all-round bird habitats. A site on the Wymondham-East Dereham line in Norfolk, was notable for its variation in vegetation types. Tall ash scrub on the south bank provided a foraging area for insectivorous birds, whilst the north bank with lower hawthorn scrub with bramble, and open areas, provided suitable nesting habitat. The neighbouring woodland and heath areas contributed to the bird life on the railway, while the infrequently used track was little disturbed. The presence of blue-tit, great-tit and pied wagtail nests, all within 10 m of one another under the road bridge over the railway, reinforced the assessment of the site as good bird habitat.

iii. Embankments. Disturbance by the tipping of ballast cleanings meant that very few embankments supported grassland vegetation, and the slopes in many cases were directly colonised by woody bramble and scrub. Low bramble provided foraging areas for insect and fruit eating birds, but it was the embankment sites with dense scrub that were found to provide the most favourable living, feeding and nesting habitat for birds on railway land. The commonest scrub types were hawthorn, blackthorn and ash, supporting bird populations which typically included blackbird, songthrush, dunnock, blue-tit, whitethroat and woodpigeon. Where the scrub was less dense, thistles (Cirsium spp.) and (Sonchus spp.), and ragworts (Senecio spp.), were common on the disturbed ground, their seeds attracting parties of goldfinches and linnets.

iv. Specialised Habitats. In addition to the habitats associated with the railway formations, the following specialised habitats were also found on BR land.

a) Woodland. Where the railway was built through old established woodland, BR land contributed little to the surrounding habitat. However, the cutting of woody vegetation to prevent encroachment onto the line often produced a 'woodland ride' effect with shorter scrub type vegetation, attracting woodland warblers such as blackcap and garden warbler.

Where the railway ran through planted coniferous forest it was found, nevertheless, that deciduous trees predominated next to the line. They were probably planted originally to reduce the fire risk to the highly inflammable conifers, and also to reduce the danger of these shallow rooted trees falling on to the line. At the site where the line passes through Nova Scotia Forestry Plantation, north of Market Rasen, Lincolnshire, the cutting slopes and the land either side were dominated by oak, ash and sallow, with a noticeable increase in birdlife compared with the surrounding conifer forest; blue-tit, coal-tit, wren, willow warbler, bullfinch and blackbird were all observed in the deciduous trees. At another site, where the Thetford-Brandon line passed through Thetford Forest, Norfolk, the land surrounding the railway was characterised by young coniferous and deciduous growth with open turf areas, producing an attractive open-clearing habitat in dense forestry. Green Woodpeckers, mixed parties of blue-tits, coal tits and longtailed tits, and goldcrests were all active in this area.

b) Borrow pits. Borrow pits were created by the digging of clay for the building of embankments and other earthworks during the construction of the railways. They generally occurred near the line, and many are still owned by BR, providing areas of often unpolluted open water, invaded to a greater or lesser extent by vegetation; most typically by reed beds and sallow carrs.

An outstanding example was recorded at the random site at Balderton on the Newark-Grantham line in Lincolnshire. This site extended to about 3 acres, with two large borrow pits, one on either side of the line, surrounded by sallow and birch scrub and woodland, providing prime bird and animal habitat on the edge of an urban area. In the course of one and a half hours, 18 species of birds were recorded, the highest number for any single site, with many nests and young birds being present. The

open water provided our only records for BR land of great crested grebe, coot and moorhen, together with suitable habitat for herons and kingfisher.

c) Stations. Other large areas of 'naturalised' land were associated with stations which had either declined in importance, or had been closed. The disused station at Louth, Lincolnshire provided diverse habitats including herb rich grassland, derelict buildings and track, and scrub. Such areas often provide important feeding and nesting sites for wildlife in towns and cities.

d) Industrial land. During the course of the survey, a visit was made to Immingham Docks, an important Humberside railhead with an extensive network of railways and sidings. Areas between the sidings were found to contain habitats of reedbed and scrub, providing cover for lesser whitethroat, sedge warbler and wren within the surrounding oil refineries and chemical works. The large areas of waste land were colonised by Oxford ragwort (Senecio squalidus) and other coarse seed bearing plants, and small flocks of goldfinches and linnets were seen feeding on their seeds. A kestrel was seen hunting the area, while the railway signal boxes supported large nesting colonies of house martins.

e) Railway structures and buildings. It was interesting to note the use birds made of the various structures and buildings present on railway land. Yellowhammers, whitethroats and willow warblers were all seen to use the telegraph wires as song perches, while swallows and house martins, frequently seen hawking along the railway for insects, also used the wires as resting perches.

The numerous derelict railway buildings were used as nesting sites. Almost every 'platelayers hut' visited contained at least one swallow's nest; the group of three huts at the automatic crossing where the Sleaford-Grantham line crossed tha A153 at Wilsford supporting no fewer than six nests. The house martin colonies on the signal boxes at Immingham Docks have already been mentioned, and swifts were seen entering holes under the eves of the Station Master's house at North Ferriby, Humberside. At Louth station, house-sparrows were nesting in an old signal gantry.

Bridges also provided nesting sites. The nests of blue-tit, great-tit, pied wagtail and stock dove were all found under railway bridges, while a wren's nest was found in ivy growing on a bridge buttress.

The main east coast line at a site just south of Berwick-on-Tweed was found to be used as a feeding area for herring gulls and carrion crows, that were scavenging from a neighbouring refuse tip. Several observations were made of woodpigeons and turtledoves collecting grit from the 'cess' by railway lines.

v. Influence of railway on neighbouring land. Numerous examples were found of spinneys and shelterbelts that had been planted in offcuts of land resulting from the construction of the railway. These areas often occurred between the railway and roads, and provided suitable habitat for nightingales, spotted flycatchers and other woodland birds. In some instances, the railway was seen to have isolated an area of wildlife habitat from other disturbance. For example, the saltmarshes on the south of the Stour Estuary near Parkeston in Essex, an ornithological SSSI notable for its wintering duck and wader populations, was bounded on the landward side by the railway line, preventing easy public access to the marshes.

d. Insects. Due to their comparative ease of identification, butterflies (Lepidoptera, sub-order Rhopalocera) were used as indicators to assess the importance of a site to insect life. However, as would be expected, the numbers and species of butterflies varied considerably with the prevailing weather and the time of the season, making the assessment of some sites difficult.

Table 4 shows the species of butterfly seen, together with the number of sightings each month. It is relevant to note that the food plants of the larvae of many of the species whose adults were common to railway lines, such as small skipper, meadow brown and gatekeeper, were grasses which also commonly occurred on railway verges, e.g. Aira spp., Holcus spp. and Poa spp.

It was apparent that the herb rich grasslands of the cutting slopes provided the most favourable habitat for butterflies and insect life in general. In addition to their rich flora, cuttings provided a sheltered environment, often acting as 'sun traps'. Some of the best insect sites were the cutting slopes of the main east coast line. At Paxton Hill, just north of St. Neots,

Table 4. Lepidoptera identified on railway land in the Eastern Region of BR.

Common name	Scientific name	May	June	July	Aug	Total
BUTTERFLIES:- (Rhopalocera)						
Brimstone	Gonepteryx rhamni	1	2	-	2	5
Common blue	Polyommatus icarus	-	1	5	-	6
Gatekeeper	Pyronria tithonus	-	1	-	11	12
Holly blue	Celastrina argiolus	1	-	-	-	1
Large white	Pieris brassicae	1	10	11	19	41
Meadow brown	Maniola jurtina	-	-	12	11	23
Orange tip	Anthocharis cardamines	8	6	2	-	16
Painted lady	Vanessa cardui	-	-	1	-	1
Peacock	Inachis io	1	-	-	2	3
Ringlet	Aphantopus hyperantus	-	-	3	8	11
Small copper	Lycaena phlaeas	4	1	-	2	7
Small heath	Coenonympha pamphilus	-	2	4	1	7
Small skipper	Thymelicus sylvestris	-	3	3	8	14
Small tortoiseshell	Aglais urticae	3	2	3	19	27
Small white	Pieris rapae	1	1	-	5	7
Wall	Lasiommata megera	1	1	-	-	2
MOTHS:- (Heterocera)						
Burnet, six spot	Zygaena filipendulae					
Cinnabar	Callimorpha jacobaeae					
Emperor moth	Saturnia pavonia					
Garden tiger moth	Arctia caja					
Plume moth	Pterophorus protadactylus					
Silver Y moth	Plusia gamma					

the herb rich Arrhenatherum elatius/Festuca rubra/Brachypodium sylvaticum sward attracted peacock butterfly, small tortoiseshell, gatekeeper, large white, brimstone, small white, ringlet, small skipper and small copper as well as the six spot burnet moth. In addition, bees were abundant, while a dragonfly, identified as Aeshna grandis, was seen hawking insects along the bank.

Stands of thistles (Cirsium vulgare and C. arvense) and hard heads (Centaurea nigra) growing on embankments were also frequented by butterflies, with small tortoiseshell being especially attracted to the thistle flowers. The painted lady butterfly was seen on a bramble covered embankment in Yorkshire.

Moths, especially members of the Microlepidoptera, were often flushed from the grass railway verges. Those that were identified are given in Table 4. The six spot burnet, a day flying moth, was particularly common, while the caterpillars of the cinnabar moth were seen later in the season on ragwort, an abundant railway plant.

Other species of insect identified included a leaf-cutter bee (Megachile centuricularis) taking leaves into a hole in a wood on a disused station, and a nest of the buff-tailed bee (Bombus terrestris) at the base of a cutting slope. Anthills, crickets and grasshoppers were common on the cutting slopes, while numerous forms of aquatic insect life were found in railway ditches.

c. Other Animals. A full list is given in Table 5.

Table 5. Animals observed on railway land in the Eastern Region of BR.

Badger	Meles meles	(disused sett)
Bank vole	Clethrionomys glarolis	
Fox	Vulpes vulpes	(c)
Grey squirrel	Sciurus carolinensis	
Hare - brown	Lepus europaeus	(c)
Hedgehog	Erinaceus europaeus	(c)
Mole	Talpa europaea	(c)
Rabbit	Oryctolagus cuniculus	(c)
Rat	Rattus norvegicus	
Stoat	Mustela erminea	(c)
Weasel	M. nivalis	
Frog - common	Rana temporaria	
Lizard - common	Lacerta vivipara	
Toad	Bufo bufo	

((c) = casualty)

Rabbits occurred at 45% of the sites visited and were the most common vertebrate (except birds) on railway land, colonising both open grassland of the cuttings, and the bramble and scrub of the embankments. However, it was noticeable that burrowing activity was greatly restricted by the presence of thick spread ballast stone. In the cuttings, the rabbits grazed the grass slopes, but, on the scrub covered embankments, the main feeding areas were on neighbouring land, where many examples of serious damage to arable crops adjoining the railway were seen. Where scrub had been cut, it was usually in aid of rabbit clearance activities. The large rabbit population attracted predators, and stoats were frequently seen hunting along the lines. Foxes were less obvious, with only two sightings, of which one was a corpse.

It was interesting that there were so few sightings of small mammals such as voles and mice, although their runs were often seen. It was noticeable, however, that kestrels did not seem to hunt the railway banks as intensively as they do roadside verges.

At Benhall, in Suffolk, mole workings were found actually in the cess as well as on the banks.

The only sign of badgers on railway land was a disused sett in a series of deep ditches at the base of a wooded cutting at Hessle near Hull.

Frogs were found to breed in the ditches on railway land, while toads and common lizards were occasionally seen.

f. Casualties. The mammal and bird casualties found on the track are given in Tables 5 and 6 respectively.

Table 6. Species of birds found dead by railway lines.

Blackbird	Turdus merula
Carrion crow	Corvus corone corone
Cuckoo	Cuculus canorus
Guilliemot	Uria aalge
Gull - blackheaded	Larus ridibundus
Jay	Garrulus glandarius
Lapwing	Vanellus vanellus
Pheasant	Phasianus colchicus
Swallow	Hirundo rustica

It may be noted that the birds included species not otherwise recorded on railway land, such as black-headed gull and lapwing. Presumably these were struck when flying across the line. Perhaps the most difficult to explain was the guilliemot found on the track at Bridlington.

All the hedgehogs recorded on railway land were casualties, although these did not appear to be as common as on roads, perhaps because rail traffic was less frequent. Carrion crow and magpies were often seen feeding on casualties, especially the many rabbits that had been struck by passing trains.

g. Conclusions. The results of subjective assessments of the sites for their comparative importance for animals are summarised in Table 7.

Fifty seven per cent (a + b) of the 156 sites were assessed as having some zoological importance, with 32 per cent (a) being of ornithological importance compared with 25 per cent (b) being important for insects. The figures reflect the large areas of scrub present on the railways providing suitable bird habitats.

Table 7. Comparative importance of railway sites as animal habitats.

Land form	No of sites	Bird habitat (a)	Insect habitat (b)	Bird/Insect habitat (c)	Zoological interest (Bird + Insect) a + b
		percent			percent
CUTTING/EMBANKMENT SITES					
Cuttings	53	25	42	6	67
Embankments	53	30	15	4	45
RANDOM SITES					
Cuttings	7	29	43	29	72
Embankments	9	56	11	11	67
Flat	34	24	15	9	39
TOTAL SITES	156	32	25	6	57

For both the random and the cutting/embankment sites, the cuttings, with their variety of habitats from open grassland to dense scrub and woodland, had the greatest proportion of sites of zoological interest. The data support the observations that the embankment slopes provided the most suitable bird habitat, while the cutting slopes were of greater importance to insect life. The differences between the figures for the cutting/embankment sites, and those for the cuttings and embankments of the random sites is probably due to the small sample in the latter, although the general trends discussed above are still shown.

The small percentage of sites notable for both birds and insects shows that dual purpose habitat was found to be generally rare on railway land in the Eastern Region. It was noticeable that the four really outstanding sites for birds, mammals and insects were all large areas supporting diverse habitat types. These sites were Clarborough Tunnel Entrance on the Gainsborough-East Retford line (Lincolnshire), Louth Station (Lincolnshire); the terraced cutting slopes on the Newcastle-Carlisle line east of Hexham (Northumberland), and the borrow pits at Balderton in Lincolnshire.

SITES OF BIOLOGICAL INTEREST

Aim

The aim of this work is to build up a dossier on sites of biological interest, with assessments of their importance, of procedures required for their protection, and of measures for their management.

Methods

The work has been conceived partly as a desk exercise to open files with basic information about sites upon which information has been received from one source or another. These files are intended to take the form shown in Appendix 5. It is not anticipated that all the sites will be visited as a part of this contract, but that preference should be given to sites indicated by NCC as being of particular concern. The files would constitute the basis of NCC's data bank on sites of conservation interest on railway land.

In 1977, about 80 sites of potential biological interest were listed: the majority were obtained from records in County and Local Floras, with a smaller number submitted by NCC Regional Officers, usually as being adjacent to, or part of, SSSIs. Regional Officers indicated two other sites in 1977 in which they were particularly interested; a further site in Cambridgeshire was reported by Mrs G. Crompton from her records of sites of rare species; other areas were suggested by railway staff. During the course of the season speculative visits were made to sections of track that 'looked good'. In addition a number of the sites from the resource survey rated recognition, and, where appropriate, files were opened.

The preliminary list of sites for the Eastern Region of BR is given in Appendix 4. 55 of these sites were visited and a proportion of them were found to be without any special interest, whilst at others the particular feature of interest was not seen. This lack of interest occurred particularly with some of the sites for the County Flora records, where the exact location of the record was sometimes (deliberately) vague.

A problem with recording ill-defined sites of this sort is that a disproportionate amount of time can be spent recording features that are not of any particular interest. Nevertheless, it seems important that a basic description of these sites should be made, with notes about the available habitats as a basis for future visits.

In addition to the specific sites, we were also told of several sections of line passing through particular parts of the country, about which NCC staff thought that it would be interesting to have more information. We were not able in 1977 to make extensive surveys of railway lines, but the possibilities and logistics of doing so in the future are discussed below.

DISCUSSION

The Nature Conservation Review

This review has been published since our first Interim Report. In the chapter on Artificial Ecosystems the section on railways was first drafted by one of us (JMW). It is of interest to see how the subjective impressions of 1971 compare with subsequent experience of two years fieldwork.

In the first instance it is likely that the area of railway land quoted in the Review as 24,000 ha is an underestimate. Calculations from field measurements and other data in 1976 suggested a figure of 74,925 ha (30,170-118,865 ha) exclusive of the track. Measurements of the 60 random sites in 1977 gave an average cross-section of the verges (exclusive of the track) in Eastern Region as 20.5 m. Applied to the 11,300 miles (18,200 km) of track still existing throughout the country this produces a revised figure of 37,300 ha, still within the 1976 range, but half the mean then calculated; although still 50% more than the figure calculated for the NCR. It will be of interest, in due course, to see how representative Eastern Region is of the rest of the network, and what further revisions up or down will have to be made.

Secondly, it is now clear that railway land has been extensively disturbed since the lines were originally constructed, either by earthworks to widen or strengthen the formations, by drainage, or by tipping. The East Coast Main line (King's Cross to Edinburgh), for instance, has been considerably reconstructed with many sections being widened from two to four track, some as recently as the late 1950s, and even more recently in connection with works to bring the track up to the standard required for the high speed train (HST). Reconstruction of local and branch lines is less likely, but the tipping of rubble and waste materials, cinders and used ballast on embankments is almost universal, with severe effects over at least five metres from the track. In some instances, ballast has also been deposited over the lower parts of cutting slopes. For both cuttings and embankments, lack of management for 15 years or more has contributed to the problems; in the days of hand or machine mowing the ground was kept clear for ease of work, but there is now a gradual build-up of discarded concrete, wood and wire. Lack of management has itself had effects that were not visualised when the Review was being drafted, so that there are not the extensive areas of cut or burned, but otherwise undisturbed, grassland that would have been the case up to the mid-1960s. Nevertheless, areas of herb rich grassland are still widely distributed, mostly on

cuttings, and the contribution of cuttings and embankments to a wide range of wildlife habitats, as mentioned in the Review, is still an important aspect of railway land.

It is of further interest to compare habitats and the vegetation of railway land with roadsides. In general, cuttings and embankments are not found on general-purpose roads, the sunken roads of the southwest and of some other areas having arisen as a result of erosion over long periods of time. Embankments are only very exceptionally found. With the newer highways constructed since the war (and especially the motorways), cuttings and embankments have been made, but the development of these features is still very recent and they bear only a general comparison with railway land. It is unlikely that the grasslands that develop on these roadsides will necessarily do so in the same way as on the railways of the past, owing to differences in management (particularly burning), and lack of tipping and other sorts of disturbance that have been described above. However, with the current lack of management of roadsides, it is likely that the gradual encroachment of roadside verges by scrub and bramble will parallel the similar developments of woody growth on the railway, for the same reason, over a longer period of time.

The point of difference then between the NCR and the observations in the field lies in the assumed extent of stable, undisturbed habitats, which appear to be more restricted, at least in the Eastern Region than had been thought. Nevertheless, the general emphasis in the Review upon the importance of railway land for wildlife remains amply justified.

Management

As noted in our previous report there has been a general policy of no management of railway land over approximately the last 15 years. The only signs of management that we saw in 1977 were small local areas of burning, possibly accidental, and some scrub clearance, with or without chemical stump treatment, and with or without clearance of cut material. There was no evidence of grass cutting, nor of bramble/briar control.

In November 1977, JMW with D.A. Wells (NCC) attended a BR Civil Engineers meeting at Watford, convened to discuss the increasingly urgent problems of vegetation on BR land. Three main areas of concern were voiced:

a. Encroachment of vegetation into the cess and permanent way, causing safety and engineering problems.
b. Dangers of fire.
c. Pest control, both in a spirit of good neighbourliness (BR needs friendly relations as it depends on neighbouring landowners for access to the line in many parts of the country), and in relation to the Pests Acts.

A variety of hand and mechanical methods of control were described. However, most of the discussions revolved around the extension of the use of herbicides. This possibility has been foreseen by us both individually and severally for some time, and was a prime reason for the placing of this NCC/ITE contract. IN RESPECT OF THIS DEVELOPMENT THE IDENTIFICATION, NOTIFICATION, AND DELIMITING OF AREAS OF BIOLOGICAL INTEREST BECOMES MORE URGENT.

It seems likely that the spray trains (see first Interim Report) will now apply selective herbicides up to 8 ft from the cess to control woody growth (bramble, briar and scrub) for engineering and safety reasons. This work would be done at the same time as the spraying of the track, and, except for the cost of the materials and the additional water required, it would not pose any application problems. The swathe to be treated would be confined to 8 ft in order to prevent any danger of drift or damage to neighbouring land, for which the contractors/British Rail might be liable. As practically the whole BR track network is covered by the spray trains, the potential for spraying the banks at the same time is very considerable. In addition, other areas might be sprayed by hand held equipment, either by direct labour, or by contract.

It is probable that 2,4,5-T alone or in combination will be most widely used. However, there are other chemicals available for this work. We have been asked by BR to observe the effects in trials of a recently introduced compound (ammonium ethyl carbomylphosphonate, trade name KRENITE, DuPont Ltd) which has shown some interesting properties for the chemical 'pruning' of woody growth.

It will be of interest to see what replaces woody growth on the highly disturbed and tipped-upon areas on embankments. They are unlikely to support stable grass herb communities, and it seems probable that ruderal species will persist, so far as they can tolerate any chemicals applied for scrub control.

Sites of biological interest

The need for the identification of these sites has been noted above in connection with the possible extended use of herbicides. The restriction of the sprayed area to an 8 ft band will minimise effects on the majority of sites where an extensive area of land is involved. Nevertheless, a number of Flora sites occur on relatively narrow sections of verge, and some of these may be at risk. It should also be noted that the favoured habitat of many annuals is the cess and disturbed area immediately adjoining. Although these annuals are quite common at the present time, and have not been noted for protection, an increase in the sprayed area in the early spring and summer might have considerable effects on their populations.

In building up a dossier of sites (which would be arranged by NCC Regions), it might also be useful to compile a data bank on the lines of the data bank currently being built up for roadside verges. This could almost certainly be done using the programme being developed for the roadside data, and would provide a means of rapidly assessing information. Indications are that we should contribute something in the order of 500 railway sites in the first instance.

Extensive surveys

Our existing programme concentrates firstly on the resources survey, which is necessary for providing a base line description of the extent and variation of the railway habitats, and for evaluating the comparative importance of different areas. It concentrates secondly on cataloguing sites of biological importance from information received. We have only had limited opportunities for 'discovering' new sites, although a number have been visited speculatively. It is undeniable that there are a great number of sites still to be discovered, but resources are limited and the rate of discovery by the interested public is restricted because of the difficulty of access to railway land (on roadsides, a high proportion of the notified sites have been discovered by local naturalists). A way is needed by which the results of the experience of our resources survey can be used to design more extensive surveys to locate new sites of importance.

One approach would be by observation from trains. This method would seem particularly valid as we have received from NCC Regional staff a number of suggestions about railway lines (as opposed to specific localities) of apparent interest (e.g. the line between Brentwood and Colchester in NCC

East Anglian region). Surveys of lengths of line might be done by walking the line, depending on the distances involved, by spot observations from bridges and access points, or, as is being suggested, from the cab or brake van of a train. The latter should produce continuous data economically.

One difficulty lies in finding trains that travel slowly enough (about 25 mph) for meaningful observations and records to be made. The observations themselves could be recorded on tape, and supplemented by photographs, in conjunction with a carefully prepared map appreciation. Several journeys over a particular stretch of line would be required for a satisfactory account, but it should be possible to do a number of journeys in a single day. The interpretation of the data would require careful thought, but experience from the resource survey would help, particularly with recognition of associations and facies of the vegetation. It is to be emphasised that photographic records cannot be taken as an end in themselves.

These are all problems that can be resolved, and we hope to make some preliminary surveys of this sort during the term of the contract.

Urban areas

There is a considerable acreage of railway land within urban boundaries. Much of it is derelict or disturbed, and accumulations of hard litter make management difficult. Nevertheless, habitats on railway property may be unique in the urban environment, either because they are not represented elsewhere, or, even if they are (in gardens for instance), the lack of human presence makes them more acceptable, especially to animals. There are stretches of urban line that do support well established vegetation, and there are sites of biological importance; not all the areas are degraded. Indeed, railways have been described as 'green corridors' into the city centres. In addition to these features, there are the irregular occurrences of adventive and alien species of plants around goods handling depots and similar places, which are of continuing interest.

However, as noted above, we have, by agreement, excluded urban areas from our resource survey for the reasons given. This exclusion is not intended as a value judgement on the importance of railway land within urban areas.

1977 results

Lists of sites, and descriptions of some of the preliminary results of the Indicator Species Analysis, are given in the body of the report and in the Appendices. Many of our general conclusions are discussed there, or have emerged in earlier parts of this discussion.

It is apparent that the major hierarchical split in the analysis of both the random and the cutting/embankment data, divides the grassland communities from unstable communities on disturbed ground and woody communities. It is reassuring that this division should occur at this level, and enables a rigorous interpretation of subjective observations that were made during the course of the field work. In terms of ground features the split represents a general division of cuttings and flat areas from embankments.

Because of the over-riding influence of disturbance, it is evident that recognisable soil characteristics are not useful criteria for interpreting or predicting vegetation. We shall now look for correlations with geology, altitude, pH and geographical location, and also for any long term residual effects of past management.

One of the dangers of an extended survey in time and space is that bias may appear because of the seasonality of some of the plants. In 1977, this bias does not seem to have been a problem; indicator species at the different levels of the hierarchy are those that would be easily recognisable at any time of the year.

Records were made of observations of living and dead animals (mostly birds), and of assessments of animal habitats. In urban areas, and in areas of intensive agriculture, it was concluded that railway land of almost any kind provided refugia and alternative habitats for animals of all sorts. In general, the gradual succession towards bramble, scrub and woodland in rural areas on embankments and elsewhere was favouring birds, although a wide range of insects would benefit from flowering bramble and briar, and from associated nettles and coarse herbs. However, the more diverse vegetation types found on cuttings, sometimes representing most stages of succession from bare ground, closed turf, dense ± herb rich grassland, scrub and finally trees, produced the highest proportion of sites of zoological interest. Grassland facies were of particular importance to ground insects and small mammals. However, the diversity of habitats needed

to provide a locus for viable animal populations was only found where BR land occupied an extensive area, such as at borrow pits, disused stations, or in large cuttings. Generally, the railway complemented habitats and feeding areas present in the surrounding countryside, although, in the more intensively farmed areas often providing features of an animal's overall requirements that were otherwise missing.

PROGRAMME FOR FIELD SEASON 1978

It has been agreed, that a similar programme of work to that carried out in 1977 should be undertaken in the Southern and Western Regions of BR. This proposal has been discussed with BR, and preliminary contacts have been made with BR Regional staff. NCC Regional staff have been asked to provide information on known or potential sites of biological interest in these two BR regions, and many have done so. We also intend to canvas for information from other sources, including the County Naturalist's Trusts and the National Biological Records Centre.

Sixty days field work are provisionally to be allocated to the random and cutting/embankment sites resources survey, as in 1977. However, some agreed variation to these may be necessary in the light of further analyses of data now in progress and discussion of the results. Visits to sites of biological interest will be arranged to fit in with the resource survey, but, as it will only be possible to visit a small proportion of the 200 or so of these sites likely to be notified before the beginning of the season, the further possibilities for speculative visits to 'discovery' sites will be reduced. However, we hope that opportunities will occur during this coming season to test our techniques of extensive survey, as outlined above, with a view to covering more ground more effectively.

ADVICE

During the course of the year we have been able to give general advice to NCC staff about the characteristics of railway land for conservation. In addition, we have also been able to give specific advice to the Nottinghamshire County Council in response to a request for an assessment of the importance of a section of disused railway line, the subject of a disputed planning proposal (Appendix 6).

APPENDIX 1

Specimen proformas

RANDOM SITE

Direction from access: N S E W

REGN / DIVN / AREA / SITE

/ / /

SITE NAME

Mp

DATE

MAP REF AP

SHEET NO

DIST AP-RP

RECORDER

ALTITUDE

GEOLOGY

GENERAL

Quadrat 1 notes

Quadrat 3 notes

Which track?

UP F	UP A	DOWN S±	Vegn	Mgt	NLU	Direction of track ↓ N S E W: 1 m	Total m
		±					
		±					
		±					
		±					
		±					
		±					
		±					
		±					

UP F	UP A	DOWN S±	Vegn	Mgt	NLU	Direction of track ↑ N S E W: 1 m	Total m
		±					
		±					
		±					
		±					
		±					
		±					
		±					
		±					

Formation 1=Flat 2=Flat 3=Slab 4=Bank up to 1m 5=Ditch

Slope S must be + or -

Total must equal sum of 1

NL = neighbouring land use

Quadrat 2 notes

Quadrat 4 notes

CUT/EMB SITE

Direction from access N S E W

REGN / DIVN / AREA / SITE

/ / /

A = access point
R = first record point

SITE NAME Mp DATE

MAP REF AP SHEET NO DIST AP--RP RECORDER

ALTITUDE GEOLOGY

Which track?

UP DOWN ↓ N S E W

CUT EMB

F	A	S±	Vegn	Mgt	NLU	l m	tot m
		+ −					
		+ −					
		+ −					
		+ −					

EMB CUT

F	A	S±	Vegn	Mgt	NLU	l m	tot m
		+ −					
		+ −					
		+ −					
		+ −					

UP DOWN ↑ N S E W

CUT EMB

F	A	S±	Vegn	Mgt	NLU	l m	tot m
		+ −					
		+ −					
		+ −					
		+ −					

EMB CUT

F	A	S±	Vegn	Mgt	NLU	l m	tot m
		+ −					
		+ −					
		+ −					
		+ −					

1 = Flat
2 = Cut
3 = Emb
4 = Bank to 1m

S must be + or −

Tot must equal sum of l

NLU = neighbouring land use

SITE OF BIOLOGICAL INTEREST	REGN / DIVN / AREA / SITE / STATUS / / / /	

Status
NI
LN
SSSI
FI RA
IN D
A/= adjacent to

SITE NAME | NEAREST STN | DATE

MAP REF | SHEET NO | ALTITUDE | RECORDER

RAILWAY LINE | MP | GEOLOGY

SIDE OF TRACK

SITE DETAILS -

Landform
1= lat
2= tting
3=Embank-
ment
4= ank
up to
clm
5= tch

Distance								
Landform								
Slope	±	±	±	±	±	±	±	±
Aspect								
Vegn								
Mgt								
N Land use								
Width								

SKETCH OF SITE. LOCATION MAP

ASSESSMENT

QUADRAT RECORD

REGN / DIVN / AREA / SITE / QUADRAT

/ / / /

SITE NAME MP RECORDER DATE

LAND FORM WIDTH (M) SLOPE ASPECT pH

VEGETATION HT (CM) MANAGE./DISTURB.

CODE		COV	CODE		COV

1 metre tot G
tot H
tot W
tot Spp

4 m + G
+ H
+ W
+ Spp

25 m + G
+ H
+ W
+ Spp

50 m + G
+ H
+ W
+ Spp

Tot G
Tot H
Tot W
Tot Spp

SITE NAME
((SITE REF.
DATE
CUT LEMB
N/S E/W
RECORDER
QUADRAT NO 1 2 3 4

GRASSES
26 Agrop can
33 RLP
35 Agros can
39 SID
40 ten
41 Aira cae
42 pra
82 Alope gen
84 rivo
85 PRA
121 Antho odo
169 ARRHE HA
220 Avena fat
249 Brach PIN
250 syl
256 Briza med
262 Bromu com
263 FRE
268 lep
269 *mol
272 ram
113 ste
293 Calam epi
597 Cynos cri
607 DACTY GLO
627 Desch cae
628 fle
813 Festu aru
816 gig
821 *ovi
822 PRA
824 *RUB
815 Festu lol
933 Glyce flu
934 max
961 Helic pra
962 pub
983 Holcu LAN
984 mol
992 Horde mur
993 sec
1087 Koele cri
1182 Lolia mul
1183 PER
1263 Melic uni
1296 Milia eff
1307 Molin cae
1344 Nardu str
1454 Phala aru
1461 Pleu her
2247 *PRA
1465 Phrag com
1506 Poa ang
1495 ANN
1499 com
1504 nem
1506 *PRA
1506 sub
1507 TRI
1915 Siegl dec
2105 Trise fla
2226 Vulpi bro
2228 myu

WOODY-CLIMBERS
3 Acer cam
5 pse
2241 Aescu hip
77 Alnus glu
239 Betul pen
240 pub
276 Bryon dio
289 Buxus sem
2248 Calys *sep
432 Casta sat
528 Clema vit
557 Coryl ave
569 Crata mon
570 oxy
762 Euony eur
810 Fagus syl

841 Fraxi exc
952 Heder hel
996 Humul lup
1023 Ilex aqu
1080 Joasp com
1133 Lycus vul
1186 Lonic per
1530 Malus syl
1484 Pinus syl
1885 Popul tre
1611 Prunu avi
1614 dom
1616 pad
1617 spi
1635 Querc cer
1638 pet
1640 rob
1675 Rhamn cat
1694 Ribes nig
1696 syl
1697 uva
1705 Rosa *
1707 arv
1708 *can
1709 can
1712 mic
1719 pim
1714 *sub
1722 *vil
1726 Rubus cae
1728 *fru
3507 Salix sp
1784 alb
1787 aur
1788 cap
1789 *cin
1790 cin
1793 fra
1901 pur
1805 vim
1814 Sambu nig
1872 Sarot sco
3508 Serbu *
1960 aqc
1994 Spira sal
2029 Syrin vul
2032 Taxus bac
548 Thely san
2063 Tilia cor
2112 Ulex eur
2113 gal
2114 min
2115 Ulmus ear
2119 gla
2122 pro
2184 Vibur lan
2185 opu

HERBS
7 Achil mil
9 pta
3501 Aceroe cus
19 Adoxa mos
20 Aegop pod
21 Aethu cyn
22 Agrim eup
46 Ajuga rep
51 Alche gla
57 ves
58 vul
60 xan
63 Alism pla
64 Allia pet
75 Allu urs
76 vin
98 Amaca pyr
99 Anaga arv
105 Anemo nem
109 Angel syl
117 Anthe arv
118 cot

125 Anthr syl
126 Anthy vul
131 Apium *arv
137 Aparin mol
151 Arctl lap
152 nbu
167 Armor aux
170 Artem abs
175 vul
176 Arum mac
185 Asple adi
192 rut
194 tri
208 Astra gly
218 Atrip pat
225 Ballo nig
229 Balsa vul
231 Belli per
234 Berul ere
235 Beta vul
237 Beton off
243 Blech spi
3502 Brachy rut
252 Brass rap
296 Calam asc
2249 Calli *ang
307 vis
309 Callu vul
310 Calth pal
320 Campa rapunculo
322 ret
325 Capse bur
328 Carda fle
329 bir
331 pra
333 Carda dra
334 Cardu acu
337 nut
339 ten
350 Carex bac
355 car
361 dem
369 divulsa
376 flacca
378 flava
381 hir
393 nig
396 ova
398 mur = pai
400 panicea
405 pil
412 rem
413 rip
357 spi
421 syl
427 Carli vul
433 Catab aqu
435 Catap vis
444 Centa nig
446 sem
451 Centa cry
461 Ceras arv
462 arr
466 glo
467 hol
469 sem
3503 Ceter off
474 Chaen mur
476 Chaer tem
477 Chama ang
119 Chama nob
480 Cheli maj
481 Cheno alb
484 bon
496 rub
502 Chrys leu
503 par
504 sep
2033 vul
506 Chrys opp

509 Cicho int
513 Circa lat
514 Cirsi aca
515 arv
516 dia
517 eri
518 het
520 pal
522 vul
530 Clino vul
540 Conlu mac
541 Coonp maj
544 Convo arv
735 Convz can
551 Conon did
552 aqu
571 Crepi bie
572 cap
578 ves
592 Cymba mur
596 Cynog off
603 Cysto fra
608 Dacty fue
609 inc
610 mac
612 pra
613 pur
620 Daucu car
630 Descu sep
640 Digit pur
644 Diplo mur
648 Dirca ful
647 pil
661 Dryop dil
662 bor
666 *aj
670 Echiu vul
675 Elaoc pal
681 Epilo can
684 Equis *hig
687 Erdym non
688 Epilo ade
689 adn
692 hir
695 mon
696 obs
697 pal
698 par
712 Equis arv
715 flu
717 pal
720 syl
721 tel
726 Erica cin
731 tet
745 Erodi *cic
749 mos
759 Erysi che
763 Eupat can
771 Eupho ext
772 hel
777 peplus
2043 Euphr *arg
830 Filag ger
833 Filip vim
824 vul
835 Foeni vul
838 Fraga ves
3504 Fumar sp
847 esp
854 off
862 Galeob lut
867 Galeop spe
873 Galiu apa
875 cru
879 *mol
183 edo
882 pal
878 sax
888 ver
891 Genis ang

893 Genis tin
897 Genti *amo
906 Geran col
909 dis
909 luc
911 mol
913 pho
914 pul
916 pus
917 pyr
918 rob
921 syl
924 Geum riv
925 urb
931 Glech hed
941 Gnaph uli
948 Cynara coa
955 Helia cha
968 Herac sph
970 Hera *pal
979 Hippo com
981 Hippu vul
1002 Hyosc nig
1003 Hyper and
1010 hirsutum
1011 hum
1606 mac
1014 per
1015 pul
1016 tet
3505 Hypnu cup
1020 Hypoc rad
1026 Impat gla
1028 par
1030 Inula con
1036 Iris foe
1038 pse
1048 Juglo mon
1050 Juncu acuts
1054 art
1057 buf
1063 con
1067 eff
1070 int
1075 squ
1077 ten
1084 Knaut arv
1094 Lactu ser
1095 vir
1098 Lamiu alb
1089 pur
1109 pur
1104 Lapsa com
1112 Lathy mon
1116 pra
1129 Leont aut
1130 his
1131 tar
1135 Lemid cam
1136 het
1161 Linar rep
1164 vul
1169 Linum cat
1173 Liste ova
1174 Litho off
1191 Lotus cor
1194 uli
1201 Luzul cam
1204 mul
1207 pil
1209 syl
1210 Lychn flo
1218 Lycop arv
1219 eur
1221 Lysim nem
1222 num
1227 Lythr sal
1232 Malva mos
1233 neg
1276 syl
1242 Matri mat

1239 Matri rec
1247 Medic ara
1250 lup
1252 sat
1261 Melil alb
1268 alt
1267 off
1272 Menth aqu
1273 arv
1290 Mercu ann
1291 per
1298 Mimul gut
1305 Moehr tri
1312 Monti fon
1315 Mycel mur
1317 Myoso arv
1319 cae
1320 ram
1321 dis
1322 sco
1333 Myrrh odo
1343 Narci pse
1346 Nastu *off
1353 Nepet cat
1361 Odont ver
1363 Oenan cro
1370 Oenot bie
1375 Onobr vic
1377 Ononi rep
1378 spi
1379 Onopo aca
1382 Ophry api
1387 Orchi mas
1393 Origa vul
1396 Ornit umb
1397 Ornit per
1401 Oroba cla
1404 nun
1413 Oxali ace
1424 Papav arg
1426 dub
1430 rho
1431 sem
1435 Parie dif
1440 Pasti sat
1442 Pedic syl
1443 Penta sem
1425 Petas alb
1446 fra
1447 hyb
1449 Petro cri
1466 Phyll sco
1471 Pleri ech
1472 hie
1475 Pimpi maj
1476 sax
1485 Plant cor
1487 lan
1488 maj
1490 med
1514 Polyg ser
1515 vul
1520 Polyg are
1521 amp
1522 *avi
1525 bis
1527 con
1528 cus
1530 hyd
1531 lap
1536 mol
1537 per
1544 Polyp vul
1546 Polys acu
1548 sat
3506 Potam sp
1563 cri
1570 nat
1575 per
1576 pol
1584 Poten aus

1588 Poten erc
1594 rep
1596* ste
1599 Poter san
1608 Prunu ver
1607 vul
1610 Prime vul
1619 Pteri aqu
1625 Pulic dys
1631 Radio lin
1632 Ranun acr
1643 *aqu
1645 aur
1647 bul
1649 fic
1651 flammula
1660 repens
1663 sce
1667 Rapha rap
1672 Resed lut
1673 luteola
1678 Rhina *min
1704 Rorip syl
1735 Rumex *ace
1724* acetosa
1741 con
1742 crispus
1745 hyd
1746 lon
1748 obt
1751 pul
1753 san
1761 Sagin ape
1766 nod
1767 pro
1809 Salvi lor
1815 Sambu ebu
1818 Sangu off
1819 Senic eur
1821 Sapon off
1830 Saxif gra
1835 hyp
1843 tri
1846 Scabi col
1047 Scirp set
1865 Scrop aqu
1867 nod
1875 Sedum acr
1876 alb
1877 urg
1885 tel
1891 Senec squ
1896 eru
1899 jac
1902 aqu
1903 syl
1904 vis
1905 vul
1912 Shera arv
1916 Silau sil
1258 Silen alb
1259 dio
1923 vul
1930 Silyb mar
1932 Sinap alb
1933 arv
1934 Sison amo
1938 Sisym off
1945 Smym olu
1947 Solan dul
1949 nig
1951 Solid vir
1952 Sonch arv
1953 asp
1934 ole
1981 Sparg ere
1987 Sperg arv
2001 Staeh arv
2003 pal
2005 syl
2007 Stell als

2089 Stell gra
2010 hol
2011 med
2021 Succi pra
2022 Symph ns
2024 Symph off
3509 x upl
2036 Tarax *luc
2034 Tarax *arg
2035 *oll
2046 Teucr scoro
2048 Thali fla
2051 Thely lim
2058 Thlas arv
2060 Thymu dru
2069 Toril jap
2070 med
2074 Trago pra
2077 Trifo arv
2080 cam
2081 dub
2083 fra
2085 hyb
2087 med
2090 och
2091 pra
2092 rep
2097 striatum
2102 Tripl pal
1241 Tripl mar
2109 Tursi fur
2111 Typha lat
2125 Umbil rup
2126 Urtic dio
2128 ure
2136 Vacci myr
2138 vit
2139 Valer dio
2140 off
2150 Verba nig
2157 thapsus
2159 Verbe off
2161 Veron agr
2163 ana
2165 arv
2166 boc
2167 cat
2168 cha
2169 fil
2171 hed
2172 mon
2173 off
2175 persica
2180 ser
2189 Viola ora
2191 hir
2197 sat
2198 sep
2202 tet
2204 Vince maj
2205 min
2206 Viola arv
2210 hir
2214 odo
2217 rei
2218 riv
2220 tri

CODE	NAME	CODE	NAME	CODE	NAME	CODE	NAME

PUNCH TAPE REF
((not for field use))

ANIMAL RECORD	REGN / DIVN / AREA / SITE / / / /	

SITE NAME : MP RECORDER DATE

LAND FORM MANAGE/DISTURB NLU

R=reproduction
F=feeding
LH=living habitat
0
1
2
3=good

	ANIMAL	R	F	LH	HABITAT APPRAISAL ref. to NLV
1	BIRDS				
2	RABBITS				
3	FOX				
4	BADGER				
5	STOAT & WEASEL				
6	BUTTERFLIES				

N=nesting

VERTS & INVERTS SEEN OF BR LAND

BIRDS	ANIMALS	INVERTS
CASUAL		

ADDITIONS - seen on NL but associated with BR land

PHOTOGRAPHS

FILM NO:

REGN / DIVN / AREA / SITE

/ / /

FRAME	DATE	SITE	MP	NOTES
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

P.T.O.

APPENDIX 2

Random sites lists

APPENDIX 2. Woodham Mitton 1977.

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION
NCC SOUTH-EAST REGION									
a) HERTFORDSHIRE									
R5	4 May	TL 319113	Bayfordbury	Kings Cross - Hertford N	W	Cut	16	16 m cutting with mixed coarse and herb rich grass and scrub, to scrub and bramble by fence. Partially burnt.	-
					E	Flat	13	Very disturbed by cinder dumping and digging. Tall scrub. Some areas of dense colonisation by small herbaceous annuals and perennials.	-
R6	4 May	TL 369153	Great Amwell	Hertford E - Broxbourne	SW	Flat	3	Coarse mixed herbs and grasses, scrub and bramble; or wooded.	-
					NE		3	Course mixed herbs. Occasional scrub.	-
NCC EAST ANGLIA REGION									
a) ESSEX									
R9	17 May	TL 907327	Mount Bures	Sudbury Branch	W	Emb	32	Tall hawthorn/blackthorn scrub. No ground flora.	-
					E		32	Almost pure 8 ft high blackthorn scrub. Dense moss ground cover. Occasional glades with mixed herbs. Good bird habitat.	-
R10	18 May	TQ 855978	Fambridge	Southminster Branch	N	Flat	6	)Bramble and scrub.	-
					S		4	)	-
R11	19 May	TM 037279	Ardleigh	Ipswich - Colchester	N	Emb	21	Mixed oak woodland on steep slope to stream. Small glades with grasses and herbs. Otherwise bramble and nettle. Good bird habitat.	-
					S	Emb	20	Mixed small oak/hawthorn scrub with bramble and briar. Small open herb rich grassy glades, or more open areas of course Arrhenatherum grassland. Good bird habitat.	-
R14	24 May	TM 147217	Weeley	Clacton/Walton Branch	N	Flat	4	Narrow with course grasses and herbs and some scrub.	-
					S		4	Low raised bank with coarse grasses and herbs and some scrub.	-
R15	26 May	TM 077318	Mill Hill, Lawford	Ipswich - Colchester	N	Flat	5	Minor banks up and down. Course grasses, herbs and bramble.	-
					S		6	Minor embankment. Course grasses, herbs, bramble and scrub.	-
b) NORFOLK									
R18	29 May	TM 191851	Gissing	Diss - Norwich	W	Emb	12	)Nettle, bramble and scrub. Little grass.	-
					E		12	)	-
R19	30 May	TG 255351	Gunton	Cromer Branch	E	Cut	7	) Cut and ?sprayed bramble/scrub. Open course grass, few herbs.	-
					W		10	)	-
R20	31 May	TG 142253	Cawston	Lenwade Branch	S	Flat	5	Minor bank, herb rich open low grass and scattered scrub with gorse.	-
					N	Cut	8	Small bank, coarser grass fewer herbs, scattered scrub.	-
R21	1 June	TG 054051	Danemoor Green	Fakenham Branch	W	Cut	17	Deep cutting with extensively cut scrub, woodland ground flora with tway blade, primrose and cowslip.	) Revisit and) review for
					E		14	More shaded than W bank. Cut scrub but less interesting ground flora. Uncut scrub further south favourable for birds.	) protection.
c) SUFFOLK									
R5	16 May	TL 782658	Barrow	Kennett - Bury St Edmunds	N	Cut	11	)Steep cutting banks with mixed grasses and herbs. Cut and	-
					S		10	)sprayed scrub.	-
R17	29 May	TM 251393	Levington	Felixstowe Branch	SW	Flat	6	) Rough grass and herbs, with scattered bramble and scrub in	-
					NE		4	) shade of shelter belt.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION
R16	27 May	TM 360581	Beversham	Ipswich - Saxmundham	N	Flat	4	)Flat and minor embankment with rough grass and bramble.	-
					S		4	)	-
R17	28 May	TM 396804	Millpost X Spexhall	Beccles - Saxmundham	S	Flat	2	) Very narrow flat verges of coarse grasses and herbs.	-
					N		2	)	-

NOR EAST MIDLANDS

a) BEDFORDSHIRE

R3	2 May	TL 180541	Tempsford Station	Sandy - St Neots	W	Emb	17	)Medium embankment to ditches. Course grasses and herbs with	-
					E		15	)scattered scrub. Evidence of fire on E side. Disused sidings.	-

b) CAMBRIDGESHIRE

R1	25 April	TL 215975	Moreton's Leam	Peterborough - Whittlesea	S	Emb	14	)Medium embankment to quite extensive flat area on both sides.	-
					N		7	)Coarse grasses and herbs. Also reeds and damp ground plants.	
R2	29 April	TL 234756	Great Stukeley Lodge	Peterborough - Huntingdon	E	Cut	45	) Complex stepped cutting. Extensive species rich grassland,	Revisit and action for protection.
					W		36	) coarser grassland and scattered herbs. Good for insects.	
R4	3 May	TL 484602	Milton	Ely - Cambridge	W	Emb	8	)Small embankment to ditches. Coarse grasses and herbs	-
					E		7	)including wet ground species. Scattered scrub.	-
R7	6 May	TL 526760	Stretham Mere	Ely - Cambridge	W	Emb	2	) Small embankment to ditches. Coarse grasses, reeds and	-
					E		8	) herbs. No scrub.	-
R13	23 May	TL 042841	Shippea Hill Station	Ely - Thetford	S	Emb	4	Minor embankment, coarse grasses and herbs.	-
					N		2	No verge.	-
R60	15 August	TL 220678	Offord Cluny	St Neots - Huntingdon	W	Flat	3	Minor embankment shaded. Coarse grass, herbs and bramble.	-
					E		1	Very narrow and disturbed.	-

c) LINCOLNSHIRE

R22	13 June	TF 212338	Priestley House X	Lincoln - Spalding	W	Flat	6	)Coarse grasses, reeds and herbs to ditches. Narrow. No	-
					E		6	)scrub.	-
R23	14 June	TF 375526	Old Leake	Skegness Branch	NW	Flat	2	) Minor embankment coarse grasses and herbs, some scrub.	-
					SE		4	)	-
R24	14 June	TF 452632	Firsby	Skegness Branch	SE	Flat	2	Narrow, rough grass verge with ditch and damp ground plants.	-
					NW		6	Part on old track bed colonised by low growing annuals and perennials.	-
R25	15 June	TF 338881	Louth	Louth Branch	E	Flat	23	Complex area of cutting and flat in area of old sidings in disused station yard. Varied grasses and herbs and scrub. A good area for plants and animals.	Revisit and monitor.
					W	Cut	7	Course grasses. Bramble and scrub.	-
R27	20 June	TF 112691	Bardney	Bardney Branch	NE	Emb	5	Minor embankment with coarse grass and herbs. Some scrub.	-
					SW		4	Minor embankment down to river. Course grasses and herbs. No scrub.	-
R28	21 June	TF 096958	Claxby Moor	Barnetby - Market Rasen	W	Flat	6	)Rough grass, herbs and bramble.	-
					E		6	)	-
R29	22 June	TF 106686	Market Rasen	Lincoln - Market Rasen	W	Cut	6	) Minor cutting. Coarse grasses, herbs and bramble.	-
					E		6	)	-
R30	23 June	TF 104931	Usselby Moor	Barnetby - Market Rasen	W	Flat	4	)Sandy, heathy area with grasses and bracken. Evidence of fire.	-
					E		4	)No scrub.	-
R34	30 June	SK 852805	Stow Park	Lincoln - Gainsborough	E	Emb	6	) Coarse grasses and herbs, but mostly dense bramble.	-
					W		7	)	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION
a) NOTTINGHAMSHIRE									
R31	27 June	SK 826518	Balderton	Newark - Grantham	N	Flat	90	)Wide flat areas to flooded borrow pits on both sides of track.	Revisit and advise for protection.
					S		90	)A good site with open water, marsh, scrub, grassland and herbs, and some disturbed ground. Varied flora and fauna (birds).	
R32	28 June	SK 740741	East Markham	Newark - Retford	W	Cut	13	Mainly rough grass and low bramble but quite herb species rich.	-
					E		11	Fairly recently burnt and more disturbed. Poorer flora than W bank.	-
R33	29 June	SK 742826	Clarborough	East Retford - Gainsborough	S	Cut	27	)Deep cutting to tunnel mouth. Good calcicolous grassland on	Revisit and advise for protection.
					N		20	)Keuper marl with some scrub.	
NCC NORTHEAST REGION									
a) CLEVELAND									
R49	30 July	NZ 426164	Preston-on-Tees	Stockton - Eaglescliff	W	Emb	4	)Minor embankment. Rough grass, herbs and bramble.	-
					E		3	)	-
b) DURHAM									
R38	19 July	NZ 366137	Goosepool	Stockton - Darlington	N	Emb	7	)Course grass and herbs, bramble, scrub and small trees.	-
					S		8	)	-
R39	20 July	NZ 342141	Fighting Cocks	Fighting Cocks Branch	E	Cut	8	) Small cutting. Rough grass and herbs mixed with bramble.	-
					W		7	)	-
R40	21 July	NZ 271500	Chester-le-Street	Durham - Newcastle	W	Cut	7	)Mixed herb rich disturbed area passing into very coarse mixed	-
					E		9	)grasses and herbs partly dominated by fireweed.	-
R41	22 July	NZ 415520	Ryhope Dene	Sunderland - Hartlepool	W	Emb/Cut	6	) Rough grass, herbs, scattered bramble and scrub.	-
					E	Emb	4	)	-
R42	23 July	NZ 272372	Sunderland Bridge	Durham - Darlington	S	Cut	19	)Mixed herb rich Arrhenatherum grassland with scrub and patches	Good flora especially on S side.
					N		14	)of bramble, and of coarse herbs (fireweed). Some trees. A good habitat also for birds.	
c) HUMBERSIDE									
R26	16 June	TA 238105	Great Coates	Grimsby - Habrough	N	Emb	6	)Minor embankment, rather narrow. Rough grass, herbs and	-
					S		6	)some scrub.	-
R54	7 August	TA 048350	Coltingham	Driffield - Hull	W	Emb	6	) Minor embankment. Rough grasses, herbs and bramble.	-
					E		6	)	-
R55	8 August	TA 026557	Driffield	Driffield - Hull	W	Flat	5	)Rough grass, herbs and bramble.	-
					E		5	)	-
R56	9 August	TA 066587	Nafferton	Driffield - Bridlington	N	Flat	5	) Rough grass, herbs and bramble, but with an area of good herb	-
					S		5	) rich turf.	-
R57	11 August	SE 752303	Howden	Selby - Hull	N	Flat	10	Old track bed with small colonists backing onto coarse grasses and herbs.	-
					S		10	Coarse herbs and grasses in front of dense willow carr to ditch. Good bird habitat.	-
R58	11 August	SE 711189	Creyke's X	Thorne - Goole	S	Emb	6	Disturbed ground. Course herbs, some grass. Occasional trees.	-
					N		4	Disturbed ground with coarse herb and bramble. Shaded by tall willow. Both sides provide good bird habitat in otherwise flat open country.	-
d) NORTHUMBERLAND									
R44	25 July	NY 666659	Greenhead Station	Haltwhistle - Carlisle	E	Flat	4	Narrow, disturbed, ruderal area at old station site.	-
					W		1	Very narrow verge to wall.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION
R45	26 July	NY 961640	Widehaugh	Hexham - Newcastle	N	Emb	9	)Small embankment with broad cinnde flats colonised by small	-
					S		9	)annuals and perennials. Otherwise coarse grasses and herbs and scrub.	-
R46	27 July	NZ 240927	Ulgham	Morpeth - Alnmouth	W	Flat	4	)Rough grass and low bramble but quite herb rich in one quadrat.	-
					E		5	)	-
R47	28 July	NU 046457	Goswick	Berwick - Belford	E	Flat	4	) Narrow, flat and uninteresting.	-
					W		4	)	-
R48	29 July	NU 208238	Christonbank	Belford - Alnmouth	W	Cut	9	Minor cutting. Coarse grasses, herbs and bramble.	-
					E	Flat	8	More herb rich, mixed scrub and bramble to woodland edge. Good habitat for birds.	-
c) NORTH YORKSHIRE									
R50	3 August	SE 166901	Constable Burton	Redmire Branch	N	Emb/Flat	4	)Line on sidelong ground with varied habitats, including stream.	Interesting features but not outstanding.
					S	Cut/Flat	7	)Mixed coarse and finer herb rich grassland; bramble; scrub; and damp ground plants. Also some typical pasture species from neighbouring fields.	
R51	4 August	SE 249892	Becale	Redmire Branch	N	Cut	6	) Small cutting. Varied habitats with weedy area, rank and	More interesting than Constable Burton, with potential but not worth a special visit. Might be worth a visit in view of general interest of railway in relation to neighbouring land.
					S		7	) short grassland, and scrub. Quite rich calcicole flora and generally a good site.	
R52	5 August	SE 523636	Tollerton	York - Thirsk	W	Cut	6	)Minor cutting and flat - generally disturbed by ballast	
					E	Flat	4	)dumping. Rank grassland, small herbs. Site itself undistinguished but some interesting plants (e.g. Medicago falcata) in the vicinity.	
R53	6 August	SE 733657	Kirkham Bridge	York - Malton	E	Emb	18	Steep embankment down to river. Coarse herbs to woodland and lush riverside vegetation.	-
					W		8	Smaller embankment. Bramble and coarse herbs.	-
NCC NORTHWEST REGION									
a) CUMBRIA									
R43	24 July	NY 529570	Tootop	Haltwhistle - Carlisle	N	Cut	22	)Rich varied flora in deep cutting. Bracken and fireweed	An interesting site but probably not exceptional for the area.
					S		21	)but more basiphilous species present. In a general area of woodland, and upland grassland. Good also for birds and insects.	
b) SOUTH YORKSHIRE									
R59	12 August	SE 667120	Thorne Junction	Thorne - Doncaster	S	Flat	9	)Generally narrow, rather disturbed. Evidence of recent burning.	-
					N		2	)One of the most uninteresting sites we visited.	-
c) WEST YORKSHIRE									
R35	5 July	SE 062131	Booth Bank	Marsden - Huddersfield	N	Emb	7	)Large embankment on the south side. In an upland area. Mixed	-
					S		15	)heath, grassland, bramble and hawthorn/sallow scrub. Provides a habitat for birds in more open country.	-
R36	6 July	SE 055431	Dawslack	Keighley - Skipton	N	Cut	7	) Mixed coarse and species rich grassland, bramble and quite well	-
					S		7	) developed scrub. No special interest.	-
R37	7 July	SE 127380	Snipley	Keighley - Bradford	S	Flat	12	)Old siding next to factory on south side - very coarse grasses	-
					N		8	)and herbs on north.	-

APPENDIX 3

Cutting/Embankment sites lists

APPENDIX A. Cutting/Embankment sites 1977.

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION/ INTEREST
NCC SOUTHEAST REGION									
a) HERTFORDSHIRE									
CE3	4 May	TL 252182	Woolmer Green	Hitchin - Hatfield	W	Cut	18	Dense bramble, tall scrub and trees. Open bank with grasses and herbs at bottom of bank.	-
					E		29	Very dense scrub with some open ground at bottom of bank. Wood higher up with no ground flora.	-
					W	Emb	46	Steep by viaduct. Course grasses and mixed herbs, bramble and some scrub.	Roman snail.
					E		44	Steep by viaduct. Scattered trees amongst course grasses and herbs.	Roman snail.
CE4	5 May	TL 315149	Waterford	Hertford N - Langey Junction	W	Cut	17	Short grass and herbs amongst scattered bramble and rose, with denser woody growth higher up bank.	-
					E		10	Short herb rich mixed grasses and scattered scrub. Some disturbance of the ground.	-
					W	Emb	19	Top of bank covered in thick ballast, lower down colonised by low herbs. Otherwise, thick tall scrub and bramble with nettles.	-
					E		22	Dense scrub with scattered ash and oak saplings, more open course grass and herbs, and wet area, at the bottom. Both sides provide good habitats for insects and birds.	-
NCC EAST ANGLIA REGION									
a) ESSEX									
CE7	17 May	TL 906311	Mount Bures	Sudbury Branch	E	Cut	15	Hawthorn/hazel scrub with oak and maple; Arrhenatherum grassland with mixed herbs. Good bird habitat.	) Revisit and note) for protection.
					W		24	Complex stepped bank with scattered scrub. Brachypodium sylvaticum grassland with mixed herbs. Good bird and insect habitat.	) Include neighbouring) sections.
		TL 907323			E	Emb	10	)Mixed course grassland, bramble and scrub. Regenerating	-
					W		13	)cut scrub with practically no herbaceous plants on east side.	-
CE8	18 May	TQ 855978	Famoridge Station	Southminster Branch	N	Cut	11	) Recently cut scrub and some bulldozed. Some burnt. Very	-
					S		7	) disturbed.	-
		TQ 834978	Little Hayes		N	Emb	8	)Course grass and few herbs. Widely scattered scrub.	-
					S		6	)	-
CE9	19 May	TM 071215	Tenpenny Brook Arlesford	Clacton - Walton Branch	S	Cut	10	Lower part heavy deposit of ballast. Upper part almost pure Arrhenatherum elatius with bramble.	-
					N		10	)Lower Arrhenatherum grassland, upper more open sandy ground, short sward, herb rich amongst scattered scrub.	Access in relation to surrounding land.
					S	Emb	14	Open grassy slope fully exposed to sun. Mixed grasses and herbs with some scrub.	Access in relation to surrounding land.
					N		18	Top of bank severely affected by tipping. Otherwise mixed bramble, scattered scrub and course Arrhenatherum grass.	-
CE10	24 May	TM 111214	Great Bentley	Clacton - Walton Branch	N	Cut	9	Herb rich cutting slope with very scattered scrub. Some bare ground left by burning but followed by herbs colonising.	)Access in relation to)other habitats in)surrounding land.
					S		10	Rough grasses with some herbs and frequent scrub.	
					N	Emb	12	)Slopes densely colonised by bramble and scattered scrub.	-
					S		14	)Otherwise rough grass and herbs, or bracken.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION/ INTEREST
CE11	25 May	TM 308817	Copperas Wood	Harwich Branch	N	Cut	14	Bracken and some grass amongst sweet chestnut scrub.	-
					S		14	Nettle, scrub and bramble with grass and herbs in clearing to wood.	-
					N	Emb	30	)Bramble, scrub and woodland. Very little ground flora. Provides	-
					S		14	)a woodland edge habitat for insects and birds.	-
CE12	26 May	TM 077318	Millhill, Lawford	Ipswich - Colchester	S	Cut	30	With small(?) quarry. Bramble over lower part. Upper with good acid meadow flora.	)Access in relation to)surrounding land.
					N		16	Bottom part disturbed and burnt. Poppies and horsetails. Upper part close grazed herb rich turf and scattered broom. Good bird habitat.	)
					S	Emb	26	)Scrub at top giving way to scattered bramble and scrub in close	)Access in relation
								)rabbit grazed herb rich turf, down to old stream bed on the	)to surrounding land.
					N		15	)south side. Good flora.	)
b) NORFOLK									
CE15	29 May	TM 145833	Burston	Diss - Norwich	W	Cut	11	)Open rough grassland with some herbs amongst scattered to	-
					E		11	)frequent scrub which has been cut and is regrowing.	-
					W	Emb	7	) Very disturbed and eroded. Scrub, bramble and nettle to ivy	-
					E		7	) under closed canopy wood.	-
CE16	30 May	TG 248366	Southrepps	Cromer Branch	E	Cut	14	)Sandy site with close to medium turf, very herb rich; white	)Access in relation
					W		9	)with Saxif gra and red with Rumex acc. A good site.	)to surrounding land.
					E	Emb	12	) Coarse grasses, nettle and bramble in the east and more	-
					W		10	) diverse in the west.	-
CE17	31 May	TG 185263	Aylsham	Lenwade Branch	S	Cut	16	Open grassland but few herbs. Scattered scrub.	-
					N		13	Herb rich slope with scattered scrub and bramble.	-
					S	Emb	16	Open very herb rich with scattered bramble and scrub.	Unusual.
					N		13	Open more coarse grassland, fewer herbs. Grazed by goats.	-
CE18	1 June	TG 075034	Kimberley Park	Fakenham Branch	N	Cut	14	Scrub and bramble with open ground, grasses and herbs.	-
					S		11	Dense closed canopy scrub and few herbs.	-
					N	Emb	13	Regenerated hazel coppice with Mercu per under	-
					S		11	very thick bramble/brier, elder, oak, hazel scrub.	-
CE19	2 June	TL 856860	Brock Plantation Thetford	Ely - Thetford	W	Cut	11	)Shallow slope, mixed calcicolous heathy grasses and herbs	)Access in relation
					E		12	)with scrub. Good flora.	)to surrounding land.
					W	Emb	7	Closed canopy birch woodland. Scattered herbs.	)
					E		7	Open grasses and herbs. Widely scattered scrub. Woodland edge habitat in forest for insects and birds.	)
c) SUFFOLK									
CE6	16 May	TL 782658	Barrow	Kennett - Bury St Edmunds	N	Cut	8	Top very herb rich, bottom Arrhe ela grassland. Well developed bramble and gorse.	)Access in relation)to surrounding land.
					S		10	Arrhe ela grassland with scrub.	)
		TL 769659			N	Emb	16	Ash/hazel scrub with Clematis. Coarse grasses and herbs.	-
					S		16	Almost pure Arrhe ela but also some interesting herbs.	-
CE13	27 May	TM 379613	Benhall	Ipswich - Saxmundham	W	Cut	15	)Rough grass with bramble and mixed scrub. Some rabbit	-
					E		16	)grazing. Good habitats for birds.	
					W	Emb	16	) Varied habitats dominated by mature oak and ash. Mixed	-
					E		16	) understory and ground flora. Good habitats for birds.	-
CE14	28 May	TM 414867	Weston Crossing	Beccles - Saxmundham	E	Cut	8	Scrub over bramble with open areas of grasses and herbs, to mainly open very herb rich rabbit grazed sward.	)Unusual Hieracium.)Access in relation
					W		7	More frequent rose, bramble and scattered scrub. Less open grassland.	)to surrounding land.
					E	Emb	9	Dense scrub with bare ground and/or herbs, and more open areas.	-
							8	Dense scrub on ballast tipping with bramble. Mainly bare beneath.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION/ COMMENT
EAST MIDLANDS REGION									
a) CAMBRIDGESHIRE									
CE4	8 May	TL 464502	Great Shelford	Hitchin - Cambridge	N	Cut	7	)Scattered scrub and open rough grassland on low bank. More herb	-
					S		7	)rich on N bank, especially in area of burning.	-
					N	Emb	4	) Recently cut and soft ash/hawthorn scrub, with bramble, nettle and	-
					S		6	) ivy. Elsewhere dense scrub.	-
CE5	8 May	TL 555562	Gt Wilbraham	Bury St Edmunds - Cambridge	N	Cut	18	Cut and sprayed scrub. Chalky ground, much eroded.	-
					S		19	Scattered cut scrub but mainly mixed herbs, grasses and moss.	-
					N	Emb	9	)Recently cut dense scrub. Eroded bare ground, few herbs.	-
					S		8	)	-
CE58	15 August	TL 201623	Paxton Hill	Sandy - Huntingdon	W	Cut	13	) Herb rich calcicolous grassland, with some rabbit grazing.	)Access in relation
					E		17	) Regenerating low scrub. Good population of interesting herbs. Good bird habitats.	)to surrounding land.)
					W	Emb	12	)Some disturbance (tipping). Rank, herb rich coarse grassland	)
					E		15	)with some bramble and scrub. Good insect food plants.	)
CE59	16 August	TL 190585	Eynesbury	Sandy - St Neots	W	Cut	12	Dense sward Bromus ere grassland and calcicolous flora amongst bramble/briar/hawthorn.	) Access in relation) to surrounding land.
					E		14	Herb rich Festu rub grassland and coarser grassland.	)
					W	Emb	12	Rough Arrhe ola grassland, scattered privet, bramble and scrub.	)
					E		11	Disturbed at top, lower rough grassland mixed herbs. Some part of area burnt. More scrub than in west.	)
CE60	16 August	TL 223783	Abbots Ripton	Huntingdon - Peterborough	W	Cut	10	)Dense Brachy pin grassland with mixed herbs, richer in rabbit	)Access whole area in
					E		8	)grazed areas.	)relation to)surrounding land.
					W	Emb	9	) Low bramble, course herbs. Good for insects.	-
					E		9	)	-
b) LEICESTERSHIRE									
CE1	28 April	SK 984040	Ketton	Stamford - Oakham	S	Cut	15	Mixed scrub and ash saplings. Bare ground under	-
					N		13	Severely affected by ballast Bromus ere grassland, potentially herb rich. Scattered briar and scrub.	-
	17 August	SK 960031	Foster's Bridge		S	Emb	14	Upper part disturbed, mainly herbaceous and remains of cut scrub. Lower part mixed bramble, nettle and scrub.	-
					N		14	Dense closed canopy hawthorn scrub with maple and ash, plus shrubby garden escapes.	-
c) LINCOLNSHIRE									
CE20	15 June	TF 316930	Utterby	Louth Branch	E	Cut	7	)Open rough grassland with some local herbs and scattered	-
					W		9	)scrub.	-
					E	Emb	8	Disturbed upper slope. Dense colonisation by bramble and scrub.	-
					W		9	Mainly rough grassland but with frequent low scrub and bramble.	-
CE22	17 June	TF 105413	Helpringham	Spalding - Sleaford	E	Cut	11	)Quite short, herb rich grassland and some evidence of burning,	-
					W		12	)to coarser grasses and herbs and mixed scrub.	-
					E	Emb	16	Dense cover of bramble, with course grasses and herbs at bottom.	-
					W		15	Severe tipping, dense scrub and bramble to shade of tall willows by borrow pit (? outside railway land). Excellent bird habitats.	-
CE23	20 June	TF 051638	Nolton	Lincoln - Sleaford	E	Cut	10	Thick scrub with grass and herbs under. Some rabbit grazing.	)Access in relation
					W		11	More open scrub with short rabbit grazed grass and herbs.	)to surrounding land.
					E	Emb	8	Rabbit disturbance. Bare ground with goose-grass and nettle and some scrub.	-
					W		10	Severe ballast tipping colonised by bramble with frequent tall scrub.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION/ INTEREST
CE24	21 June	TF 104931	Claxby & Usselby Station	Barnetby - Market Rasen	E	Cut	8	Sandy with close herb rich turf, burnt and grazed by rabbits.	)As seen in relation
					W		8	Scrub and bramble with patches of rough grass.	)to surrounding land.
					E	Emb	9	Bramble and large areas rough grass with reed from wet ditch.	-
					W		9	Almost continuous bramble and some rough grass. Occasional scrub.	-
CE25	22 June	TF 079816	Wickenby	Lincoln - Market Rasen	W	Cut	19	)Rough grass with scrub and bramble.	-
					E		20	)	-
		TF 087837			W	Emb	7	) Thick spread cinder, mostly colonised by grasses and herbs	-
					E		7	) but with bramble and scrub.	-
CE26	23 June	TF 109912	Nova Scotia Bridge	Barnetby - Market Rasen	W	Cut	8	Closed canopy deciduous woodland with scattered ground flora.	-
					E		7	Regenerating cut woodland with quite a lot of bare ground. Good bird habitats both sides.	-
					W	Emb	6	)Scrub, bramble and mature trees. Some rough grass.	-
					E		8	)	-
CE27	24 June	TF 014717	Greetwell Bridge	Lincoln - Market Rasen	N	Cut	22	Scrub, bramble, mixed grasses and herbs. Water seepage.	)Adjacent in relation
					S		18	Mixed grasses and herbs passing into Dench fle zone and then to scrub and bramble up slope. Good mixed bird habitats.	)to surrounding land.
					N	Emb	9	)Bramble, briar, coarse herbs and scrub.	-
					S		9	)	-
CE30	30 June	SK 852825	Stow Park	Lincoln - Gainsborough	W	Cut	21	Mainly Arrhe ela grassland with frequent bramble, briar and hawthorn scrub.	-
					E		19	Some disturbance, otherwise Brachy pin grassland with scattered bramble, briar, gorse and scrub.	-
					W	Emb	8	)Severe disturbance ballast tipping with some Brachy pin	-
					E		8	)grassland, otherwise bramble, briar, scrub and coarse herbs.	
CE31	1 July	TF 012419	Wilsford	Ancaster - Sleaford	N	Cut	22	) Cutting in oolitic limestone with exposed rock. Brachy pin	)Revisit and save
					S		20	) grassland with ash and privet scrub, and Bromus ere. Good and varied flora.	)whole area for)protection.
					N	Emb	7	)Rough Brachy pin grassland and undistinguished herbs.	-
					S		7	)Rare bramble.	

a) NOTTINGHAMSHIRE

CE28	28 June	SK 787707	Marnham	Lincoln - Tuxford	N	Cut	12	)Mixture of herb rich Arrhe ela grassland, with signs of	)Not an exceptional
					S		11	)burning at some time, and rougher but still quite herb rich Arrhe grassland. Rare hawthorn bushes.	)site, but may be)of local interest.
					N	Emb	11	) Bramble and scrub on ballast and cinder tipping.	-
					S		12	)	-
CE29	29 June	SK 774823	North Leverton	Cottam Branch	N	Cut	13	)Herb rich Arrhe ela and Brach syl grassland with scrub	)Possible local
					S		12	)and bramble.	)interest.
					N	Emb	14	) Mixed grasses and herbs but mainly bramble and scrub on	-
					S		12	) tipped ballast.	-
CE32	4 July	SK 792657	Sutton-on-Trent	Newark - Retford	W	Cut	9	)Low bank. Mixed grasses, herbs, bramble and scattered	-
					E		8	)scrub.	-
					W	Emb	6	) Low bank. Ballast and cinder tippings. Course grass, herbs	-
					E		6	) and bramble.	-

b) NORTHEAST REGION

a) CLEVELAND

CE36	16 July	NZ 421118	Yarm	Stockton - Northallerton	W	Cut	20	)Herb rich calcareous grassland on lower slope, becoming	)Possible local
					E		20	)coarser towards top. Scrub and scattered bramble.	)interest. Whole
					W	Emb	25	Dense hawthorn, bramble, briar, to open course herbaceous vegetation.	)site contains)mixture of bird)habitats.
					E		25	Some bramble but mostly dense coarse herbs.	

Map 7 - 4 dup

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	APPROX. INTEREST
b) DURHAM									
[illegible]	14 July	NZ 41[illegible]20	High Firth Moor	Stockton - Darlington	S	Cut	10	Mixed herb rich grassland and scattered scrub to plantation behind.	Local interest.
					N		12	Lower half open grassland but higher very dense bramble and scrub.	-
					S	Emb	10	100% ash/hawthorn scrub with briar. Good bird habitat.	-
					N		10	Dense course Arrhenatherum elin grassland, with scattered bramble, briar and scrub.	-
[illegible]E86	20 July	NZ 35013[illegible]	Morton Palms	Stockton - Darlington	N	Cut	10	Bromus erec grassland, herb rich in scattered scrub.	Of local + interest.
					S		10	Arrhen, Dacty, Festu grassland. Coarser grasses and herbs. Scattered scrub.	-
					N	Emb	12	Mixed scrub and herb rich grassland.	A good mixed area of scrub and grassland.
					S		24	Dense scrub at top changing to mixed Arrhen coarse grassland. Both sides good habitats for birds.	
[illegible]E87	21 July	NZ 2[illegible]0[illegible]0	Pinewood	Durham - Newcastle	W	Cut	20	)A deep sandy cutting with scattered Sambucus, oak and birch.	A good site in relation
					E		17	)Evidence of haphazard burning. Heather and heathy vegetation with Deschampsia flo. Rabbit grazed.	to surrounding land.
		NZ 271404	Chester Moor		W	Emb	10	) Severe deposit of ballast. Mixed coarse grasses and herbs	-
					E		11	) and dense bramble, scattered scrub.	
[illegible]E88	22 July	NZ 405512	Cherry Knowle	South Hetton Branch	E	Cut	16	)Mixed, open herb rich Brach syl limestone grassland.	A good site. A visit
					W		19	)Some scrub, some exposed boulders and bare ground.	must be well timed for protection.
					E	Emb	14	) Course grasses and herbs, bramble, briar and scattered	-
					W		10	) scrub.	-
[illegible]E91	23 July	NZ 272372	Sunderland Bridge	Durham - Ferry Hill	N	Cut	18	)Rock cutting in coal measures sandstone and sloped area above.	Interesting but not
					S		16	)Grasses, herbs and ferns to birch/oak woodland.	exceptional.
		NZ 258379			N	Emb	45	) A very large, steep embankment. Severe ballast tipping over	Probably very good for
					S		36	) upper part. Mixed dense bramble/briar, scattered low scrub to mature tall hawthorn scrub.	birds and insects.
c) HUMBERSIDE									
[illegible]E21	16 June	TA 153170	Killingholme	Ulceby - Immingham	S	Cut	11	)Mixed dense scrub with patches of grasses and herbs. Calcareous,	-
					N		17	)quite species rich. Mixed habitats for birds.	-
					S	Emb	11	) Dense bramble and scrub to mature scrub. Little ground cover.	-
					N		17	)	-
[illegible]E53	9 August	TA 085855	Humble Cliff	Hull - Selby	N	Cut	33	)Mature sycamore, beech and elm to steep cliff in old chalk	-
					S		17	)quarry area. Almost pure ivy under. Good bird habitats.	-
					N	Emb	12	Embankment actually on rim of old chalk quarry. Closed canopy hawthorn/sycamore/elder scrub and poor ground flora. But note small area by track of herb rich Brach pin grassland.	-
					S		8	Dense bramble/briar and coarse herbs to scrub at bottom.	-
[illegible]E54	9 August	TA 0[illegible]6557	Driffield Beck	Hull - Driffield	E	Cut	18	Dense bramble/briar with tall scrub to more open grassland with mixed herbs. Very varied.	-
					W		13	Less tall scrub but dense bramble/briar intermixed with more open grassland, and fireweed patches.	-
					E	Emb	7	)Bramble/briar with scattered scrub and local open areas with coarse	-
					W		6	)grasses and mixed herbs.	-
[illegible]E55	9 August	TA 1[illegible]6[illegible]6	Sewerby	Filey - Bridlington	W	Cut	18	) Steep chalk cutting generally densely covered in scrub or	Of int rest in local
					E		30	) bramble, cut with small open grassland areas.	context and probably for birds.
					W	Emb	10	)Mixed open coarse grasses and scattered scrub to how far on	-
					E		13	)north, not full course in south.	-

REF	DATE	GRID REF OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	STATUS / INTEREST
CE48	10 August	SE 938284	North Ferriby	Hull - Selby	S	Cut	10	)Mixed good herb rich calcareous grassland; coarser grasses	)Possibly of local
					N		13	)and herbs, some bramble and occasional scrub.	)interest.
					S	Emb	11	) Tipped ballast. Bramble/briar. Coarse herbs and grasses.	-
					N		19	)	-
d) NORTHUMBERLAND									
CE44	26 July	NY 906633	Farnley	Hexham - Newcastle	S	Cut	44	)Very large complex cutting with mixed very herb rich	)Detailed investi-
					N		38	)grassland and varied scrub. Disused line and tunnel. Good	)gation of whole area
								animal habitats.	)needed.
		NY 961640	Widehaugh		S	Emb	10	) Mixed tall birch/sallow/hazel/ash scrub with little ground	-
					N		10	) vegetation. Some bramble and nettle.	-
CE45	27 July	NU 225043	Coquet Bridge	Morpeth - Alnmouth	W	Cut	17	)Good mixed herb rich and coarser grasslands with scattered	)Possibly of local
					E		15	)bramble and briar.	)interest.
					W	Emb	14	) Scrub and rough grass with tall herbs but quite species	-
					E		19	) rich. Good habitats for birds.	-
CE46	28 July	NU 022489	Philadelphia	Berwick - Belford	W	Cut	14	)Rather disturbed but with some local calcicole herbs, and	)Possibly of local
					E		10	)ferns on old bridge. Otherwise rough grass and bramble.	)interest.
					W	Emb	21	) Rough grass and herbs. Scattered-frequent bramble and scrub.	-
					E		30	) Some disturbance.	-
CE47	29 July	NU 214224	Embleton	Belford - Alnmouth	W	Cut	11	)Coarse grasses and herbs. Bramble and scrub.	-
					E		11	)	-
					W	Emb	7	) Bramble and coarse grasses in disturbed area, but some	-
					E		7	) interesting herb populations. Better than the cutting.	-
e) NORTH YORKSHIRE									
CE34	6 July	SD 987482	Cononley	Keighley - Skipton	E	Cut	8	Ballast dumping and very disturbed. Bramble, course herbs	-
								and scrub.	
					W		10	Also disturbed but with a patch of Calluna and Holcu mol.	-
					E	Emb	7	)Ballast tipping. Coarse grasses and herbs but good colonies	-
					W		7	)of Geran pra and Myrrh odo.	
CE49	3 August	SE 369901	Spennithorpe	Redmire Branch	S	Cut	10	) Good carboniferous limestone flora, mixed with rougher	)Possibly of local
					N		11	) Arrhenatherum grassland passing to bramble and scrub.	)interest.
					S	Emb	13	)Disturbed by ballast tipping. Bramble/briar and scrub with	-
					N		7	)some course grasses and herbs.	-
CE50	4 August	SE 249892	Bedale	Redmire Branch	S	Cut	20	) Deep cutting, rabbit grazed herb rich magnesian limestone	)Detailed investi-
					N		14	) turf with some scrub and locally disturbed areas.	)gation of whole area
									)needed.
					S	Emb	10	)Dense ash/elm/sycamore scrub to 4 m but some cut and	-
					N		7	)regenerating. Large areas bare ground. Some woodland	-
								herbs. Good habitats for birds.	
CE51	5 August	SE 420798	Thirsk	Thirsk - York	E	Cut	16	) Lower slopes some ballast tipping, course herbs and grasses	)Possibly of local
					W		16	) with bramble. Upper slopes and other areas past evidence	)interest.
								of fire leaving very herb rich turf, and in places calcicole rich.	
		SE 436774	Dalton		E	Emb	10	)Ballast tipping. Frequent low bramble, sometimes dense, with	-
					W		11	)rough Arrhe elo and course herbs. Scattered scrub.	-

REF	DATE	GRID OF ACCESS	SITE NAME	RAILWAY LINE	SIDE	FORM	WIDTH	NOTES	ACTION/ INTEREST
CE56	6 August	SE 708643	Barton-le-Willows	York - Malton	S	Cut	11	)Mixed grasslands some herb rich and extensive patches of	)Possibly of local
					N		11	)almost pure Bromus erectus. Disturbance from tipping at the bottom, also some cutting. Elsewhere evidence of burning. Scattered scrub on S, but rare on north.	)interest.))
					S	Emb	7	Mixed low bramble with coarse grasses. Some Bromus ere.	-
					N		7	Dense mixed bramble, briar and scrub with coarse herbs.	-
CE57	10 August	SE 610419	Escrick	York - Selby	E	Cut	13	)Open grassland. Rough Arrhe in the west with herbs and some	-
					W		11	)rabbit burrowing. Much shorter turf in the E, heavily rabbit grazed with scattered bramble. Herb rich short turf and bare ground.	-
					E	Emb	6	) Heavily disturbed by tipping, frequent rabbits. Low bramble,	-
					W		7	) scattered scrub and coarse herbs.	-

NCC NORTHWEST REGION

a) CUMBRIA

CE43	25 July	NY 615653	Upper Denton	Haltwhistle - Carlisle	S	Cut	10	)Mixed rough and heathy grasslands with some signs of disturbance	-
					N		11	)in past and occasional patches of fireweed.	-
					S	Emb	6	) Bramble, coarse grasses and herbs.	-
					N		7	)	-
CE42	24 July	NY 529570	Talkin	Haltwhistle - Carlisle	E	Cut	20	)Arrhe ela grassland with patches of fireweed. Scattered to	-
		NY 538591			W		19	)frequent oak/hawthorn scrub and bramble.	-
					N	Emb	19	Generally disturbed. Bramble, grasses and coarse herbs.	-
					S		14	Also disturbed, bramble, grasses etc. but also large colonies of Hieracia.	)Possibly of local)interest.

b) SOUTH YORKSHIRE

CE48	2 August	SE 661003	Auckley	Gainsborough - Doncaster	S	Cut	9	)Some disturbance and rabbit grazing. Sandy heathland	)Possibly of local
					N		9	)vegetation with good combination of species.	)interest.
					S	Emb	8	) Ballast tipping. Scattered scrub. Good colonisation by	-
					N		8	) coarser herbs and some smaller. Also reed on the north side.	-

c) WEST YORKSHIRE

CE33	5 July	SE 050120	Marsden	Huddersfield - Marsden	N	Cut	20	)Cutting between housing. Calluna and Vaccinium on north side	-
		SE 088745	Slaithwaite		S		7	)with Desch cae. South side mixed grasses and herbs.	-
					N	Emb	8	Dense sycamore. Practically no ground flora.	-
					S		25	Dense bramble with some fireweed and Desch fle. Good habitats for birds.	-
CE35	7 July	SE 127380	Shipley	Keighley - Bradford	N	Cut	22	)Closed canopy birch/oak/sycamore woodland. Scattered	-
					S		18	)understory. Ground flora lacking or continuous bracken with grasses. Good bird habitat.	-
					N	Emb	13	) Dense bramble. Coarse grasses and herbs. Scattered scrub on	-
					S		13	) the south side. Good bird habitats.	-

APPENDIX 4

Biological Interest sites lists

APPENDIX 4. Biological interest sites 1977.

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
NCC SOUTHEAST REGION								
a) HERTFORDSHIRE								
B7	20 April	TL 232634	Letchworth	Hitchin - Cambridge	Cut	Flora	Disturbed - no sign of Linaria repens.	Note.
B8	20 April	TL 197294	Hitchin Sidings	Hitchin - Kings Cross	Cut & Flat	SSSI & Flora	Good site - variety of flora.	Note.
B9	21 April	TL 225263	Fisher's Green	Hitchin - Kings Cross	Cut	Flora	Acid grassland and scrub - fair. No sign of Lathyrus hirsutus.	Note.
B10	21 April	TL 268208	Bragbury End	Hertford North - Langley Junction	Emb	Flora	Silybum and good annuals present. Good woodland for birds.	Note.
B11	21 April	TL 242031	Brookmans Park	Hatfield - Kings Cross	Cut	Flora	Good varied grass and scrub with fern on bridge.	Note.
B12	21 April	TQ 262986	Cockshot Hill	Hatfield - Kings Cross	Cut & Flat	Info.	Grass, scrub and heathy ground poor.	-
B23	Appendix 7	TL 252182	Woolmer Green				Open rough grass and some scrub, flat and embankment. With Roman snails.	Note.
NCC EAST ANGLIA REGION								
a) ESSEX								
B14	22 April	TL 500430	Gt Chesterford	Cambridge - Liverpool Street	Emb & Flat	Flora	No sign of Poa palustris but good scrub and annuals.	Note.
B15	22 April	TL 515681	Ring Hill Camp	Cambridge - Liverpool Street	Cut	Flora	No sign of Orobanche elatior very disturbed and cleared.	-
B20	23 May	TL 963240	West Bergholt	Colchester - Marks Tey	Emb	Flora	No sign of Verbascum pulverulentum, but good wooded emb and rich fauna.	Note.
B21	25 May	TM 200317	Copperas Wood	Harwich Branch	Cut	Flora & SSSI	No sign of Corydalis clayiculata but excellent varied flora of therophytes, grass and scrub.	Schedule.
B22	25 May	TM 221316	Parkeston Salting	Harwich Branch	Flat & Emb	Flora & Info	Good stand of Orchis morio, also Geranium rotundifolium. Maritimes, grass and good scrub.	Schedule.
B23	25 May	TM 181316	Wrabness Station	Harwich Branch	Cut	Flora	Good stand of Silene gallica.	Schedule.
B26	26 March	TL 55 26	Elsenham	Cambridge - Liverpool Street	Cut	NCC	Some good acid turf, but generally disturbed and poor.	-
B27	Appendix 5	TL 906311	Mount Bures				Herb rich cutting especially on west side.	Note. ?Schedule.
B28	Appendix 5	TM 111214	Great Bentley				Herb rich cutting especially - north side.	Note.
B29	Appendix 5	TM 027318	Mill Hill, Lawford				Herb rich cutting and embankment.	Note. ?Schedule.

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
b) NORFOLK								
B49	1 September	TL 905870	Kilverstone	Thetford - Norwich	Cut, Emb & Flat	A/SSSI	Some heath, generally poor and disturbed, but good for insects.	-
B54	7 September	TM 175945	Forncett St Mary	Diss - Norwich	Cut & Flat	NCC	Excellent varied site with scrub and calcicole grassland. Cuscuta and potentially very good for fauna.	Schedule.
B21	Appendix 2	TG 054031	Danemoor Green				Cutting with good woodland flora some exposed by recent scrub cutting.	Note. Schedule.
CE16	Appendix 3	TG 248366	Southrepps				Very herb rich turf in cutting.	Note. Schedule.
CE17	Appendix 3	TG 185263	Aylsham				South side embankment rather unusual flora.	Note.
c) SUFFOLK								
B50	1 September	TL 973643	Norton Wood	Bury - Elmswell	Cut	NCC	Good scrub spreading from wood but a lot now cleared. Excellent fauna and variety of habitats.	Note.
B51	2 September	TM 041629	Haughley Junction	Bury - Haughley Junction	Cut, Emb & Flat	NCC	Species poor calcicolous grass and scrub. On cinder flats - Lepidium latifolium and Orobanche minor.	Note.
CE5	Appendix 3	(TL 968658 (TL 969659	Barrow				Herb rich cutting. Emb with big population of Euphorbia cyparissias.	Note. Note.
CE14	Appendix 3	TM 414862	Weston Crossing				Herb rich cutting with unusual Hieracium.	Note. Schedule.
NCC EAST MIDLANDS REGION								
a) BEDFORDSHIRE								
B2	19 April	TL 178493	Sandy	Hitchin - St Neots	Cut	A/SSSI	Good. Sandy grassland and scrub.	Note.
B3	19 April	TL 193443	Biggleswade	Hitchin - Sandy	Flat	Flora	No interest visible.	-
B4	19 April	TL 192402	Langford Sidings	Hitchin - Sandy	Cut	Flora	No sign of Acaena but herb rich and Poterium polygamum.	Note.
b) CAMBRIDGESHIRE								
B1	18 April	TF 109073	Lolham Pits	Peterborough - Grantham	Flat & Emb	Info	Some good turf and annuals on cinder.	-
B5	20 April	TL 328402	Litlington Road	Royston - Hitchin	Cut	Flora	No sign of Iberis but good calcicolous flora.	?
B6	20 April	TL 290380	Odsey	Royston - Hitchin	Cut	Flora	No sign of Sambucus ebulus but good chalk flora with Orobanche elatior.	Note.
B13	22 April	TL 473502	Dernford Fen	Cambridge - Liverpool Street	Emb	A/SSSI	Some interest with Jaw-wedge and butterbur, but no special contribution to area.	-
B14	22 April	TL 611584	Dullingham	Cambridge - Bury	Cut	NCC	Rich shady grassland with scrub. Good diverse habitats.	Note.

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
817	26 April	TL 457560	Homerton	Cambridge - Shepreth Junction	Flat	Flora	Good stands of Lepidium latifolium and Cerastium diffusum.	Note.
818	28 April	TL 215975	Moreton's Leam Bridge	Whittlesey - Peterborough	Emb	Discovery	Good stand of Cerastium arvense.	Note.
839	22 August	TL 548836	Chettisham	Ely - March	Cut & Emb	Speculation	Rich varied area of grass, marsh and scrub with many plants rare in fenland. Rich fauna also.	Schedule.
840	22 August	TL 383687	Over	St Ives Branch	Cut	Speculation	Scrub and rank grassland with good fauna and a little rich turf.	-
841	23 August	TL 499887	Ouse Washes	Ely - March	Emb	A/SSSI	Woodland and good shelter for birds. Fauna good, but flora poor.	-
842	23 August	TL 501565	Fulbourn	Cambridge - Bury	Cut	Speculation	Chalk turf and scrub. Good but not outstanding in context of area.	Note.
843	24 August	TL 628684	Landwade	Ely - Kennett	Cut	Speculation	Diverse and rich grass and scrub, with good flora and faunal habitat.	Note. ?Schedule.
844	25 August	TL 657657	Chippenham Junction	Ely - Kennett	Cut	Speculation	Good chalk turf with local species.	Note.
845	25 August	TL 683688	Waterhall	Kennett - Cambridge	Cut	Speculation	Species poor chalk turf - not of any importance.	-
847	30 August	TL 364429	Holland Hall	Cambridge - Royston	Cut	Info	Excellent chalk grassland, one national rarity and other local plants. Good insects.	Schedule.
848	30 August	TL 22 69	Offord Hill	Huntingdon - St Neots	Cut	Speculation	Calcicole turf and gorse scrub. Not outstanding.	Note.
866	10 September	TL 280962	Whittlesey Station	Whittlesey - March	Cut & Flats	Discovery	Outstanding variety of habitats with extremely rich flora and fauna and many local species.	Schedule.
82	Appendix 2	TL 234756	Stukeley Lodge				Extensive, complex cutting with mixed herb rich grasslands.	Note. Schedule.
CE58	Appendix 3	TL 201623	Paxton Hill				Herb rich calcicolous rabbit grazed cutting.	Note. Schedule.
CE59	Appendix 3	TL 190585	Eynesbury				Herb rich cutting and embankment.	Note. ?Schedule.
CE60	Appendix 3	TL 223783	Abbots Ripton				Extensive, cutting with mixed herb rich grassland.	Note. Schedule.
			Denton Covert				Buffer zone between railway and Holme Fen.	Bodie & Hunter NT site.
			Woodwalton				Large embankment with good mixed flora.	Bodie & Hunter NT site.

c) LINCOLNSHIRE

817	27 April	SK 963272	Bassingthorpe	Peterborough - Grantham	Cut	Flora	Calcicolous grassland with big stand of Euphorbia cyparissias.	Schedule.
834	15 June	TF 336882	Louth Grain Store	Louth Branch	Flat	Discovery	Marshy with good stand of Dactylorhiza praetermissa.	Schedule.
835	15 June	TF 419994	Utterby Cutting	Louth Branch	Cut	Discovery	Good stand of Lathyrus tuberosus.	Note.

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
B27	22 June	TF 082826	Wickenby Wood	Lincoln - Market Rasen	Emb	A/SSSI	Disturbed and poor - no importance.	-
B28	23 June	TF 110906	Nova Scotia Level Crossing	Barnetby - Market Rasen	Cut	Flora	Good stand of rare alien: Teucrium chamaedrys.	Schedule.
B30	1 July	TF 033437	Wilsford and Rauceby Warren	Sleaford - Ancaster	Flat	A/SSSI	Diverse grassland with good population of Lathyrus tuberosum.	Note.
B52	5 September	SK 930325	Little Ponton	Grantham - Peterborough	Cut	Speculation	Oolite rock, grass and scrub - diverse and rich.	?Schedule.
B53	5 September	SK 933302	Great Ponton	Grantham - Peterborough	Cut	Speculation	Oolite rock, grass and scrub - rich.	?Schedule.
B25	Appendix 2	TF 132881	Louth Station				Complex area of cutting and flat with cinder beds. Mixed flora.	Note.
CE23	Appendix 3	TF 051638	Nocton				Rabbit grazed turf with mixed herbs in cutting.	Note.
CE24	Appendix 3	TF 104931	Claxby and Usselby Station				Sandy, grazed, herb rich turf on cutting.	Note.
CE27	Appendix 3	TF 014717	Greetwell Bridge				Mixed grasslands and herbs in cutting.	Note.
CE31	Appendix 3	TF 012419	Wilsford				Oolitic limestone cutting with mixed grass and woodland flora.	Note. ?Schedule.
B29	29 June	SK 745827	Clarborough Tunnel Head	Gainsborough - Retford	Cut	SSSI	Rich calcicolous grassland.	Schedule.
B31	8 July	SK 623784	Manton Wood Bridge	Worksop - Retford	Cut & Emb	Flora	Cystopteris fragilis not seen, but good sandy grassland.	Note.
B33	Appendix 2	SK 826518	Balderton				Borrow pit and surrounding area. Mixed open water to woodland habitats.	Schedule.
B35	Appendix 2	SK 742826	Clarborough				Extensive deep cutting to tunnel mouth. Calcicolous grassland.	Note. Schedule.
CE29	Appendix 3	SK 774825	North Leverton				Herb rich grassland.	Note.
B54	20 July	NZ 320276	Bradbury	Ferryhill - Darlington	Cut	Speculation	Species rich grassland and bramble.	Note.
B56	20 July	NZ 320296	Nunstainton East	Ferryhill - Darlington	Cut	Speculation	Very good calcicolous grass some marshy. Extensive site.	?Schedule.
B42	Appendix 2	NZ 272372	Sunderland Bridge				South side cutting mixed herb rich grasslands.	Note.
CE58	Appendix 3	NZ 360132	Norton Palms				Embankment of mixed open scrub and varied herb grassland.	Note.
CE59	Appendix 3	NZ 370476	Flawswood				A deep cutting in sandstone with heathy, rabbit grazed vegetation.	Note. ?Schedule.
CE60	Appendix 3	NZ 405512	Cherry Knowle				A deep cutting in limestone with mixed limestone flora.	Schedule.

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
b) LINCOLNSHIRE								
B50	6 June	TA 186168	Immingham Docks	Immingham various	Flat & Emb	Speculation	Marsh and cinder flats. Good plant list and haven for birds.	Note.
CB55	Appendix 3	TA 106686	Bewerby				Steep chalk cutting extensively wooded, with an alien Sorbus.	Note.
CB56	Appendix 3	SE 085255	North Ferriby				South side of cutting mixed herb rich grassland.	Note.
c) NORTHUMBERLAND								
B45	28 July	NU 04 46	Goswick	Berwick - Belford	Cut	A/SSSI	Rough grass - no interest.	-
B46	28 July	NU 027483	Rhiladelphia	Berwick - Belford	Emb	Discovery	Rough open grass with very large stand of Geranium sanguineum.	Note.
CB44	Appendix 3	NY 996633	Farnley				Extensive complex cutting with mixed herb rich grasslands, scrub and woodland.	Note. Schedule.
CB45	Appendix 3	NU 225048	Coquet Bridge				Mixed herb rich grasslands in cutting.	Note.
d) NORTH YORKSHIRE								
B50	Appendix 2	SE 166901	Constable Burton				Varied flora in cutting.	Note.
B51*	Appendix 2	SE 249892	Bedale				Small cutting with mixed habitats and calcicole flora.	Note.
B52	Appendix 2	SE 520636	Tollerton				Not of special note, but railway land in the vicinity of some interest.	Note.
CB49	Appendix 3	SE 139901	Spennithorpe				Areas of good carboniferous limestone flora in cutting.	Note.
CB50*	Appendix 3	SE 249892	Bedale				See above. Whole area needs assessing.	-
CB51	Appendix 3	SE 420798	Thirsk				Some good herb rich turf. Cutting.	Note.
CB52	Appendix 3	SE 708643	Barton-le-Willows				Mixed grasslands with some herb rich turf in cutting.	Note.
e) CLEVELAND								
CB36	Appendix 3	NZ 421112	Yarm				Cutting with some herb rich grassland.	Note.
B NORTHWEST REGION								
a) SOUTH YORKSHIRE								
B31	6 July	SK 532830	Anston Stones Wood	Thurcroft Branch	Cut & Emb	A/SSSI	Magnesian rock cutting, rough grass, turf and scrub. Many rare and local species. Line contributes much to the site.	Schedule.
B32	12 August	SK 48 99	Finningley Gravel Pits	Doncaster - Gainsborough	Flat	A/SSSI	Narrow heavily grazed turf of no real interest.	-

REF	DATE	GRID REFERENCE	SITE NAME	RAILWAY LINE	FORMATION	SOURCE	ASSESSMENT/NOTES	ACTION
[illegible]	12 August	SE 59 00	Potteric Carr	Doncaster - Retford	Flat, Emb & pits	SEDI	Open water, carr and marsh with dry grass, and scrub. Some rare species. YNT reserve.	YNT site.
CE48	Appendix 3	SE 651003	Auckley				Sandy, heathy vegetation in cutting with some interesting species.	Note.
b) CUMBRIA								
R43	Appendix 2	NY 529570	Tootop				Deep cutting with rich flora amongst bracken.	Note.

APPENDIX 5

Biological Interest sites
specimen files

(Section 1)

RAILWAY SITE OF BIOLOGICAL INTEREST

SITE NAME FORNCETT ST MARY Map Ref TM 175945 Data bank ref

NCC Region East Anglia County Norfolk Internal ref B54

STATUS

Part of	Adjacent to	NNR	PNNR	INR	SSSI	

County Flora site. State ref -

Local Information site. State source - Ex Dr Martin George. Ro East Anglia

Discovery etc. (Describe) -

INTEREST

Plants	General	Local	Rare	Very rare	
Animals	Insects	Reptiles	Birds	Mammals	

(Habitat)) describe - General woodland
Geological)

RAILWAY REGION E DIVISION Norwich AREA Norwich

Address of Area Civil Engrs Office Mr G.A. Prentice
Telephone number Thorpe Station.
Thorpe Road, Norwich.
(0603) 22255 ext 6349.

Name of railway line Norwich - Ipswich

Access at Road overbridge 175945 Mileage post 105

NOTIFICATION

	With whom	By whom	Date	Ref.
Site notified to BR				
Management agreement (see section 3 for detail)				

VISITS

Date	By whom	Assessment/Action
7-9-77	J.O. Mountford	A good area all round with local species (eg. dodder - absent from S. Cen. Norfolk), and with grassland with scrub. Quite an extensive area with a wide variety of habitats in an otherwise arable countryside. * Consider for notification. Assess management requirements. Also good for animals, especially insects and birds. Providing a refuge for them to forage from, and good food sources in the area itself. * Monitor animal species and population.

Continue overleaf

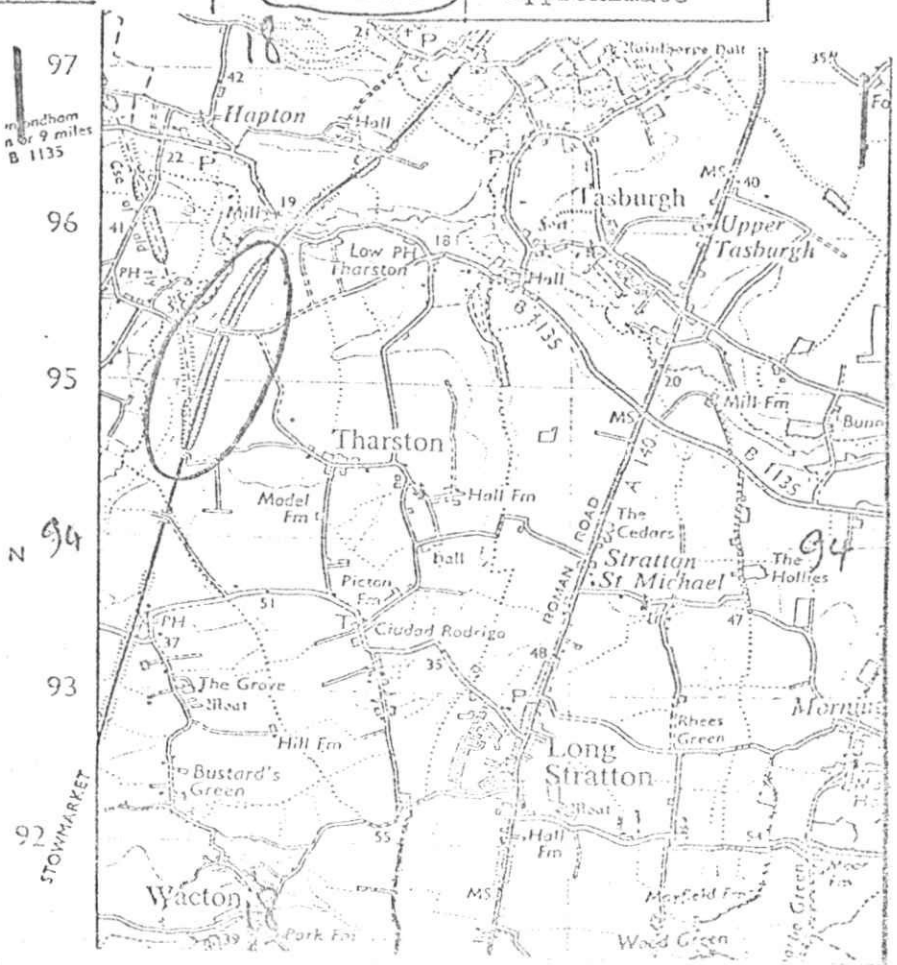
FILE OPENED BY ITE Merlewood DATE 2/12/77

(Section 2)

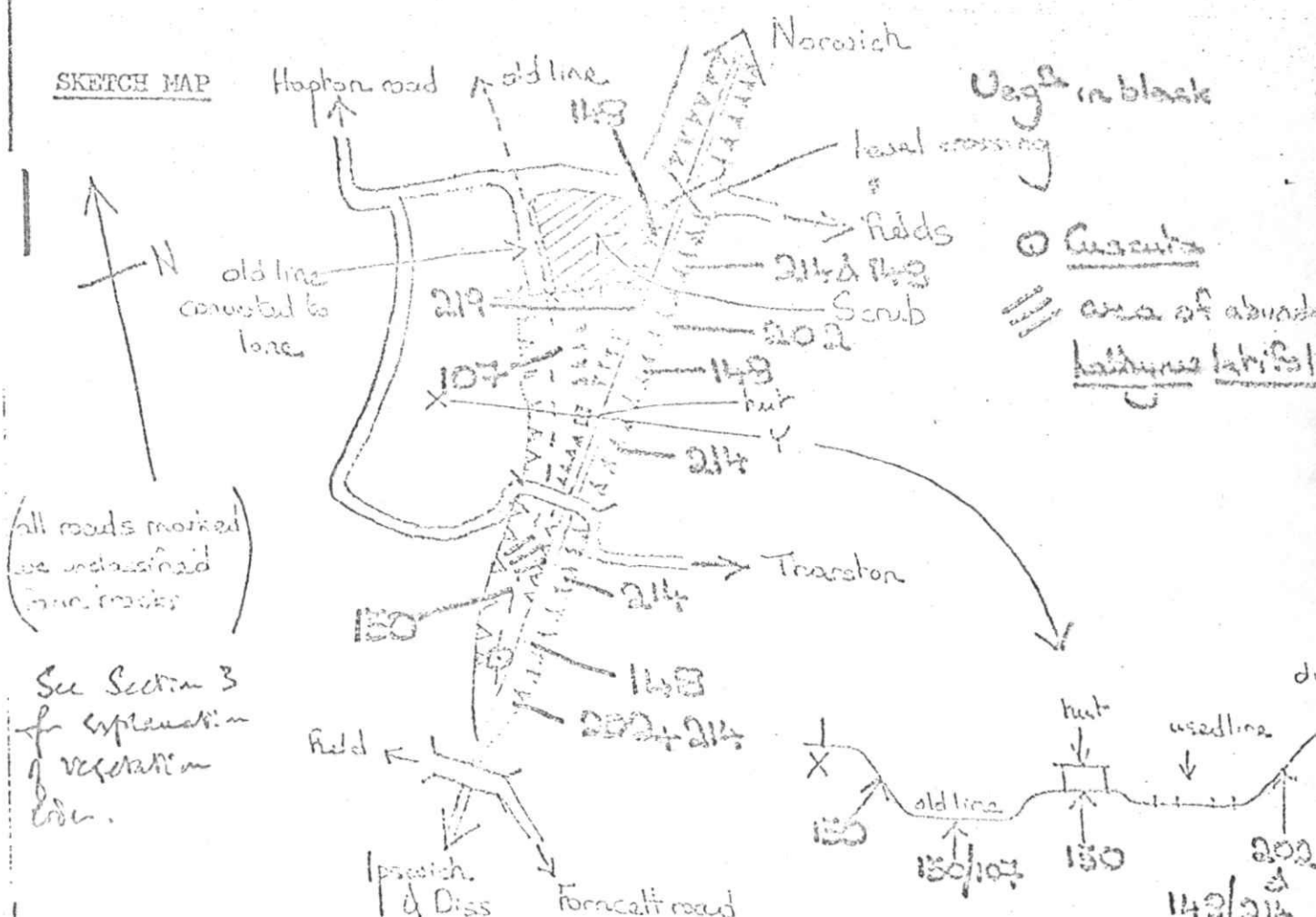
SITE NAME FORNCETT ST MARY CDB ref Internal ref B54

LOCATION MAP SCALE 1:50000 SHEET NO. 134 MAP REF 175948

LOCATION STATUS Accurate | Approximate



SKETCH MAP



(Section 3)

SITE NAME FORNCETT ST MARY CDB ref Internal ref B 54

Altitude 125 ft Local Geology Boulder Clay over Chalk

Neighbouring landuses Arable farming

DIRECTION FROM ACCESS (N) (E) W S E W or BOTH

Dist from * access point	Refer to sketch map.							
Side of track °	E	E	E	E	W	W	W	W
Landform x	S.Cut	S.Cut	S.Cut	Ditch	S.Cut	S.Cut	Flat	Flat
Aspect-degrees	300	300	300	-	120	120	-	-
Width-metres	8-1	8-1	8-1	1·5	2·4	2·4	9	9
~~Disturbance~~ + Vegetation code See below	148	202	214	202	148	219	107	150

* If site is both sides of access point, precede distance by cardinal point
° Indicate side of track by compass cardinal point
x Flat, Cut, Emb, Combination, Complex, Steep, Moderate, Structure, etc.
\+ Severe, Moderate, Light, Tipping, Ballast, Cinder, Fire, Clearance, Works, etc.

FEATURES OF SPECIAL INTEREST An area previously noted by D Norris Records from examination of the abandoned line to the north

General vegn characteristics and habitat description indicate side of track

The junction of the Norwich - Ipswich line with the DS line to Wymondham has disused. Visit more or less confined to the working railway land.

Used line runs through a small chalk cutting with various herbs with grassland communities, with some patches of low bramble and scrub on the east side, and taller scrub (especially higher up the bank) on the west side.

The track bed and sides of the DS line were more overgrown near the junction. In the smaller cutting by the junction there was a tall scrub and herb community dominated by Lathyrus latifolius grading into a herb rich turf.

Vegetation codes: 107 Herb rich grassland 5-20 cm high
148 Herb rich grassland 5-20 cm high with woody plants to 2 m
150 ——— " ——— >20 cm high ——— " ———
202 Bramble + Briar with herbs
214 10% - 30% mixed woody and herbaceous plants
219 >30% closed woodland canopy, with mixed bramble/briar and herbaceous

See sketch map

See attached photocopy field Animal Records form.

PREFERRED MANAGEMENT

EVIDENCE OF MANAGEMENT. Close entries by date and recorder's initials.

Some rabbit grazing and cutting at Ouseway of scrub. 7-9-77. JDM.

Continue overleaf

RECORD E / NR / NR / B54

SITE NAME Foncett MP 105 RECORDER jom DATE 7.9.77

LAND FORM 281 MANAGE/DISTURB 700/708 NLU 800/82

+726/737

R=reproduction
F=feeding
LH=living habitat
3=good
N=nesting

	ANIMAL	R	F	LH
1	BIRDS	3	3	3
2	RABBITS	3	3	3
3	FOX	3	3	3
4	BADGER	2	2	2
5	STOAT & WEASEL	3	3	3
6	BUTTERFLIES	3	3	3

HABITAT APPRAISAL ref. to NLV

Excellent on all grounds covering all vegetation types on [illegible] bar waterground & part woodland & Trees interlaced in good feeding & shelter for a big & varied Excellent food variety for all mammals & all other species. The combination of the area with the scrub area in the fork between disused railway produces a right area of species necessary which can support a large breeding population to forage in the fields and beech. The continued existence of the site is desirable.

VERTS & INVERTS SEEN OF BR LAND

BIRDS	ANIMALS	INVERTS
Whitethroat Robin Wren Red Wagtail	Rabbit	Large White Small Painted Lady Diplodepis rosae Peacock

CASUALTIES

ADDITIONS - seen on NL but associated with BR land

GRASSES

26	Agrost	can
35		RTP
38	Agrost	can
39		S10
40		ten
41	Aira	car
42		pra
82	Alope	gen
84		myo
85		PRA
121	Antho	odo
169	[illegible]	[illegible]
220	Avena	fat
249	Brach	PIN
250	[illegible]	[illegible]
256	[illegible]	[illegible]
262	Bromu	com
263	[illegible]	[illegible]
268		lep
269		*mol
272	[illegible]	[illegible]
113	[illegible]	[illegible]
203	Calam	epi
597	Cynos	cri
607	[illegible]	[illegible]
627	Desch	cae
628		ile
813	Feste	aru
816		gig
821		*AV
823		PRA
824		*RUB
825	Feste	tol
933	Glyce	flu
934		max
961	Helic	pra
962		pub
983	Holcu	LAN
984		mol
992	Horde	mar
993		sec
1067	Koele	cri
1162	Lolia	mul
1183		PER
1263	Melic	uni
1296	Milia	eff
1307	Molin	cae
1344	Nardu	str
1454	Phala	aru
1461	Phleu	ber
1547		*PRA
1565	Poa sp	com
1586	[illegible]	[illegible]
1595		ANN
1600		com
1604		nem
1606	[illegible]	[illegible]
1506		sub
1507		TRI
1918	Stipl	dec
2105	Trise	fla
2226	Vulpi	bro
2228		myu

WOODY - CLIMBERS

3	Acer	[illegible]
5		pse
2241	Aescu	hip
77	Alnus	glu
239	Betul	pen
240		pub
276	Bryon	dio
287	Buxus	sem
2248	Calyx	*sep
432	Cista	sat
525	Clema	vit
557	Corył	ave
569	[illegible]	[illegible]
570		oxy
762	Fumy	cur
810	Fagus	syl

841	[illegible]	[illegible]
952	[illegible]	[illegible]
995	Hedra	hel
1023	Ilex	aqu
1080	Junip	com
1144	[illegible]	[illegible]
1188	Lonic	per
1230	Malus	syl
1484	Pirus	syl
1555	Popul	tre
1611	Prunu	avi
1614		dom
1616		pad
1617	[illegible]	[illegible]
1635	Quere	cer
1638		pet
1640	[illegible]	[illegible]
1675	Rhamn	cat
1694	Ribes	nig
1696		syl
1697		uva
1705	Rosa	*
1707		sty
1708	[illegible]	[illegible]
1709		can
1712		mic
1719		pim
1714		*rub
1722		*vil
1726	Rubus	cae
1728	[illegible]	[illegible]
3507	Salix	sp
1784		alb
1787		aur
1788		cap
1789		*cin
1790		cin
1793		fra
1801		pur
1805		vim
1814	Sambu	nig
1822	Sorbt	sco
3508	Sorbu	*
1900	.	ane
1994	Spira	sal
2029	Syrin	vul
2052	Tamus	com
2039	Taxus	bac
548	[illegible]	[illegible]
2063	Tilia	cor
2112	Ulex	eur
2113		gal
2114		min
2115	Ulmus	cur
2119		gla
2122		pro
2184	Viscu	lan
2185		opu

HERBS

7	Achil	mil
9		pta
3501	Aconc	cus
19	Adoxa	mos
20	Aegop	pod
21	Aethu	cyn
22	[illegible]	[illegible]
46	Ajuga	rep
51	Alche	gla
57		ves
58		vul
60		xan
63	Alism	pla
64	Alla	pet
75	Allu	uro
76		vin
98	Anaca	pyr
99	Anaga	arv
105	Anemo	nem
109	Angel	syl
117	Anthe	arv
118		cot

125	[illegible]	[illegible]
126	Anthy	vul
131	Aphan	*arv
137	Apium	nod
151	Aretl	lap
152		min
167	Armor	rus
170	Artem	abs
175		vul
176	Arum	mac
185	Asple	adi
192		rut
194		tri
208	Astra	gly
218	Atrip	pat
225	Ballo	nig
229	Batha	vul
231	[illegible]	[illegible]
244	Betul	ere
235	Beta	vul
237	Beton	off
243	Blech	pcr
244	Blech	spi
3502	Brachy	rut
252	Brass	nig
296	Calam	asc
2249	Calli	*agg
307		sta
309	Callu	vul
310	Calth	pal
320	Campa	rapunculo
322		rot
325	Capse	bur
328	Carda	fle
329		hir
331		pra
333	Carda	dra
334	Cardu	aca
337		nut
339		ten
350	Carex	bin
355		cur
361		dem
369		divisa
370		flacca
376		flava
381		hir
393		nig
396		otr
398		mur = pal
400		paniculea
405		pil
412		tem
413		rig
357		spi
421		syl
427	Carli	vul
433	Catab	aqu
435	Catap	rig
444	[illegible]	[illegible]
446		sca
451	Centa	ery
461	Ceras	arv
462		atr
466		glo
467		hol
469		sem
3503	Ceter	off
474	Chaen	min
476	Chaer	tem
477	[illegible]	[illegible]
119	Chama	moi
480	Cheli	maj
481	Chena	alb
484		bon
486		rub
502	[illegible]	[illegible]
503		par
504		seg
2033		vul
506	Chrys	opp

509	Cichо	int
513	Cirea	lut
514	Cirsi	arc
515	[illegible]	[illegible]
516		dis
517		eri
518		het
520		pal
522		vul
530	[illegible]	[illegible]
540	Conia	mac
541	Conop	maj
544	[illegible]	[illegible]
735	Convz	can
551	Coron	did
552		sca
571	Crepi	bie
572	[illegible]	[illegible]
578	[illegible]	[illegible]
592	Cymba	mur
596	Cynog	off
602	Cysto	fra
608	Dacty	fue
609		ine
610		mac
612		pra
613		pur
620	[illegible]	[illegible]
630	Descu	sop
640	Digit	pur
644	Diplo	mur
646	Digra	fol
647		pil
661	Dryop	aut
662		bor
664		*ci
670	Echiu	vul
675	Epilo	par
681	Elisde	cor
684	Empet	*nig
687	Endym	non
688	Epilo	ang
689		vir
692		hir
695		mon
696		ova
697		pal
698		par
712	[illegible]	[illegible]
713		flu
717		pal
720		syl
721		tel
726	Erica	cin
731		tet
745	Erodi	*cic
749		mos
759	Erysi	che
763	Eupat	can
771	Euphe	esl
772		hel
777		peplus
2243	Euphr	*agg
830	Filag	ger
833	[illegible]	[illegible]
834		vul
835	Foeni	vul
838	[illegible]	[illegible]
3504	Fumar	sp
847		cap
854		off
862	Galeob	lut
867	Galeop	tpe
873	Galiu	apa
875		cru
879		*mol
183		odo
882		pal
878		sax
888		ver
891	Genis	ang

893	Genis	tin
897	Gentl	*amo
906	Geran	col
907		dis
909		luc
911		mol
913		pha
914		pra
916		pus
917		pyr
918	[illegible]	[illegible]
921		syl
924	Geum	riv
926		urb
931	[illegible]	[illegible]
941	Graph	uli
948	Gymna	con
955	Helia	cha
968	[illegible]	[illegible]
976	[illegible]	[illegible]
979	Hippo	com
981	Hippu	vul
1002	Hyote	nig
1003	Hyper	mul
1010		hirsutum
1011		hum
1006		mac
1014	[illegible]	[illegible]
1015		pul
1016		tet
3505	Hypnu	cup
1020	Hyppo	rad
1025	Impat	gla
1026		par
1030	Inula	con
1036	Iris	foe
1038		pse
1046	Juncu	inco
1048	Juncu	acut
1056		art
1057		buf
1063		con
1067		eff
1070		inf
1075		squ
1077		ten
1084	[illegible]	[illegible]
1094	Lactu	ser
1095		vir
1098	Lamia	alb
1099		amp
1103		pur
1104	Lamsa	dom
1112	Lathy	mon
1116	[illegible]	[illegible]
1129	Leont	aut
1130		his
1131		tar
1133	Lepid	cam
1139		het
1161	Linar	rep
1164	[illegible]	[illegible]
1169	Linum	cat
1173	Liste	ova
1174	Litho	off
1191	[illegible]	[illegible]
1194		ulı
1201	Lazul	cam
1204		mul
1207		pal
1209		syl
1210	Lychn	flo
1218	Lycop	arv
1219		eur
1221	Lysim	nem
1222		nurn
1227	Lythr	sal
1232	Malva	mos
1233		neg
1236		syl
1242	Matri	mat

1239	Medic	[illegible]
1247	Medic	[illegible]
1250	[illegible]	[illegible]
1252		syl
1264	Melil	alb
1265		sul
1267		off
1272	Menth	aqu
1273		arv
1290	Mercu	ann
1291	[illegible]	[illegible]
1298	Mimul	gut
1305	Mochr	tri
1312	Monti	fon
1315	Myoel	mur
1317	Myoso	arv
1319		cae
1320		ram
1321		dis
1322		sco
1333	Myrrh	odo
1345	Nitel	pro
1348	Nastu	*off
1353	Nepet	cat
1361	Odont	ver
1363	Oenan	cro
1370	Oenot	bie
1375	Onobr	vic
1377	Ononi	rep
1378		spi
1379	Onopo	aca
1382	Ophry	api
1387	Orchi	mas
1389	Orlga	vio
1396	Orna	umb
1397	Ornit	pyr
1401	Orobu	ver
1414	Oxalı	ace
1424	Pario	ofi
1430		dub
1430		ova
1431		sem
1435	Pane	cal
1440	Papa	set
1442	Pedic	syl
1443	Penta	sem
1445	Petas	nig
1446		rac
1447		hyb
1449	Petro	cri
1466	Phyll	sco
1471	Picri	ech
1472	[illegible]	[illegible]
1475	Pimpi	maj
1476	[illegible]	[illegible]
1485	Plant	cor
1487	[illegible]	[illegible]
1488		maj
1490	[illegible]	[illegible]
1514	Polyg	ser
1515		vul
1520	Polyg	are
1521		amp
1522		*avi
1525		bis
1527		com
1528		cus
1530		hyd
1531		lap
1536		nod
1537		per
1544	Polyp	vul
1546	Polys	acu
1548		set
3506	Potam	sp
1563		cri
1570		rut
1575		per
1576		pol
1584	Poten	ans

1585	Poten	ere
1594	[illegible]	[illegible]
1596		ste
1599	[illegible]	[illegible]
1605	Primu	ver
1607		vul
1610	Prune	vul
1619	Pteri	aqu
1625	Pulic	dys
1641	Radio	lin
1642	Ranun	acr
1643		*aqu
1645		aur
1647		bul
1649		fic
1651		flammula
1660		repens
1663		sce
1667	Rapha	rap
1672	Reted	lut
1673		luteola
1678	Rhina	*min
1704	Ronip	syl
1735	Rumex	*ace
1724	[illegible]	[illegible]
1741		con
1742		crispus
1745		hyd
1746		lun
1748		obt
1751		pul
1753		san
1761	Sagin	ape
1766		nod
1767		pro
1809	Salvi	hor
1815	Sambu	ebu
1818	Sangu	off
1819	Sanic	eur
1821	Saxif	off
1830	Saxi	pra
1835		tri
1843		tri
1846	Scabi	col
1847	Scirp	set
1865	Scrup	aqu
1867		nod
1875	Sedum	ace
1876		alb
1877		ang
1885		tel
1891	Senec	aqu
1896	[illegible]	[illegible]
1899		jac
1902		squ
1903		syl
1904		vis
1905		vul
1912	Shera	arv
1916	[illegible]	[illegible]
1258	Silen	alb
1259		dio
1923		vul
1930	Silyb	mar
1932	Sinap	alb
1933		arv
1934	Sison	amo
1938	Sisym	off
1943	Smyrn	olu
1947	Solan	dul
1949		nig
1951	Solid	vir
1952	[illegible]	[illegible]
1953	[illegible]	[illegible]
1954	[illegible]	[illegible]
1981	Sparg	ere
1957	Sperg	arv
2001	Stach	arv
2003		pal
2005		syl
2007	Stell	als

2009	Stell	gra
2010		hol
2011		med
2021	Succi	pra
2022	Symph	riv
2024	Symph	off
3509		x upl
2036	Tarax	*lae
2034	Tarax	*agg
2035		*off
2046	Teucr	scorod
2048	Thali	fla
2051	Thely	lim
2058	Thlas	arv
2060	Thymu	dru
2065	Toril	jap
2070		nod
2074	Trago	pra
2077	Trifo	arv
2080		cam
2081		duo
2083		fra
2085		hyb
2087		med
2090		och
2091		pra
2092		rep
2097		striatum
2102	Trigl	pal
1241	Tripl	mar
2109	[illegible]	[illegible]
2111	Typha	lat
2125	Umbil	rup
2126	Urtic	dio
2128		ure
2130	Vacci	myr
2138		vit
2139	Valer	dio
2140		off
2150	Verba	nig
2157		supina
2159	Verbe	off
2161	Veron	agr
2163		ana
2165		arv
2166		bec
2167		cat
2168		chi
2169		fil
2171		hed
2172		mon
2173		oli
2175		persica
2180		ser
2189	Viola	[illegible]
2191	[illegible]	[illegible]
2197		sat
2198		sep
2202		tet
2204	Vinca	maj
2205		min
2206	Viola	ary
2210		her
2214		odo
2217		tri
2218		riv
2220		tri

Additional Species

CODE	NAME
162	Arenaria ser ss.
286	Vicia dot ang.

SIZE OF TRACK

N	E	W	S	E	W

DATE 7-9-77

RECORDER Jo. Hewitson

Internal ref R 84

GRASSES

20 Agrop can
33 ~~Holc~~
35 Agros can
39 S10
40 ten
41 Aira car
42 pra
82 Alope gen
84 myo
85 PRA
121 Anthe odo
~~169 Arden~~
220 Avena fat
249 Brom PIN
250 ~~Bro~~
256 ~~Bro~~ ~~med~~
262 Bromu com
263 ~~Bro~~
268 lep
269 *mol
272 ram
313 ste
293 Calam epi
597 Cynos eri
607 ~~Fes~~ CLO
627 Deschi cae
628 fle
813 Festu ara
816 gig
821 *ova
823 PRA
824 ~~*FES~~
815 Festu tel
933 Glyce flu
934 max
961 Helic pra
962 pub
983 Holcu LAN
984 mol
992 Horde mar
993 sec
1087 Koele cri
1182 Lolia mul
1183 PER
1293 Melic uni
1296 Milia eff
1307 Molin cae
1344 Nardu str
1454 Phala ara
1461 Pilea ber
2247 *PRA
1465 Phrag com
1506 ~~Poa~~ ang
1495 ANN
1499 com
1504 nem
1506 ~~*PRA~~
1506 sub
1507 TRI
1915 Slegl dec
2105 Trise fla
2226 Vulpi bro
2228 myu

WOODY-CLIMBERS

3 Acer cam
5 pse
2241 Aescu hip
77 Alnus glu
239 Betul pen
240 pub
276 Bryon dio
289 Bryon sem
2238 Calys *sep
432 Cista sal
528 Clema vit
557 ~~Lonic~~ ~~per~~
560 ~~Lonic~~ ~~man~~
570 oxy
762 Euony eur
810 Fagus syl

841 ~~Hedera~~ ~~hel~~
952 ~~Ilex~~ ~~aqu~~
996 Humul lup
1023 Ilex aqu
1080 Junip com
1144 Ligus vul
1188 Lonic per
1230 Malus syl
1464 Pinus syl
1555 Popul tre
1611 Prunu avi
1614 dom
1616 pad
1617 ~~spi~~
1635 Quere cer
1638 pet
1640 ~~rob~~
1675 Rhamn cat
1694 Ribes nig
1696 syl
1697 uva *
1705 Rosa *
1707 arv
1708 ~~*sub~~
1709 can
1712 mic
1719 pim
1714 *rub
1722 *vil
1726 Rubus cae
1726 ~~*fru~~
3507 Salix sp
1784 alb
1787 aur
1788 cap
1789 *cin
1790 cin
1793 fra
1801 pur
1805 vim
1814 Sambu nig
1822 Sorbt sco
3508 Sorbu *
1900 ace
1904 Spira sal
2029 Syrin vul
2052 Tamus com
2039 Taxus bac
548 ~~Thuja~~ ~~sqa~~
2063 Tilia cor
2112 Ulex eur
2113 gal
2114 min
2115 Ulmus ear
2119 gla
2122 pro
2184 Vibur lan
2185 opu

HERBS

7 ~~Achil~~ mil
9 pta
3501 Aceroe cus
19 Adoxa mos
20 Aegop pod
21 Aethu cyn
22 ~~Agrim~~ ~~eup~~
46 Ajuga rep
51 Alche gla
57 ves
58 vul
60 xan
63 Alism pla
64 Alla pet
75 Alsin uni
76 ver
98 Anacy pyr
99 Anaga arv
105 Anemo nem
107 Angel syl
117 Anthe arv
118 cot

125 ~~Anthe~~ ~~syl~~
126 Anthy vul
131 Aphan *arv
137 Apium nod
151 Arcti lap
152 min
167 Armor rus
170 Artem abs
175 vul
176 Arum mac
185 Asple adi
192 rut
194 tri
208 Astra gly
218 Atrip pat
225 Ballo nig
229 Barba vul
251 Belli per
234 Berul ere
235 Beta vul
237 Beton off
243 Blech per
244 Blech spi
3502 Brachy rot
252 Brass nig
296 Calam pse
2249 Calli *apa
307 sca
309 Callu vul
310 Calth pal
320 Campa rapuncule
322 rot
325 Capse bur
328 Carda fle
329 lil
331 pra
333 Carda dra
334 Cardu oca
337 nut
339 ten
350 Carex bin
355 ear
361 dem
369 divisa
376 ~~flacca~~
378 flava
381 hir
393 nig
396 otr
398 mur * pai
400 panicea
405 pil
412 rem
413 rip
357 spi
421 syl
427 Carli vul
433 Catab aqu
435 Catap rig
444 ~~Centa~~ ~~rig~~
446 sca
451 Centa ery
461 Ceras arv
462 atr
466 glo
467 hol
469 sem
3503 Ceter off
474 Chaen min
476 Chaer tem
477 Chama ang
119 Chama nob
486 Chefi mar
481 Cheno alb
484 bon
496 rub
502 ~~Chrys~~ ~~leu~~
503 par
504 seg
2033 vul
506 Chrys opp

509 Cicho int
513 Circa lut
514 Cirsi acu
515 ~~arv~~
516 dis
517 eri
518 het
520 pal
522 ~~vul~~
530 ~~Clima~~ ~~vul~~
540 Conin mac
541 Conop maj
544 ~~Convo~~ ~~arv~~
735 Conyz can
551 Coron dil
552 squ
571 Crepi bie
572 ~~cap~~
578 ves
592 Cynba mur
596 Cyneg off
603 Cysto fra
608 Dacty glo
609 ine
610 mac
612 pra
613 jun
620 Daucu car
630 Descu sup
640 Digit pur
644 Diplo mur
646 Dipsa ful
647 pil
681 Dryop dil
662 hir
664 *vil
670 Echiu vul
675 Eleoc pal
681 Elode can
684 Empet *nig
687 Endym aym
688 Epilo a le
689 adn
692 hir
695 mon
696 obs
697 pal
698 par
712 ~~Fesit~~ ~~ov~~
713 fle
717 pal
720 syl
721 tel
726 Erica cin
731 tet
745 Erodi *cic
749 mos
750 Eryti che
763 Eupat can
771 Eupho ext
772 hel
777 peplus
2243 Euphr *arg
830 Filag gyr
833 ~~Filip~~ ~~ulm~~
834 vul
835 Foeni vul
838 ~~Fraga~~ ~~ves~~
3504 Fumar sp
847 cap
854 off
862 Galeob lut
867 Galeop spe
873 Galiu apa
875 cru
879 *mol
183 odo
882 pal
878 sax
888 ver
891 Genis ang

893 Genis tin
897 Genti *ame
906 Geran col
907 dis
909 lac
911 mol
913 pha
914 pra
916 pus
917 pyr
918 ~~rob~~
921 syl
924 Geum riv
925 urb
931 Glech hed
941 Gnaph uli
945 Gymna con
955 Helia cha
960 ~~Hedy~~ ~~sph~~
976 Hiera *pil
979 Hippo com
981 Himpu vul
1002 Hyosc nig
1003 Hyper and
1010 hirsutum
1011 hum
1016 mac
1014 per
1015 pul
1040 tet
1005 Hypnu cup
1020 Hypoc rad
1026 Impat gla
1029 per
1030 Inula con
1036 Iris ibe
1038 pse
1046 Jasio mon
1050 Juncu acu
1054 art
1057 buf
1063 con
1067 eff
1070 inf
1075 kyl
1077 ten
1086 ~~Kniph~~ ~~uva~~
1094 Lactu sat
1095 vir
1096 Lamiu alb
1099 amp
1103 pur
1104 Lamva com
1112 Lathy mon
1116 ~~pal~~
1129 Leont sax
1130 ~~tax~~
1131 tar
1133 Lepid cam
1139 het
1161 Linar rep
1164 ~~vul~~
1169 Linum cat
1173 Liste ova
1174 Litho off
1191 Lotus cor
1194 uli
1201 Luzul cam
1204 mul
1207 pil
1209 syl
1210 Lychn flo
1218 Lycop arv
1219 eur
1221 Lysim nem
1222 num
1227 Lythr sal
1232 Malva mos
1233 neg
1236 syl
1242 Matri mat

1239 Matr. ine
1247 Medic arv
1250 ~~sup~~
1252 sat
1264 Melil alb
1265 alt
1267 off
1272 Menth aqu
1273 arv
1290 Mercu ann
1291 per
1298 Mimul gut
1305 Mochr tri
1312 Monti fon
1315 Mycel mur
1317 ~~Hyosc~~ ~~ni~~
1319 esc
1320 ten
1321 dis
1322 sco
1333 Myrrh odo
1343 Narci pse
1348 Nastu *off
1353 Nepet cat
1361 Odont ver
1363 Oenan cro
1370 Oenot bie
1375 Onobr vic
1377 Ononi rep
1326 spi
1379 Onopo ten
1382 Ophry ovi
1387 Orchi mor
1393 Orega vul
1396 Ornit mon
1397 Ornit pyr
1401 Orobu alb
1404 tub
1413 Oxali ace
1424 Papav dub
1426 dub
1430 rho
1433 som
1435 Pede cri
1440 ~~Bell~~ ~~per~~
1442 Pedic syl
1443 Penta sem
1445 Petas alb
1446 fra
1447 hyb
1449 Petro cri
1450 Phyll sco
1451 Pim. sch
1452 ~~Pine~~
1475 Plant. maj
1476 ~~mos~~
1485 Plant cor
1487 ~~Pneu~~ ~~mon~~
1488 maj
1490 ~~Poa~~ ~~pal~~
1514 Polyg. ser
1515 vul
1520 Polyg aze
1521 amp
1522 *avi
1525 bis
1527 con
1528 cus
1530 hyd
1531 lap
1536 nod
1537 per
1543 Polyp vul
1546 Polys acu
1548 set
3506 Potam sp
1563 cri
1570 nat
1575 per
1576 pol
1584 Poten ans

1585 Poten ere
1587 ~~rup~~
1590 ste
1599 ~~Potor~~ ~~hyb~~
1605 Primu ver
1607 vul
1610 Prune vul
1619 Pteri aqu
1625 ~~Pulic~~ ~~dys~~
1641 Radio lin
1642 Ranun acr
1643 *aqu
1645 aur
1647 bul
1649 fic
1651 flammula
1660 repens
1663 sce
1667 Rapha rap
1672 Resed lut
1673 luteola
1678 Rhina *min
1704 Ronip syl
1735 Rumex *pce
1734 acetosa
1741 con
1742 crispus
1745 hyd
1746 lon
1748 obt
1751 pal
1753 san
1761 Sagin apc
1766 mod
1767 pra
1809 Salvi lor
1815 Sambu ebu
1818 Sangu off
1819 Sanic rur
1821 Scrop off
1830 Scutl ga
1825 hyp
1843 tri
1846 Scabi col
1847 Scirp set
1865 Scrop aqu
1867 ned
1875 Sedum acr
1876 alb
1877 ang
1885 tel
1891 Senec aqu
1896 ~~eru~~
1899 jac
1902 squ
1903 syl
1904 vis
1905 vul
1912 Shera arv
1916 ~~Sibba~~ ~~sil~~
1258 Silen alb
1259 dio
1923 vul
1930 Silyb mar
1932 Sinap alb
1933 arv
1934 Sison amo
1938 Sisym off
1945 Sisym olu
1947 Solan dul
1949 nig
1951 Solid vir
1952 ~~Sonch~~ ~~arv~~
1953 ~~asp~~
1956 ole
1981 Sparg ere
1987 Sperg arv
2001 Stach arv
2003 pal
2005 ~~syl~~
2007 Stell ass

2009 Stell gra
2010 ~~hol~~
2011 med
2021 Sucel pra
2032 Symph riv
2024 Symph off
3509 x upl
2036 Tarax *lae
2034 Tarax *agg
2035 *off
2046 Teucr scoro
2048 Thalf flu
2051 Thely lim
2058 Thlas arv
2060 Thymu dru
2069 Turit jap
2070 nod
2074 Trago pra
2077 Trifo arv
2080 cam
2081 dub
2083 fra
2085 hyb
2087 med
2090 och
2091 pra
2092 rep
2097 striatum
2102 Tripl pal
2241 Tripl mar
2109 ~~Tripl~~ ~~fra~~
2111 Typha lat
2125 Umbil rup
2126 Urtic dio
2128 uro
2136 Vacci myr
2138 vit
2139 Valer dio
2140 off
2150 Verba nig
2157 tripsis
2159 Verbe off
2161 Veron agr
2163 arv
2165 arv
2166 bec
2167 cat
2168 dil
2169 fil
2171 hed
2172 mon
2173 off
2175 persica
2180 ~~Viola~~ ~~ri~~
2191 hir
2197 sat
2198 sep
2202 tet
2204 Vinca maj
2205 min
2206 Viola arv
2210 hir
2214 odo
2217 rei
2218 riv
2220 tri

Additional Species

CODE	NAME
786	Salix cin ol
1111	Lathy lat.

SIDE OF TRACK | N | E | W | S | E | W |

DATE 7-9-77 RECORDER J. C. Mann

Internal ref 15 54

SITE NAME Horncastle Sk Quarry CDB ref Internal ref R 54

SIDE OF TRACK | N | E | W | S | E | W | DATE 7-9-77 RECORDER J.O. Hemingway

S & E of track on SW fringe

GRASSES

20	Agrop	can
33		RIP
35	Agros	can
39		SFO
40		ten
41	Aira	car
42		pra
82	Alope	sen
84		myo
85		PRA
121	Antho	ode
169	~~Arrhen~~	~~elat~~
220	Avena	fat
247	Brach	PIN
250		syl
256	Brize	med
262	Bromu	ere
263	~~Bromu~~	~~hord~~
268		lep
269		*mol
272		rum
113		~~sto~~
293	Calam	epi
597	Cynos	cri
607	DACTY	GLO
627	Desch	cae
628		fle
813	Feste	aru
816		gig
821		*ovi
823		PRA
824		~~RUB~~
815	Festu	lol
933	Glyce	flu
934		max
961	Helic	pra
962		pub
983	Holcu	LAN
984		mol
992	Horde	mur
993		sec
1067	Knele	cri
1182	Lolia	med
1183		PER
1263	Melic	uni
1296	Milii	eff
1307	Molin	cae
1344	Nardu	str
1454	Phala	aru
1461	Phleu	ber
2247		*PRA
1465	Phrag	com
1606	~~Poa~~	~~anc~~
1493		~~chlo~~
1499		com
1504		nem
1506		~~viv~~
1506		sub
1507		~~tri~~
1915	Siegl	dec
2105	~~Trisc~~	~~fla~~
2226	Vulpi	bro
2229		myu

WOODY--CLIMBERS

3	Acer	~~cam~~
5		pse
2241	Aescu	hip
77	Alnus	gla
229	Betul	pen
240		pub
276	Bryon	dio
289	buxus	sem
2248	Calys	*sep
432	Carla	sat
528	Clema	vit
557	~~Cornu~~	~~san~~
569	~~Crata~~	~~laev~~
570		oxy
762	Euony	eur
810	Fagus	syl

841	~~Hedera~~	~~hel~~
952	Heder	hel
996	Humul	lup
1023	Ilex	aqu
1080	Junip	com
1144	Ligus	vul
1198	Lonic	per
1230	Malus	syl
1484	Pinus	syl
1555	Popul	tre
1611	Prunu	avi
1614		dom
1616		pad
1617		spi
1635	Querc	cer
1638		pet
1640		rob
1675	Rhamn	cat
1694	Ribes	nig
1696		syl
1697		uva
1705	Rosa	*
1707		arv
1708		*can
1709		com
1712		mic
1719		pim
1714		*rub
1722		*sul
1726	Rubus	cae
1725		*fru
2607	Salix	~~sp~~
1784		alb
1787		aur
1788		cap
1789		*cin
1790		cin
1793		fra
1801		pur
1805		vim
1814	Sambu	nig
1822	Sarot	sco
2208	Sorbu	*
1990		auc
1994	Solra	ssl
2029	Syrin	vul
2032	Tamus	com
2039	Taxus	bac
548	~~Ulex~~	~~eur~~
2063	Ulex	eur
2112	Ulex	eur
2113		pal
2114		nan
2115	~~Ulmus~~	~~cor~~
2119		gla
2122		pro
2184	Viburn	lan
2185		opu

HERBS

7	~~Achil~~	~~mil~~
9		pta
3501	Aceae	cus
19	Adoxa	mos
20	Aegop	pod
21	Aethu	cyn
22	~~Aetiu~~	~~cap~~
46	Aruga	rep
51	Alche	gla
57		ves
58		vul
60		xan
63	Alism	pla
64	Allia	pet
75	Alsi	urs
76		sin
98	Anaca	pyr
99	Anaga	arv
105	Anemo	nem
109	Angel	syl
117	Anthe	arv
118		cot

125	Anthr	syl
126	Anthy	vul
131	Aphan	*arv
137	Aquil	nod
151	Arcti	lap
152		min
167	Armor	rus
170	Artem	abs
175		vul
176	Arum	mac
185	Asple	adi
192		rut
194		tri
208	Astra	ply
218	Atrip	pat
225	~~Aubri~~	~~ing~~
229	Barba	vul
231	~~Bellis~~	~~per~~
234	Berul	ere
235	Beta	vul
237	Beton	off
243	Black	per
244	Blech	spi
3502	Bolethy	rut
252	Brass	nig
296	Calam	acu
2349	Calli	*spe
307		sta
309	Callu	vul
310	Calth	pal
329	Campa	rapunculo
322		rot
325	Capse	bur
328	Carda	fle
329		hir
331		pra
333	~~Carda~~	~~cra~~
334	Cardu	aca
337		nut
339		ten
350	Carex	bin
355		cur
361		dem
369		divulsa
376		flacca
378		flava
381		hir
393		nig
396		otr
398		mur = pal
400		panicea
405		pil
412		rem
413		rip
357		spi
421		syl
427	Cardi	vul
433	Catab	aqu
435	~~Centa~~	~~nig~~
444	~~Centa~~	~~nig~~
446		sca
451	Centa	ery
461	Ceras	arv
462		atr
466		glo
467		tri
469		sem
3503	Ceter	off
474	Chaen	min
476	Chaer	tem
477	~~Chama~~	~~ang~~
119	Chama	nob
480	Cheri	maj
481	Cheno	alb
484		bon
486		rub
502	~~Chrys~~	~~leu~~
503		par
504		seg
2033		vul
506	Chrys	opp

509	~~Cicha~~	~~ari~~
513	Circa	lut
514	Cirsi	arv
515		~~arv~~
516		dis
517		eri
518		het
520		pal
522		~~vul~~
530	~~Clino~~	~~vul~~
540	Conia	mac
541	Conop	mel
544	~~Convo~~	~~arv~~
735	Conyz	can
551	Coron	did
552		squ
571	Crepi	bie
572		cap
578		ves
592	Cynba	mur
596	Cynog	off
603	Cysto	fra
608	Dacty	glo
609		inc
610		mac
612		pra
613		pur
620	~~Daucu~~	~~car~~
630	Descu	sep
640	Digit	mar
644	Diplo	mur
646	Dipsa	ful
647		pil
661	Dryop	dil
662		bor
664		*di
670	Echiu	vul
675	Epilo	pal
681	Equis	arv
684	~~Eranth~~	~~hye~~
687	Eupat	cae
688	Eryn	cam
690		ang
692		hir
693		mon
696		sco
697		pal
698		par
712	~~Equis~~	~~arv~~
713		flu
717		pal
720		syl
721		tel
726	Erica	cin
731		tet
745	Eredi	*cil
749		mos
759	Erysi	cheir
763	Eupat	can
771	Eupho	exi
772		hel
777		peplus
2243	Euphr	*agg
830	Filag	ger
833	Filic	vim
834		vul
835	Foeni	vul
838	~~Fraga~~	~~ves~~
3504	Fumar	sp
847		cap
854		off
862	Galeob	lut
867	Galeop	spe
873	Galiu	apa
875		cru
879		*mol
883		odo
882		pal
878		sax
888		ver
891	Genis	ang

893	Genis	tin
897	Gentl	*ama
906	Geran	col
907		dis
909		luc
911		mol
913		pha
914		pra
916		pus
917		pyr
918		rob
921		syl
924	Geum	riv
925		urb
931	Glech	hed
941	Gnaph	ulb
948	Gymna	con
955	Helia	cha
968	~~Herac~~	~~sph~~
976	~~Hera~~	~~sph~~
979	Hippo	com
981	Hippu	vul
1002	Hyose	nig
1003	Hyper	mac
1010		hirsutum
1011		hum
1006		mac
1014		~~pul~~
1015		pul
1016		tet
3505	Hypnu	cup
1020	Hypoc	rad
1026	Impat	gla
1028		par
1030	Inula	con
1036	Iris	foe
1036		pse
1048	Jasio	mon
1050	Juncu	acut
1054		art
1057		buf
1063		con
1067		eff
1070		inf
1075		sca
1077		ten
2084	~~Hyacin~~	~~non~~
1094	Lactu	ser
1095		vir
1098	~~Lamiu~~	~~alb~~
1099		amp
1103		pur
1104	Lapsa	com
1112	Lathy	nis
1116		pra
1120	Leont	aut
1130		his
1131		tar
1133	Lepid	cam
1136		ner
1161	Linar	rep
1164		vul
1169	Linum	cat
1173	Lisia	ova
1174	Litho	off
1191	Lolia	cer
1194		tll
1201	Lucul	cam
1204		mal
1207		pil
1206		syl
1210	Lychn	flo
1218	Lycop	arv
1219		eur
1221	Lysim	nem
1222		nam
1227	Lythr	sal
1232	Malva	mos
1233		neg
1236		syl
1242	Matri	mat

1239	Matri	rec
1247	Medic	ara
1250	~~Mela~~	~~apy~~
1252		sat
1264	Melil	alb
1265		alt
1267		off
1272	Mentha	aqu
1273		arv
1290	Mercu	ann
1291		per
1298	Mimul	gut
1305	Moehr	tri
1312	Montl	fon
1315	Myoso	mar
1317	~~Myosu~~	~~arv~~
1319		cae
1320		ram
1321		dis
1322		sco
1328	Myrrh	odo
1343	Narel	pse
1348	Nastu	*off
1355	Nepet	cat
1361	~~Nuphl~~	~~alb~~
1363	Oenan	cro
1370	Oenot	bie
1375	Onobr	vic
1377	Ononi	rep
1378		spi
1379	Onopo	acu
1382	Ophry	api
1387	Orchi	mas
1393	Origa	vul
1396	Ornit	umb
1397	Ornit	per
1401	Orona	ela
1404		ram
1413	Orchi	ace
1424	Papav	arg
1428		dub
1430		rho
1431		sen
1435	Pasa	sil
1440	~~Pedic~~	~~sil~~
1442	Pedic	syl
1443	Penta	sem
1445	Petas	alb
1446		fra
1447		hyb
1449	Petro	sil
1466	Phyll	sco
1471	Picri	ech
1474	~~Pimpi~~	~~ang~~
1475	Pimpi	maj
1476	~~Pimpi~~	~~nig~~
1485	Plant	cor
1487		lan
1488		maj
1490		med
1514	Polyg	ser
1515		vul
1520	Polyg	are
1521		amp
1522		*avi
1525		bis
1527		con
1528		cus
1530		hyd
1531		lap
1536		ned
1537		per
1544	Polyp	vul
1546	Polyt	acu
1548		sco
3506	Potam	sp
1563		eri
1570		nat
1575		per
1576		pol
1584	Poten	ans

1586	Poten	ere
1587		rep
1596		ste
1599	~~Potes~~	~~sup~~
1605	Prunu	ver
1607		vul
1610	Prune	vul
1619	Pteri	aqu
1625	~~Pulic~~	~~dys~~
1641	Radio	lin
1642	Ranun	acr
1643		*sup
1645		aur
1647		bul
1649		fic
1651		flammula
1660		repens
1663		sce
1667	Raphs	rap
1672	Resed	lut
1673		luteola
1678	Rhina	*min
1704	Rorip	syl
1735	Rumex	*sce
1734		sceleva
1741		con
1742		crispus
1745		hyd
1746		lon
1748		obt
1751		pul
1753		san
1761	Sagin	apc
1766		noti
1767		pro
1809	Salvi	hor
1815	Sambu	ebu
1818	Sangu	off
1819	Sanic	eur
1821	Sanun	off
1826	Satil	ida
1835		rival
1843		tin
1846	Scabi	osa
1847	Scirp	set
1865	Scrop	aqu
1867		nod
1875	Sedum	acr
1876		alb
1877		ang
1885		tel
1891	Senec	aqu
1896	~~Sene~~	~~ere~~
1899	~~Sene~~	~~jac~~
1902		squ
1903		syl
1904		vis
1905		vul
1912	Shera	arv
1916	~~Silen~~	~~all~~
1958	Silen	alb
1959		dio
1923		ves
1930	Silyb	mar
1932	Sinap	alb
1933		arv
1934	~~Sison~~	~~ame~~
1938	Sisym	off
1945	Smyrn	olu
1947	Solan	dul
1949		nig
1951	Solid	vir
1952	Sonch	arv
1953		asp
1954		ole
1981	Sparg	ere
1987	Sperg	arv
2001	Stach	arv
2003		pal
2005		syl
2007	Stell	als

2009	Stell	gra
2010		hol
2011		med
2021	Succi	pra
2022	Symph	riv
2024	Symph	off
3509		x upl
2036	Tarax	*bic
2034	Tarax	*agg
2035		~~ruf~~
2046	Teucr	scorod
2048	Thali	fla
2051	Thely	lim
2058	Thlas	arv
2060	Thymu	dru
2069	Turil	jup
2070		nod
2074	~~Tropa~~	~~pra~~
2077	Trifo	arv
2080		~~cam~~
2081		dub
2083		fra
2085		hyb
2087		med
2090		och
2091		pra
2092		~~rep~~
2097		striatum
2102	Trigl	pal
1261	~~Tripl~~	~~mar~~
2109	~~Tulsi~~	~~fra~~
2111	Typha	lat
2125	Umbil	rup
2126	Urtic	dio
2128		ure
2136	Vacci	myr
2138		vit
2139	Valer	dio
2140		off
2150	Verpa	rig
2157		thapsus
2158	Verbe	off
2161	Veron	arv
2163		ana
2165		arv
2166		bec
2167		cat
2168		dia
2169		fil
2171		hed
2172		mon
2173		off
2175		persica
2180		ser
2189	Viola	ca
2191		hir
2197		sal
2198		sep
2202		tet
2204	Vinca	maj
2205		min
2206	Viola	arv
2210		hir
2214		odo
2217		rel
2218		riv
2220		tri

Additional Species

CODE	NAME
733	Epilobium ssp
162	Arenaria ser
2486	Vicia cat ang
1111	Lathyrus lat
142	Arabidopsis thal
589	Cuscuta epit (on V. arvensis)
1789	Salix cin sp.

RAILWAY SITE OF BIOLOGICAL INTEREST

SITE NAME Finningley Gravel Pits Map Ref 68.99. Data bank ref

NCC Region NORTHWEST | County SOUTH YORKSHIRE Internal ref B37

STATUS

Part of	(Adjacent to)	NNR	PNNR	LNR	(SSSI)	

County Flora site. State ref -

Local Information site. State source -

Discovery etc. (Describe) -

INTEREST

Plants	General	Local	Rare	Very rare	
Animals	Insects	Reptiles	Birds	Mammals	

Habitat) describe -
)
Geological)

RAILWAY REGION E DIVISION DONCASTER AREA LINCOLN

Address of Area Civil Engrs Office Mr B.J. Saunders
Telephone number LICOLN STATION, LINCOLN
LINCOLN (0522) 26291

Name of railway line Doncaster - Gainsborough

Access at Level X 677995 Mileage post 111½

NOTIFICATION

	With whom	By whom	Date	Ref.
Site notified to BR				
Management agreement (see section 3 for detail)				

VISITS

Date	By whom	Assessment/Action
12.8.77	JAW / JOM	Interesting for the heavily grazed communities as dominance of Cerastium arvense. Not an important site for conservation: provides buffer zone to the adjacent SSSI.

Continue overlea

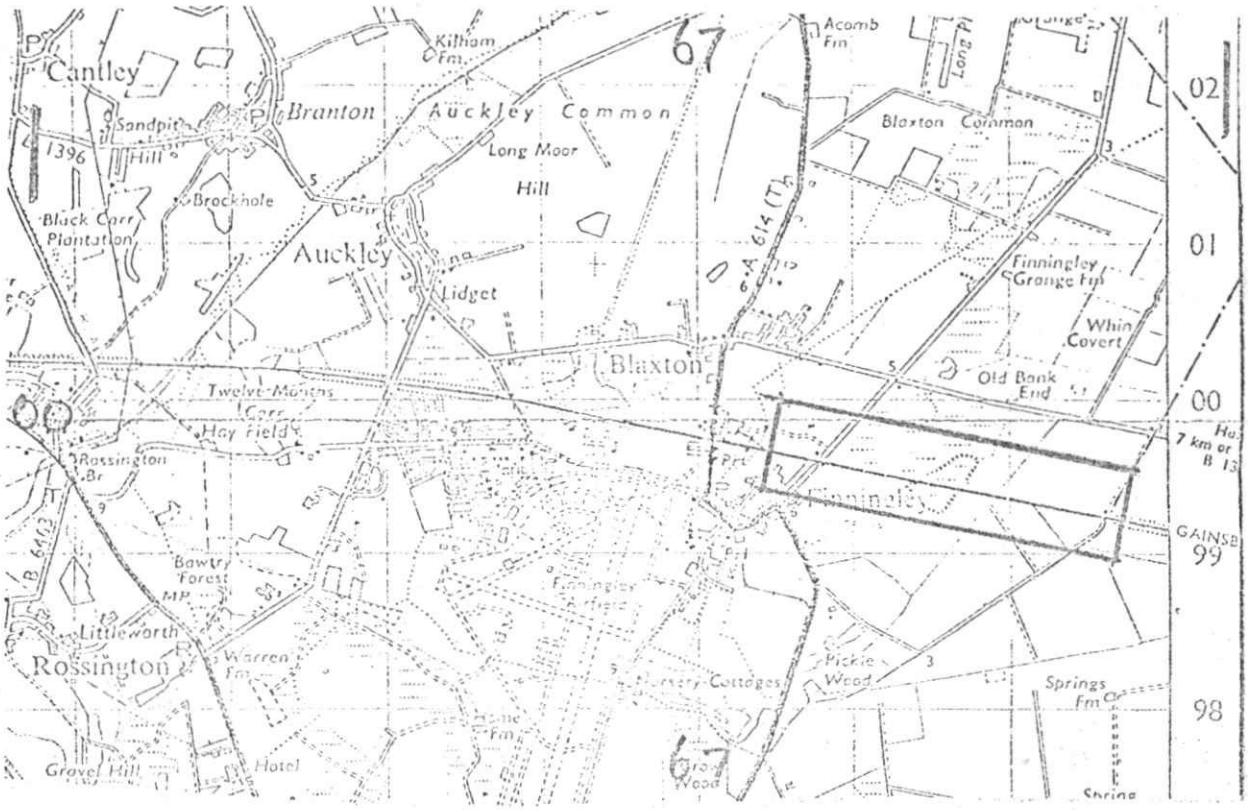
FILE OPENED BY ITE Monks Wood DATE 2/12/77

(Section 2)

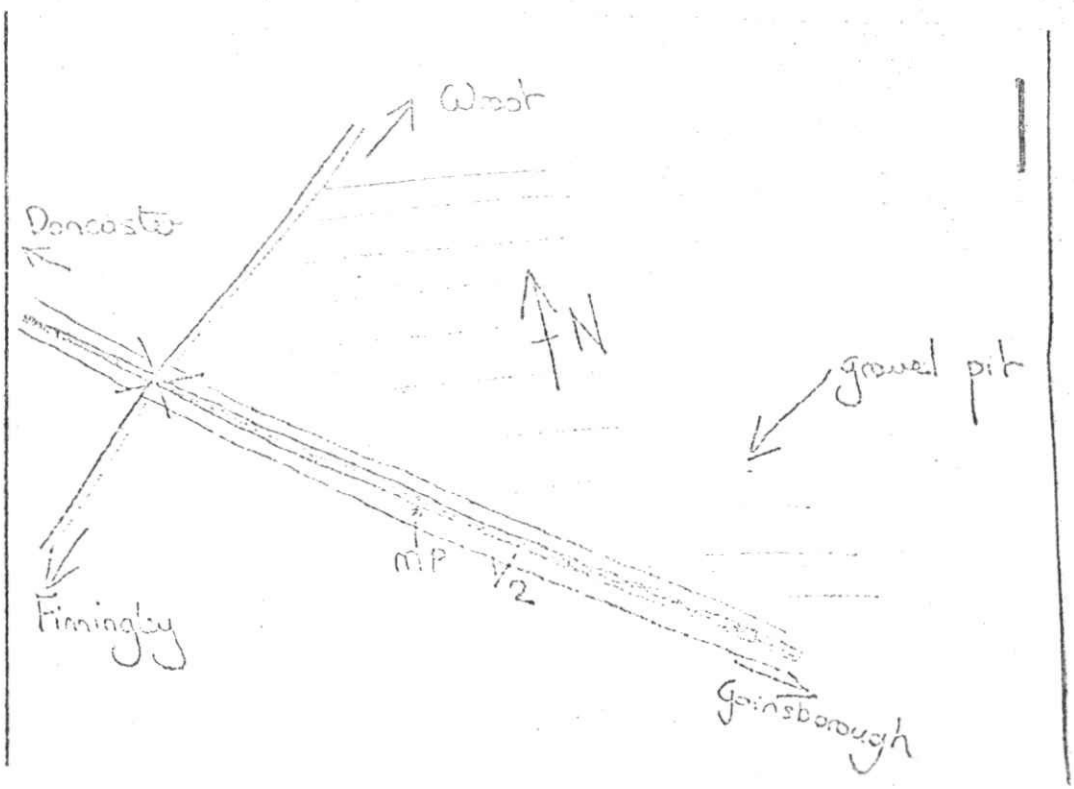
SITE NAME FINNINGLEY GRAVEL PIT CDB ref Internal ref B 37

LOCATION MAP SCALE 1:50,000 SHEET NO. 111 MAP REF 68 · 99

LOCATION STATUS (Accurate) Approximate



SKETCH MAP



Continue overleaf

(Section 3)

SITE NAME Finningley Gravel Pit CDB ref Internal ref B37

Altitude 20 ft Local Geology OS sin grave over Bunter Sandstone

Neighbouring landuses Disused gravel pit as arable agriculture.

DIRECTION FROM ACCESS | N | (E) | W | S | E | W | or | BOTH |

Dist from * access point								
Side of track o			S					
Landform x	flat	flat	Low batch					
Aspect-degrees			200°					
Width-metres	4	4	5					
Disturbance +	S Rabbit	grazed. M	Fire +	L Ballast	tipping.			

* If site is both sides of access point, precede distance by cardinal point
o Indicate side of track by compass cardinal point
x Flat, Cut, Emb, Combination, Complex, Steep, Moderate, Structure, etc.
\+ Severe, Moderate, Light, Tipping, Ballast, Cinder, Fire, Clearance, Works, etc.

FEATURES OF SPECIAL INTEREST Adjacent to SSSI

General vegn characteristics and habitat description indicate side of track

Mainly mainly embankment and flat along South side of grave pits. Heavily rabbit grazed as previously, in places by ballast tipping ops. Occasional trees mainly birch on south side.

Ceratium arvense on N side + abundant regrowth. Verges on the south side with Arrhe ela, Sisym alt and Crepis cap.

PREFERRED MANAGEMENT

EVIDENCE OF MANAGEMENT. Close entries by date and recorder's initials.
Rabbit grazed, fire and light ballast dumping 12.8.77. JMW/JOH.

Continue overleaf

SITE NAME FINNINGLEY Willows KTS CDB ref Internal ref 637

SIDE OF TRACK (N) E W (S) E W DATE 12·8·77 RECORDER Jom

GRASSES
20 Agrop can
53 REP
35 Agros can
39 STO
~~40 Aira cae~~
42 pra
82 Alope gen
84 niye
85 PRA
121 Antho odo
169 ARRHE ELA
220 Avena fat
249 Brach PIN
280 syl
256 Brya med
262 Bromu com
243 ERE
268 lep
269 *mol
272 rum
113 ste
293 Calam epi
597 Cynos cri
607 DACTY GLO
627 Desch cae
628 fle
813 Festu aru
816 gig
821 *ovi
823 PRA
824 *RUB
815 Feste lol
933 Glyce flu
934 max
961 Helic pra
962 pub
983 Holcu LAN
~~992 Horde mur~~
993 sec
1087 Knele cri
1182 Loliu mul
1185 PER
1263 Melic uni
1296 Milii eff
1507 Molin cae
1344 Nardu str
1454 Phala aru
1461 Phleu bet
2247 *PHA
1465 Phrag com
1506 Poa ang
1495 ANN
1499 com
1504 nem
1506 *PRA
1506 sub
1507 TRI
1915 Sieg dec
2105 Tris fla
2226 Vulpi bro
2228 myu
WOODY CLIMBERS
3 Acer cam
5 pse
2241 Aescu hip
77 Alnus glu
~~239 Betul pen~~
240 pub
276 Bryon dio
289 Buxus sem
2248 Calys *sep
432 Casta sat
528 Clema vit
557 Cory1 ave
~~569 Corn mas~~
570 oxy
762 Ignony eur
810 Fagus syl

841 Fraxi exc
952 Heder hel
996 Humul lup
1025 Ilex aqu
1080 Junip com
1144 Ligus vul
1188 Lonic per
1230 Malus syl
1484 Pinus syl
1555 Popul tre
1611 Prunu avi
1614 dom
1616 pad
1617 spi
1635 Quere cer
1638 pet
1640 rob
1675 Rhamn cat
1604 Ribes nig
1696 syl
1697 uva
1705 Rosa *
1707 arv
1708 *can
1709 can
1712 mic
1719 pim
1718 *rub
1722 *vil
1726 Rubus cae
~~1728 Idae~~
2207 Salix sp
1784 alb
1787 aur
1788 cap
1789 *cin
1790 cin
1793 fra
1801 pur
1805 vim
1814 ~~fruti~~ sg
1822 Sarot sco
3506 Sorbu *
1960 auc
1994 Spira sal
2029 Syrin vul
2032 Taxus com
2039 Taxus bac
54b Thely san
2063 Tilia cor
~~2112 Ulex eur~~
2113 gal
2114 min
2115 Ulmus car
2119 gla
2122 pro
2184 Vibur lan
2185 opu
HERBS
7 Achil mil
9 pta
3501 Aceoe cus
19 Adoxa mos
20 Aegop pod
21 Aethu cyn
22 Agrim eup
46 Ajuga rep
51 Alche gla
57 ves
58 vul
60 nan
63 Alism pla
64 Alisa pet
75 Allia urs
76 vin
98 Anaca pyr
~~99 Antip arc~~
105 Anemo nem
109 Angel syl
117 Anthe arv
118 cot

125 Anthr syl
126 Anthy vul
131 Aphan *arv
137 Aparn mol
151 Areti tap
152 min
~~167 Aureo tys~~
170 Artem abs
175 vul
176 Arum mac
185 Asple adi
192 rut
194 tri
208 Astra gly
218 Atrip put
225 Ballo nig
229 Barba vul
231 Belli per
234 Berul ere
235 Betu vul
237 Beton off
243 Black per
244 Blech spi
3502 Brachy rat
252 Brass nig
296 Calam ase
2249 Calli *agg
307 sta
309 Callu vul
310 Calth pal
320 Campa rapunculo
~~322 Card~~
325 Carpe bur
328 Carda fle
329 hir
331 pra
333 Carda dra
334 Cardu acu
337 nut
339 ten
350 Carex bin
355 ver
361 dem
369 divulsa
376 flacca
378 flava
381 hir
393 nig
396 otr
398 mur = pai
400 panicea
405 pil
412 rem
413 rip
357 spi
421 syl
427 Carli vul
433 Catab aqu
436 Catap nig
444 Certa nig
446 wa
~~451 Cerin ore~~
~~461 Cerv arv~~
462 atr
466 glo
467 hol
~~469 sem~~
3503 Ceter off
474 Chaen min
476 Chaer lem
~~477 Chaer ang~~
119 Chama nob
480 Chell maj
481 Cheno alb
484 bon
486 rub
502 Chrys leu
503 par
504 seg
2033 vul
506 Chrys opp

~~509 Cicho tri~~
513 Cicca lut
514 Cirsi acu
~~515 eri~~
516 dis
517 eri
518 het
520 pal
552 vul
530 Clino vul
540 Coniu mac
541 Conop maj
~~544 Corno arv~~
735 Conyz can
551 Corun did
552 squ
571 Crepi bie
~~575 cap~~
576 ves
592 Cymba mur
595 Cynog off
603 Cysto fra
608 Dacty fue
609 inc
610 mac
612 pra
615 pur
620 Daucu car
630 Descu sep
640 Digit pur
648 Diplo mur
646 Dipsa ful
647 sy
~~681 Dryop dil~~
662 ~~ba~~
~~665 Ech~~
670 Echiu vul
675 Eleoc pal
681 Elode ~~ca~~
686 Empet *nig
687 Endym ~~hi~~
~~688 Epilo mon~~
689 ~~alsi~~
692 lat
~~695 Eryn~~
696 ~~ces~~
697 pal
698 par
712 Equis arv
713 flu
717 pal
720 syl
721 tel
726 Erica cin
731 tet
~~745 Eroph ~~
749 mos
759 Erysi che
763 Eupat can
771 Eupho exi
772 hel
777 peplus
2243 Euphr *agg
830 Filag ger
833 Filip ulm
834 vul
835 Foeni vul
838 Fmga ves
3504 Fumar sp
847 cap
854 off
862 Galeob lut
867 Galeop spe
873 Galiu apa
875 cru
879 *mol
883 odo
882 pal
878 sax
~~888 ver~~
891 Genis ang

893 Genis tin
897 Genti *amz
906 Geran col
907 dis
909 luc
~~911 rob~~
913 phe
914 pra
916 pus
917 pyr
918 rob
921 syl
924 Geum riv
925 urb
931 Glech hed
943 Graph uli
948 Gymna con
955 Helia cha
~~968 Heter spi~~
~~976 Hieri *pil~~
979 Hippo com
981 Hyapu vul
1002 Hyose nig
1003 Hyper and
1010 hirsutum
1011 hum
1006 mac
1014 pur
1015 pul
1016 tet
3505 Hypnu cup
1020 Hypoc rad
1026 Impat gla
1028 par
1030 Inula con
1036 Iris foe
1038 pse
1040 Jasio mon
1050 Juncu acut
1064 art
1067 bal
1080 fas
1087 eff
1070 inf
1075 squ
1077 ten
1084 Knaut arv
1094 Lactu ser
1095 vir
1096 Landu cle
1099 cmp
1103 pur
1104 Lamia cam
1112 Lathy mon
1116 pra
~~1129 Leont aut~~
1130 his
1131 tar
1133 Lepid cam
1139 het
1161 Linar rep
~~1164 vul~~
1169 Linum cat
1173 Listе ova
1174 Litho off
~~1191 Lotus cor~~
1194 uli
1201 Luzul cam
1204 mul
1207 pil
1209 syl
1210 Lychn flo
~~1218 Lycop arv~~
1219 cur
1221 Lysim nem
1222 num
1227 Lythr sal
1232 Malva mos
1233 neg
1236 syl
1242 Matri mat

1239 Matri tec
1247 Medic ara
1250 lup
1252 sat
1264 Melil alb
1265 alt
1267 off
1272 Menth aqu
1273 arv
1290 Mercu ann
1291 per
1298 Mimul gut
1305 Mochr tri
1312 Monti fon
1315 Myrel mur
1317 Myoso arv
1319 ese
1320 ram
1321 dis
1322 sco
1333 Myrrh odo
1343 Narci pse
1348 Nastu *off
1353 Nepet cat
1361 Odont ver
1363 Oenan cro
1370 Oenot bis
1375 Onobr vic
1377 Ononi rep
1378 spi
1379 Onopo aca
1382 Ornit api
1387 Orchi mas
1393 Oreo vul
1396 Ornit tomb
1397 Orvil per
1401 Oxalis ace
1403 min
1417 Oxtro tra
1424 Papav arg
~~1430 rho~~
1431 hum
1435 Pane dif
1440 Parie ram
1442 Pedic syl
1443 Pentia sem
1445 Petas alb
1446 fra
1447 hyb
1449 Petro cri
1456 Phyll sco
1471 Picri ech
1472 hie
1475 Pimpi maj
1476 sax
1485 Plant cor
~~1487 ma~~
1488 maj
1490 med
1514 Polyg ser
1515 vul
1520 Polyg are
1521 amp
1522 *avi
1525 bis
1527 con
1528 cus
1530 hyd
1531 lap
1536 nod
1537 per
1544 Polyp vul
1546 Polys acu
1548 set
3506 Potam sp
1563 cri
1570 nat
1575 per
1576 pol
1584 Poten ans

1588 Poten ere
1594 rep
1596 ste
1599 Poter ann
1605 Prunu ver
1607 vul
1610 Prune vul
~~1619 Pseu squ~~
1625 Pulic dys
1641 Radio lin
1642 Ranun acr
1643 *aqu
1645 aur
1647 bul
1649 fi
1651 flammula
1660 repens
1663 sce
1667 Rupha rup
~~1672 Rosa lut~~
1673 luteola
1678 Rhina *min
1704 Rotip syl
~~1735 Rumex Acet~~
1734 acetosa
1741 con
~~1742 crispus~~
1745 hyd
1746 lon
1748 obt
1751 pul
1753 san
1761 Sagin ape
1766 med
1767 pro
1809 Salvi hor
1815 Sambu ebu
1818 Sangu off
1819 Sanic eur
1821 Saxif off
1820 Scabi sya
1835 hyb
1843 in
1846 Scabi col
1847 Scirp set
1865 Scrop aqu
1867 ned
1875 Sedum acr
1876 alb
1877 ang
1885 tel
1891 Senec aqu
1896 eru
~~1899 jac~~
1902 squ
~~1905 syl~~
1904 vis
1905 vul
1912 Shera arv
1916 Silau sil
~~1958 Sium lat~~
1959 dio
~~1923 ver~~
1930 Silyb mar
1932 Sinap alb
1933 arv
1934 Sison ama
~~1938 Sisym off~~
1945 Sniym olu
1947 Solan dul
1949 nig
1951 Solid vir
1952 Sonch arv
~~1953 leo~~
1954 ole
1981 Sparg ere
1987 Sperg arv
2001 Stach arv
2003 pal
2005 syl
2007 Stell als

2009 Stell gra
2010 hol
~~2011 uli~~
2021 Succi pra
3022 Symph tiv
2024 Symph off
3509 x upl
2036 Tarax *lae
2034 Tarax *agg
2035 *off
2046 Teuer scoro
2048 Thali fla
2051 Thely lim
2058 Tilas arv
2060 Thymu dru
2069 Toni jap
2070 nod
2074 Trago pra
2077 Trifo arv
2080 cam
2081 dub
2083 fra
2085 hyb
2087 med
2090 och
2091 pra
2092 rep
2097 * striatum
2102 Trigl pal
~~2241 Trich mar~~
2109 Tussi far
2111 Typha lat
2123 Umbil rup
~~2126 Urtic dio~~
2128 ure
2136 Vacci myr
2138 vit
2139 Valer dio
2140 off
2150 Verba nig
2157 thapsus
2154 Verbe off
2161 Veron agr
2163 arv
2165 arv
2166 bec
2167 cat
2168 cha
2169 fil
2171 hed
2172 mon
2173 off
2175 persica
2180 ser
~~2189 Vicia cra~~
2191 hir
2197 sat
2198 sep
2202 tet
2204 Vinca maj
2205 min
~~2206 Viola riv~~
2210 hir
2214 odo
2217 rei
2218 riv
~~2220 tri~~

Additional Species

CODE	NAME
1736	Rumex acetosella s.s.
1935	Sisym alt
162	Arena der
1786	Salix cin ole
163	Arena lep

APPENDIX 6

Advice to Nottinghamshire CC

Planning and Transportation
Department
Director Brian T Collins
Trent Bridge House
Fox Road West Bridgford
Nottingham NG2 6BJ
telephone (0602) 866555

Nottinghamshire County Council

your ref

Dr. J.H. Way,
Institute of Terrestrial
Ecology,
Monks Wood Experimental Station,
Abbots Ripton,
Huntingdon,
PE17 2LS

our ref
S.PL/JS 6402.8.1

1.

please ask for
Mr. P. Lees
Ext: 319

date
24th October, 1977

Dear Dr. Way,

ECOLOGICAL SURVEY OF BRITISH RAIL LAND

At the recent open day at Monks Wood Experimental Station, my Assistant Mr. Lees discussed with you the possibility that you may be able to examine data which I have accumulated on a disused railway cutting and borrow pit. This site is currently the subject of an appeal against the County Council's decision to refuse permission for filling with industrial and domestic waste. The main reason for refusal was the Nature Conservation importance of the site.

I would be grateful for your opinion as to the value of this site as compared with others found in your survey of British Rail's Eastern Region. I would also be grateful if you could let me know how abundant you found the following species in your study :-

Rumex crispus
Rumex obtusifolius
Cirsium arvense
Cirsium vulgare
Senecio jacabaea

Yours sincerely,

for Director of Planning and Transportation

Mr. P. Lees
Dept of Planning and Transportation
Nottinghamshire County Council
Trent Bridge House
Fox Road
West Bridgford, Nottingham NG2 6BJ

S.PL/JS 6402.8.1

JRM/VJB

31 October 1977

Dear Mr. Lees,

Ecological Survey of Railway Land

Thank you for your letter of 24 October concerning the disused railway site and borrow pit at Ruddington Lane, Wilford.

I have looked at the site plan and the flora list with considerable interest. Included in the impressive number of species recorded we have noted the following as being of particular interest either in their own right, or because of their occurrence in this part of Nottinghamshire.

Blackstonia perfoliata
Carex echinata
Carex lepidocarpa
Eriophorum angustifolium
Eriophorum vaginatum
Euphorbia cyparissias
Listera ovata
Ophioglossum vulgatum
Orchis morio
Orchis praetermissa
Orchis praetermissa x fuchsii
Orobanche minor
Potentilla anglica
Rhinanthus minor
Samolus valerandi
Saxifraga granulata
Vicia lathyroides
Sphagnum fimbriatum
Sphagnum girgensohnii
Sphagnum palustre
Sphagnum plumulosum
Sphagnum squarrosum
Scorpidium scorpioides

The site plan indicates a variety of contrasting habitats in a limited area that would be, by any standards, of high wildlife conservation importance. If, as I suspect, the site also contrasts with neighbouring land uses and available habitats then its importance will be greater.

My own survey has been concerned with active railways, and I am able to say that during our survey of the Eastern Region of BR in 1977 we only found one or two sites of similar importance to this one. From this it would be possible to conclude that on disused railways there are also comparatively few sites of high wildlife importance, although there may be many miles of old trackway providing general wildlife habitats. My opinion is that if we had discovered this site in our survey of active railways we should have drawn the Nature Conservancy Council's particular attention to it, with a view to considering whether it should be declared a Site of Special Scientific Interest.

Of the five statutory ~~Wild~~ Weed species that you list Senecio jacobaea was probably the most common, although several other species of Senecio also occur and could easily be confused with S. jacobaea by anyone not familiar with the genus. I do not recall seeing it occur in great abundance. Cirsium vulgare was also of fairly common occurrence but nowhere abundant. Cirsium arvense, Rumex crispus and R. obtusifolius were more sporadic in their occurrence. Our experience was that none of these five plants occurred in sufficient abundance to give rise to a risk of serious infestation of neighbouring land.

I am enclosing some other papers that were included by error in your letter to me.

Yours sincerely,

J.H. May

Planning and Transportation
Department
Director Brian T Collins
Trent Bridge House
Fox Road West Bridgford
Nottingham NG2 6BJ
telephone (0602) 866555

Nottinghamshire County Council

your ref

our ref
S.MAV/CPW/6402.8.1

please ask for
Mr. Vincent
Ext. 319

Dr. J. M. Way,
Institute of Terrestrial
Ecology,
Monks Wood Experimental Station,
Abbots Ripton,
Huntingdon,
PE17 2LS.

1

date

30th November 1977

Dear Dr. Way,

ECOLOGICAL SURVEY OF RAILWAY LAND

Thank you very much for your letter of 31st October 1977 evaluating the disused railway line at Ruddington Lane, Wilford in relation to your 1977 survey of operating railways in the Eastern Region. Your detailed comment is much appreciated and is likely to be presented as evidence when the Appeal against the refusal of planning consent for controlled tipping is considered by the Secretary of State.

Thank you once again for your valuable assistance in this matter.

Yours sincerely,

for Director of Planning and Transportation

APPENDIX 7

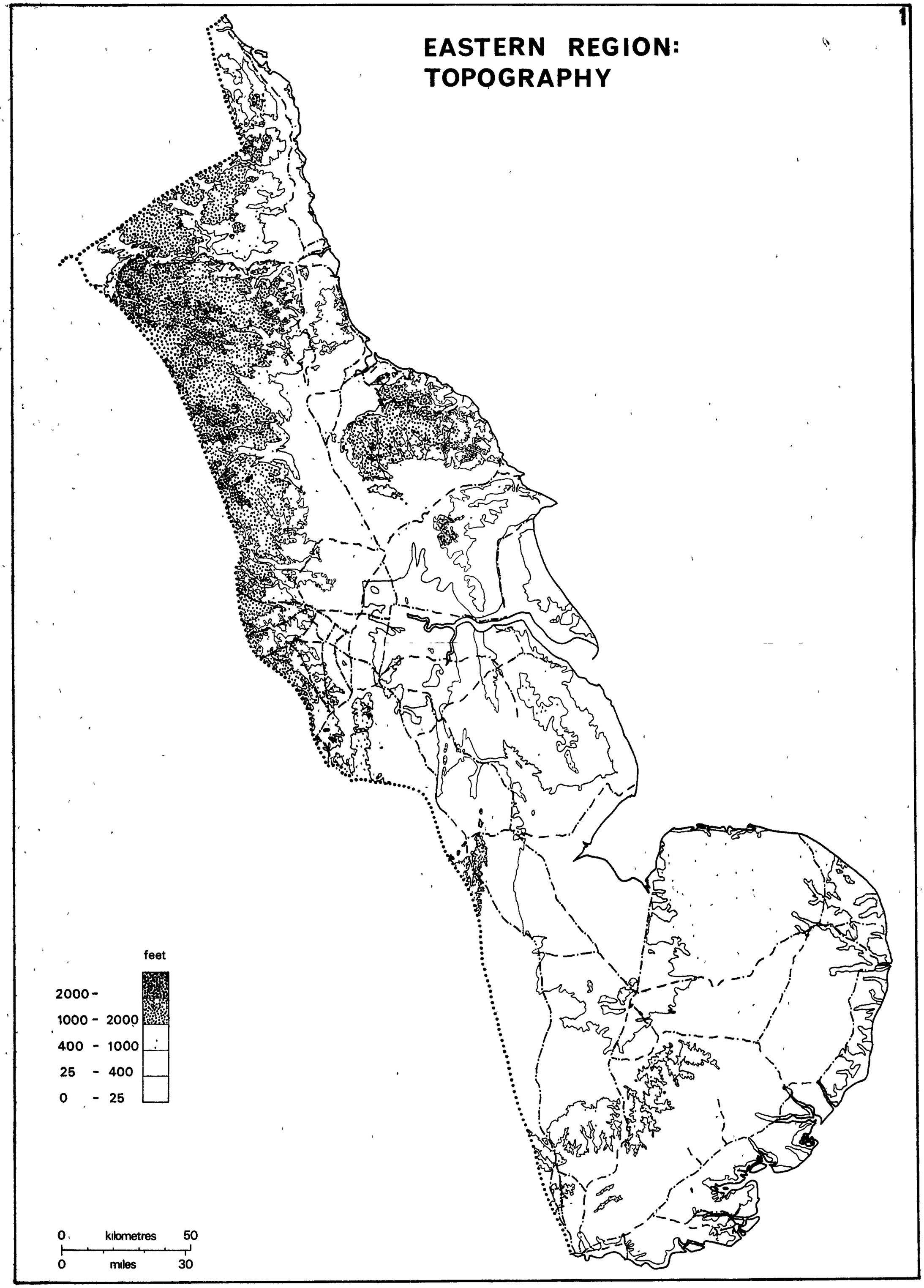
Selected transparencies
Copies 1-6 only

Titles all copies.

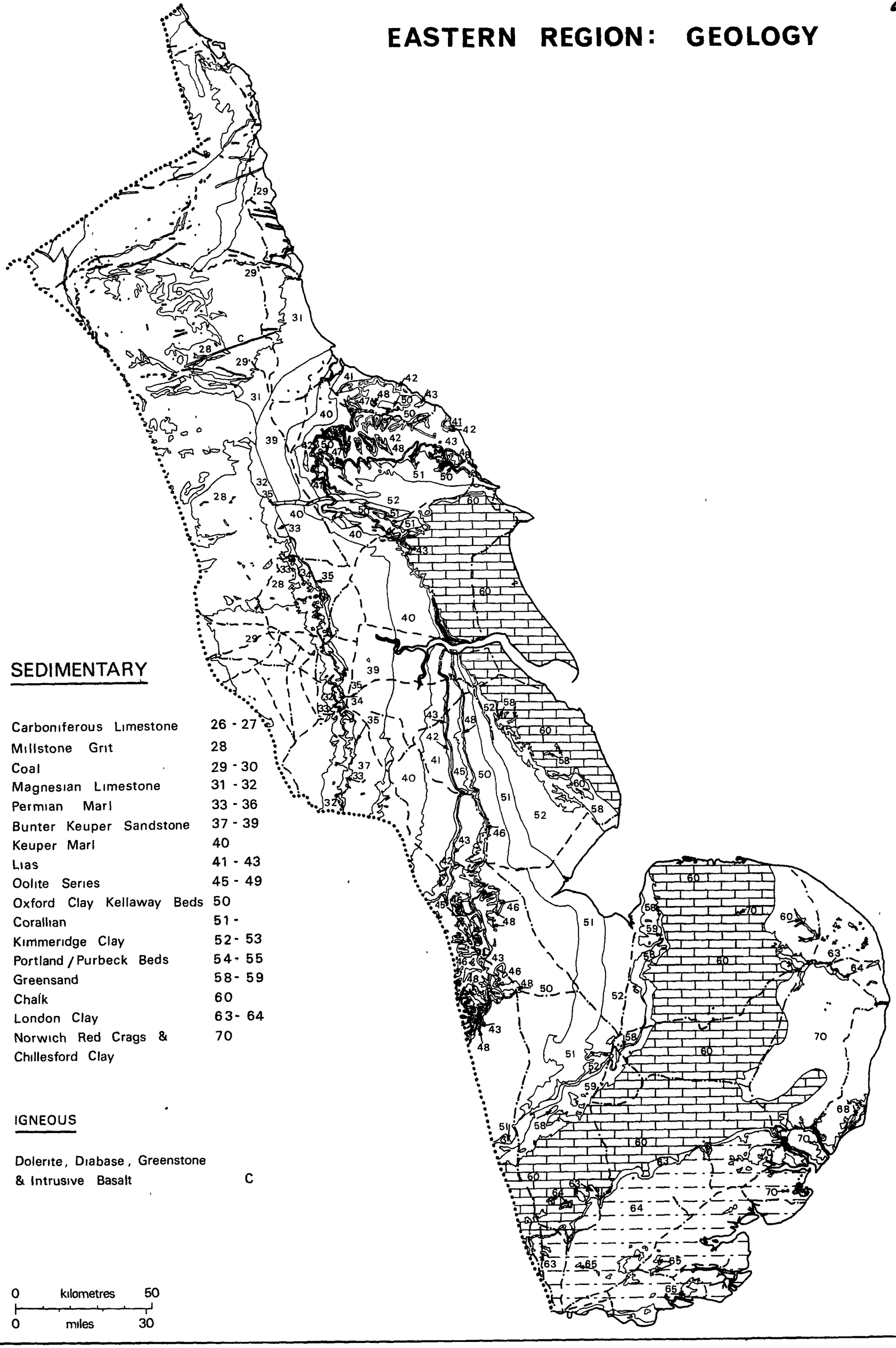
APPENDIX 5. Selected transparencies. (Available Reports numbered 1-6 only).

NO	FILM	DATE	SITE	NAME	COUNTY	DIRECTION	
1	1	19 Apr	B2	Sandy	Beds	N	Adjacent to SSSI. Sand flora with spring ephemerals and large population of Montia perfoliata.
2	2	22 Apr	B17	Homerton	Cambs	N	Flora site for Lepidium latifolium (in foreground) and spring ephemerals on cinder bed.
3	2	29 Apr	R2	Sapeley	Cambs	S	Complex large cutting. Unburnt Brachypodium pinnatum grassland in foreground. Burnt and rabbit grazed behind.
4	3	4 May	R5	Bayfordbury	Herts	N	Flat burnt area rich in herbs amongst scrub on dumped cinder.
5	3	5 May	CE4	Waterford	Herts	N	Steep embankment severely affected by ballast tipping to limit of stability (note footprints).
6	4	6 May	CE5	Gt Wilbraham	Cambs	E	Recent scrub clearance and trash. Virtually bare ground beneath.
7	4	17 May	CE7	Mount Bures	Essex	SE	Mixed herb rich grasslands on right and more dense scrub on left. Excellent for plants, birds and insects.
8	5	19 May	R11	Ardleigh	Essex	N	Mature oak and sallow scrub with varied ground flora on embankment to culvert over stream.
9	6	25 May	CE11	Copperas Wood	Essex	E	Line in cutting through mature woodland with sweet chestnut coppice on the left. Extended woodland edge.
10	7	26 May	CE12	Lawford	Essex	NE	Large herb rich embankment with some bramble and scrub. Note beehive.
11	7	28 May	R17	Spexhall	Suffolk	E	Narrow verges of no interest in flat arable agricultural land.
12	8	28 May	CE14	Weston Crossing	Suffolk	NE	Herb rich grassland amongst scrub in small cutting. Site of unusual Hieracium.
13	8	30 May	CE16	Southrepps	Norfolk	N	Very herb rich sandy cutting. Notable for extensive population of Saxifraga granulata (white flowers).
14	9	31 May	CE17	Aylsham	Norfolk	E	Large very herb rich embankment.
15	9	1 June	R21	Danemoor Green	Norfolk	S	Cleared scrub in cutting with Listera ovata and woodland ground flora, especially on right.
16	9	1 June	R21	Danemoor Green	Norfolk	S	Population of Listera ovata. Uncleared scrub good bird habitat in left background.
17	10	1 June	CE18	Kimberley Park	Norfolk	W	Dense scrub in a sandy cutting with interesting ground flora in open areas. Rich in birds.
18	10	2 June	CE19	Thetford	Norfolk	E	Small sandy cutting with grasses and deciduous scrub between railway and conifers of Thetford forest.
19	11	15 June	B24	Louth	Lincoln		Orchis praetermissa growing in damp grassland by derelict railway siding.
20	17	20 Jul	CE38	Morton Palms	Durham	E	Steep embankment. Upper part severely affected by ballast tipping. Mixed scrub, grassland and damp grassland below.
21	17	20 Jul	B33	Bradbury	Durham	N	Speculative site. Extensive grassland with dense population of Hieracium sp. in middle distance.
22	18	21 Jul	CE39	Plawswood	Durham	S	Sandy heathy vegetation in deep cutting. Calluna, Deschampsia flexuosa, oak, ash, birch and elder.
23	19	23 Jul	CE41	Sunderland Bridge	Durham	E	Coal measures sandstone cutting with exposed rock. Acid flora with ferns, oak/birch scrub above.
24	20	24 Jul	CE42	Talkin	Cumbria	S	Very disturbed embankment with dense population of Hieracium vulgatum and H. perpropinquum.
25	19	24 Jul	R43	Talkin	Cumbria	E	Cutting in triassic sands and marls overlain by glacial clay and gravel. Bracken and mixed grassland flora amongst scrub.
26	20	26 Jul	CE44	Farnley	Northumberland	E	Large complex cutting with disused tunnel, in limestone and mixed sandstones and shales. Range of habitats. Mixed flora.
27	24	9 Aug	CE55	Sewerby	Humberside	SE	Chalk cutting with dense scrub and woody growth. Site of an alien Sorbus.
28	25	10 Aug	CE57	Escrick	N Yorks	N	Intensively rabbit grazed herb rich short turf in small sandy cutting.
29	28	5 Sep	B52	Little Ponton	Lincoln	E	Speculative site. Oolitic limestone cutting near Grantham. Mixed herb rich grassland and scrub.
30	28	7 Sep	B54	Fornsett St Mary	Norfolk	N	Information received site. Junction of disused line and active line. Varied habitats. Population of Lathyrus latifolius.

EASTERN REGION: TOPOGRAPHY



EASTERN REGION: GEOLOGY



SEDIMENTARY

Carboniferous Limestone	26 - 27
Millstone Grit	28
Coal	29 - 30
Magnesian Limestone	31 - 32
Permian Marl	33 - 36
Bunter Keuper Sandstone	37 - 39
Keuper Marl	40
Lias	41 - 43
Oolite Series	45 - 49
Oxford Clay Kellaway Beds	50
Corallian	51 -
Kimmeridge Clay	52 - 53
Portland / Purbeck Beds	54 - 55
Greensand	58 - 59
Chalk	60
London Clay	63 - 64
Norwich Red Crags & Chillesford Clay	70

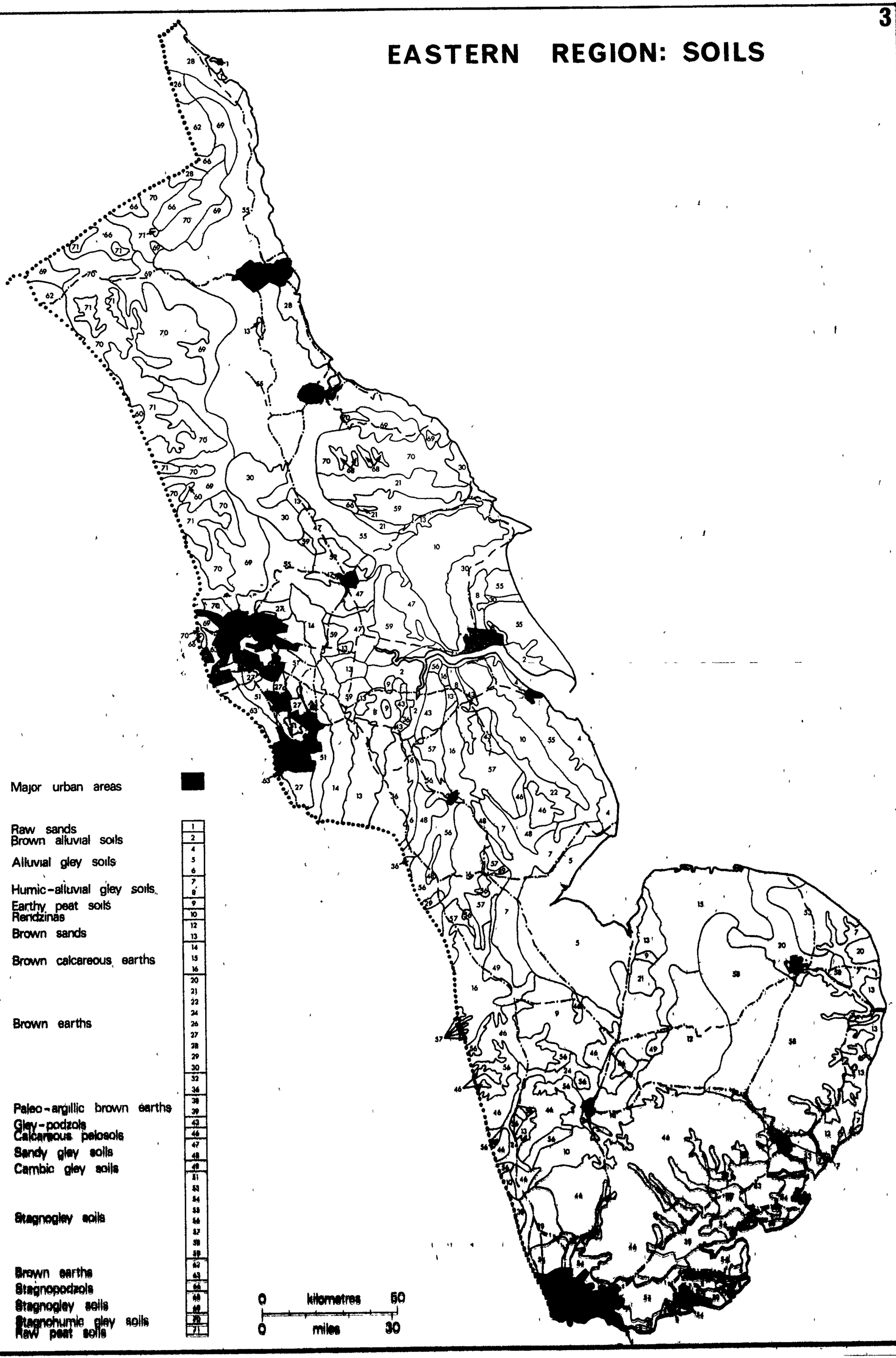
IGNEOUS

Dolerite, Diabase, Greenstone & Intrusive Basalt	C

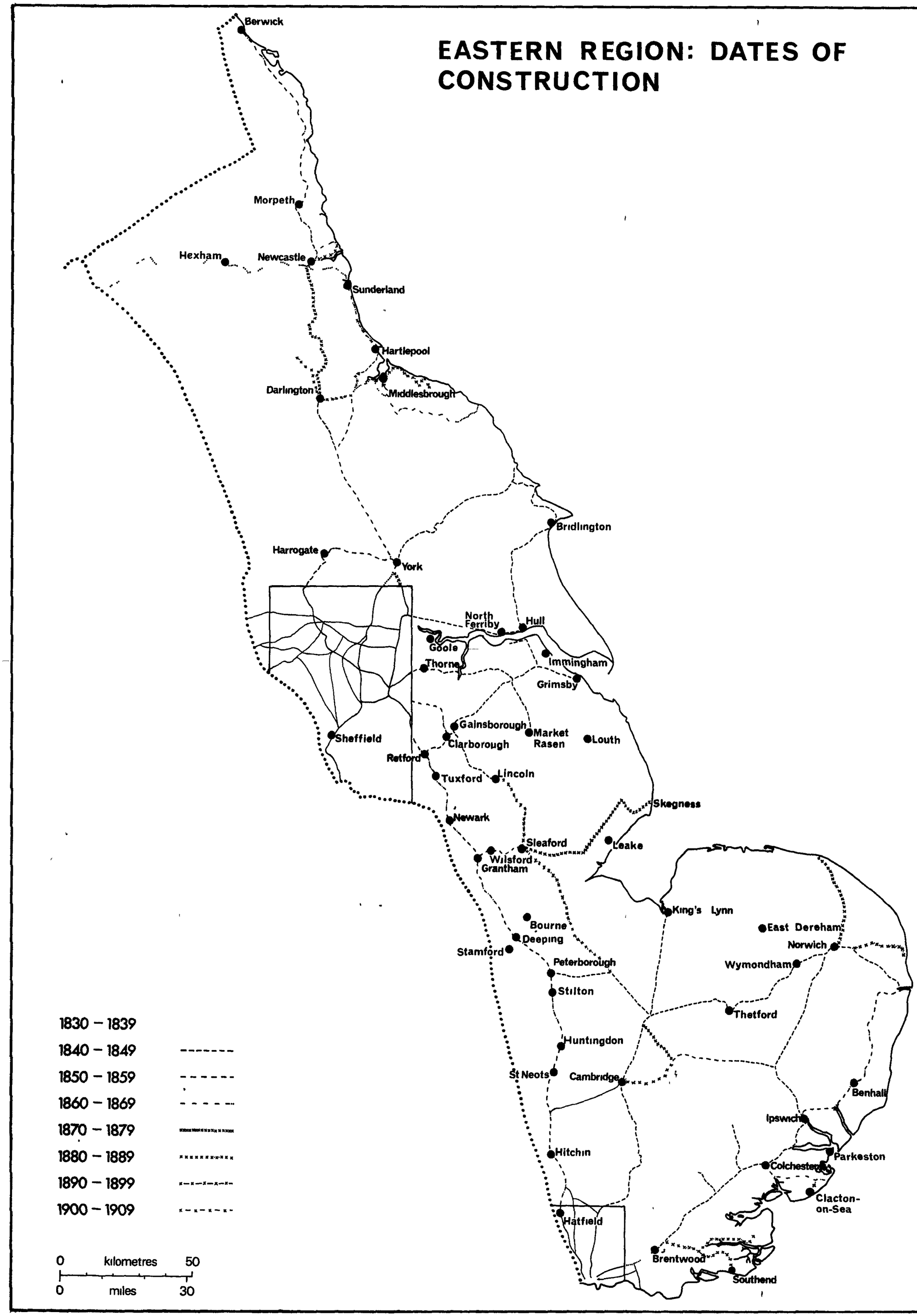
0 kilometres 50

0 miles 30

EASTERN REGION: SOILS



EASTERN REGION: DATES OF CONSTRUCTION



EASTERN REGION BR

SURVEY SITES 1977