GRAVEL PITS AND PLANNING POLICIES

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C O N T E N T S

CHAPTER I

INTRODUCTION

Mineral working in general, and the sand and gravel industry in particular, have been somewhat neglected in planning literature. Most discussion in the journals has been concerned with aspects of restoration and the after-use of mineral workings. The general assumption regarding policy was that little positive planning could be done in this field and in the case of sand and gravel that development control should restrict working to areas recommended in the reports of the Advisory Committee on Sand and Gravel - known as the Waters Report after its Chairman A.H.S.Waters (M.T. & C.P. 1948; M.H.L.G. 1954). Furthermore, each application for development should be treated 'on its own merits' in the general framework provided by the Waters Report.

The original aims of this dissertation were to question this basic assumption, to test various alternative planning policies relating to the sand and gravel industry, and particularly to test the feasibility of incorporating considerations of recreational after-uses of wet gravel pits during the formulative stages of policy evolution.

Much of the discussion and analysis centres on a particular area in Eastern England, chosen largely on grounds of institutional and analytic convenience (fn.).

Empirical work done in the study area has resulted in a different emphasis than would have been provided by a discussion of future alternative policy considerations, as it became clear that recent policy changes have been influenced by the very consideration basic to this study - namely that of the recreational after-use of wet pits. Thus it is possible first to discuss the theoretical questions relating to the planning of the sand and gravel industry, and then to examine these in the context of the selected study area. The content of this dissertation has been fundamentally affected by the partly unexpected nature of the data obtained - much of this information only came to light through discussions with planners in the area, and is not documented elsewhere. The changing nature of the dissertation as the work progressed has caused many

(fn.) This area comprises four county planning authority areas - Essex, Norfolk, East and West Suffolk, and contains a wide range of problems, interests and approaches to the working of sand and gravel, Fig.1. The variations are partly due to physical factors (nature of the resource) and partly to socio-economic factors, particularly increasing distance from London. The counties chosen are also largely co-incident with River Authority areas, an important consideration from the institutional viewpoint.

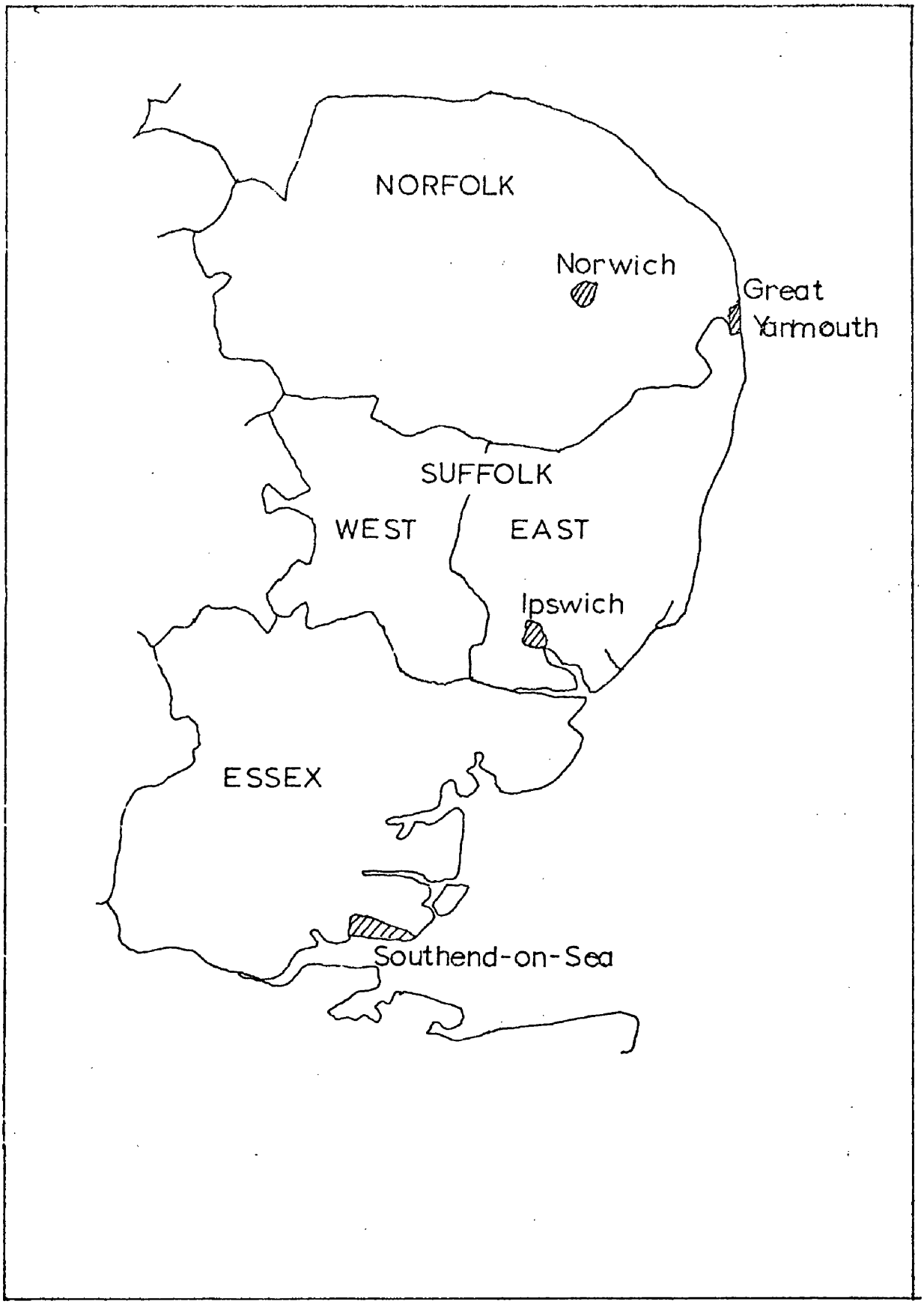


Fig.1, The Study Area

problems in the organisation and presentation of the material, and this introductory chapter sets out both to explain these problems and introduce the discussion contained in later chapters. This chapter will also briefly describe the methods used in the collection of the data, and advantages and constraints inherent in these methods.

Discussion throughout is centred upon the relationships between (a) the sand and gravel industry and local planning authorities, (b) the nature of the supply of the resources in question - sand and gravel, and recreational facilities, and (c) the demand for these resources. Many questions are asked (e.g. how is mineral working controlled in the study area? What are the main determinants of the sand and gravel policies of the different planning authorities? How much does the nature of the sand and gravel resource and industry affect their approaches? What is the state of knowledge within which these planning authorities formulate their policies?), and these are answered to varying degrees of satisfaction.

The recent history of sand and gravel in the area is studied, particularly with a view to seeing how much effect the industry has had upon the countryside, and how much

this effect has been modified and controlled by the local planning authorities. Also the potential interplay of factors is considered to see how evolving strategies with successive policy applications could modify or alter the effect of the sand and gravel industry to meet specific planning objectives. The particular objective of interest is the provision of recreational facilities in the form of wet pits, and in this context angling is chosen as a suitable recreation upon which to concentrate (fn.)

Information was gathered in a number of ways, both by field work in the study area during vacations, and by reading and correspondence during term-time. The choice of a study area distant from the University base (though close to vacation base) proved to be in some ways a handicap, as particular follow-up lines of enquiry could not always be pursued satisfactorily by post, also there was a time-lag (between vacations) between separate parts

(fn.) Angling was chosen because of (a) my own particular interest in and knowledge of the sport (b) it is the major participant sport using water resources (c) it provides one convenient viewpoint from which to view other water using sports in their planning context.

of the field work. Much valuable information and insight into the processes at work was gained by discussion with planning officers concerned with the control of mineral working in the study area, focussed by the use of a structured interview (Appendix II). Other valuable data was supplied by the planners in the form of statistics, maps, diagrams, reports, and photographs - and by permitting access to confidential material on the agreement that its confidentiality would be respected. The other part of the question, namely recreational aspects of the dissertation, was pursued first through wide background reading, then by discussion and correspondence with River Authorities, local Sports Councils, and through a small angling questionnaire (Appendix I). This was carried out to test the views, experiences and preferences of anglers, especially to test whether any strong feelings were held with regard to gravel pits, and to see whether different members of the angling fraternity had different tastes, aspirations and expectations. Recent publications and research are widely drawn on, and a recent survey by National Opinion Polls of Angling in England and Wales has proved very valuable.

Chapter 2 examines the nature of gravel pits their evolution, and how planning policies have recently contributed to their changing patterns of distribution. Leisure and recreation trends with particular emphasis on angling, are also discussed in this chapter, and some possible relationships between wet gravel pits and outdoor recreation are explored. Chapter 3 then examines the nature of the sand and gravel industry, partly by reference to the study area, and discusses how changes in the organization of the industry have been partly responsible for changes in the relations between local planning authorities and the industry. An attempt is made to set the industry in its evolving planning context.

Chapter 4 discusses the scope for future policy formulation mainly from a theoretical point of view, and looks at the different trade-offs that must be made in order to satisfy different objectives. This chapter stresses the need for a clear appraisal of objectives and consideration of policies as they relate to these objectives (which would, hopefully, form part of a long-term goal-oriented strategy for the area). The fifth chapter looks at the recent planning history of sand and gravel in the study area, at changes in some of the variables discussed

in chapters two and three, drawing on the theoretical arguments put forward in Chapter 4. The changing inter-relationships are discussed and then Chapter 6, after summing up the arguments so far, attempts to focus consideration of planning policies for the sand and gravel industry on to the theme of incorporation of after-use considerations at the formulative stage of policy making, and the scope of local planning authorities in this context. It is suggested that change cannot be related to one prime determinant, rather it is occuring because of different relationships between the forces operating in the area, of which one major force is the system of town and country planning that has been operative since the late 1940's, and which is itself undergoing a process of change.

Town and country planning, regional planning, physical, economic and social planning, are in a state of flux. Planning law has recently been revised and renewed. Any planning discussion, to be of value, must contain this dynamic element of change - it is, after all, the 'raison d'etre' of the town and country planning movement as we know it. It is perhaps the role of the

planner to comprehend and manipulate change, to steer the forces of change to certain desirable goals via interim objectives. One such goal (if not the overriding consideration) is to 'improve the quality of life'. Strategies aimed at this goal may well include concern for the maximisation of benefits to be derived from leisure. A humble start in physical resource planning would thus be to co-ordinate this objective with that of efficient resource use by the means of a sound policy for the sand and gravel industry incorporating consideration of recreational after-uses of wet gravel pits. That is the theme of this dissertation.

CHAPTER 2

GRAVEL PITS, RECREATION, AND RELATED PLANNING POLICIES.

Neat classifications of industries into such categories as 'primary', 'secondary', 'tertiary' and more recently 'quaternary' are of very little use in understanding the relationships between the sand and gravel industry and the planning process. The mechanisms of development plan and development control can distinguish between types of industry, but in practice the distinctions, especially in the former, are usually generalised and inexact; and in the case of industries with strong vertical linkages the distinctions are of even less value other than for purely analytical purposes. The planning framework dealing with industry has evolved in an ad hoc manner, and mineral working, with a fundamentally different 'use' of land has required a different approach than other industrial development considerations. There has tended to be no overall plan, no synthesis, only an inductive approach, attempting disjointed solutions to problems as they emerge.

The changing nature of the sand and gravel industry is discussed at length in the following chapter, but here discussion centres on the themes which will be brought together later in the dissertation. These themes are basic to the formulation and application of policies for sand and gravel working, especially if such policies may be directed towards the provision of recreational resources in the form of wet pits.

The control of mineral workings has many elements, including considerations of local and national demands for the particular mineral concerned, competing uses for the land to be exploited, the nature of the mineral working and its effect (both in the short and long terms) on the local environment, alternative sources of mineral supply, and numerous 'amenity' aspects. The last aspect has usually provided most opposition to any application and in the light of these many considerations it is hardly surprising that after-use has in the past had little influence on actual mineral working policy, except insomuch as planning conditions usually attempt to minimise dereliction. In fact it has been usual for the sand and gravel industry to be lumped together for treatment with

extractive industries responsible for dereliction. Control focussed on reducing adverse effects on the environment by progressive rehabilitation and landscaping whilst admitting little influence over the actual location of the mineral working. "Whatever the natural charms of the sites, gravel has to be won where it exists and the hard facts of nature cannot be gainsaid. Acceptance of this is much easier if we look upon the working of sand and gravel as a short-term operation; to be followed by restoration of the pits to some useful purpose which will remove from the landscape the blot which almost every working inevitably causes", (Doubleday, 1958). This approach, however, is based on the implicit acceptance that sand and gravel workings cannot be tackled at a different scale, with alternative mineral working areas evaluated in the light of other criteria. It would surely only be tenable if there were no alternative sources of sand and gravel (which is often not the case) or if the cost of obtaining information was so great as to outweigh any advantages desired for having that information (which has often been assumed to be the case.). Attempted solutions have generally included conditions insisting on

agreed after-uses, usually returning the pit to its former use, or, with appropriate landscaping allowing some other acceptable use e.g. yachting lake. There have been many problems associated with meeting planning conditions, especially the shortage of economic filling material for wet pits; also it is becoming apparent that for the new, larger wet pits (see below) conditions stipulating filling are becoming generally pointless and inapplicable.

Sand and gravel pits, usually referred to as 'gravel pits' are an increasingly familiar part of the British landscape. They are as much a product of the twentieth century as the moon rocket and the hydrogen bomb. Modern methods of mechanised working, and the ever-increasing demands for gravel by the construction industry, have led to more and bigger pits being dug throughout Britain and especially in S.E.England round the London conurbation. Gravel pits are surface workings,'open-cast' mineral workings, usually now with a working life of 15-20 years (partly, of course, depending on the size of the pit to be worked). (S.A.G.A.1967). Individual permissions vary in size from parts of an acre (for particular local jobs, e.g. construction of a small bridge), to well over a

hundred acres. Their depths vary considerably, due both to size of seams and depth of overburden (source: local authority records of mineral workings in the study area). Whether the resulting holes will be wet or dry depends entirely on the location of the working and the height of the water table. Despite some variations throughout Britain due to varying glacial experiences, we can generally distinguish two broad groups of sand and gravel deposits: (a) 'High-Level' gravels (usually producing dry pits) consisting of glacial outwash both sorted and unsorted, and (b) 'Low-Level' deposits (more often wet) derived mainly from the high level, but sorted, graded, washed, and "clearly attributable to the present rivers or their immediate ancestors". The real distinction between the two, is then "not primarily altitude but age, origin, and ..... character" (Wooldridge, 1950).

The low-level 'valley gravels' as they are usually known, have been naturally sorted and washed, which is a considerable advantage from the working point of view as it eliminates much costly processing. That these workings are almost invariably waterlogged (being found in large deposits in lower valley sections of rivers) has

retarded their exploitation until fairly recently when improved techniques of wet-working have allowed greater access to these, generally more desirable gravel deposits. Unfortunately knowledge of the true extent and character of these two types of gravel deposit is limited due to the Geological Survey paying little attention to them, concentrating more, as it did, on solid geology; any independent survey work is costly, and a county authority could not hope to survey its whole area in the hope of finding alternative sources of gravels other than those desired by the mineral operators - hence, in part the attitude cited earlier (Doubleday, 1958). Also, better knowledge of valley gravels than high-level gravels has further led to increased exploitation of gravels in the river valleys.

The term 'pit' can refer to the actual site of operations where gravel is being dug, an area where permission has been given to extract gravel and also the hole left once removal of gravel is finished - whether wet or dry. Whilst in the short term it is important to control the methods of working due to noise, dust, pollution, traffic, and visual impact, in the long term

it is important to control (a) the effect on the local landscape of the resultant hole in the ground, (b) regional distribution of gravel workings acceptable on numerous planning grounds (adequate supply of minerals to market, and possibly provision of recreational resources) whilst (c) ensuring the free flow of mineral product at economic cost (M.H.L.G., 1960).

Permission is usually given in stages, so that as one pit is becoming worked out an adjacent area is designated for working. Thus a working will grow in a number of steps - sometimes permission will be given for the whole area on condition that the parts will be worked sequentially, with each successive phase only commencing when the previous stage is completed. Following on from the recommendations of the Waters Committee, planning authorities have tried to keep sand and gravel workings to specific areas, without allowing piecemeal exploitation scattered throughout their entire areas. The resultant pit complexes, when wet, as in the group being worked in the Flixton-Homersfield area in the Waveney Valley, can provide valuable recreational facilities, but in this case as with most others in the past, this is co-incidental.

The shape and size of pits, individually and in relation to each other has been of little concern to planners regarding the requisites of recreational users. The characteristics of the pits produced are due to three factors (a) the nature of the deposit, (b) the methods of extraction, and (c) planning conditions influencing extraction. Clearly, with increasing mechanisation and growing demand, the deposits most likely to be effectively and economically worked will be large, and work will progress most efficiently along a single, orderly face. However, deposits may prove to be more variable in content than anticipated, as uneven bottom and side contours would then result, as was generally the case until the mid-1950's, when increasing mechanisation led to larger workings. Older pits are generally more random in shape with odd islands and peninsulas. It is probably fair to say that modern large-scale extraction techniques are tending to produce larger, more uniform pits than ever before. Planning controls, requiring working on a single face with specific bank slopes are, if anything, contributing to this uniformity. Complete uniformity is never essential, however, as minor modifications, as included in landscaping

conditions, can ensure a more 'interesting' finished product - small bays, islands and peninsulas can be created quite easily - or left during the working stages - for recreational users. Of course, there are many possible after uses of pits, both wet and dry, and recreation would be but one competing use. Factors such as availability, initial and transfer costs of suitable filling materials, relative benefits accruing to recreation and competing uses e.g. building land would be considered. A balanced regional policy might aim at providing some recreational water in pits, whilst filling others with, e.g. household refuse. This question is examined further in chapters 4 and 5; here we are more concerned with wet pits and recreational considerations.

The sand and gravel industry was studied by the Waters Committee in the late 1940's and early 1950's, recommendations being made in a series of reports, one general and the rest pertaining to specific gravel regions. Land was allocated which was estimated to be sufficient till the end of the century, and the country was divided up into 'service areas', each with local demand targets. The general effect and importance of Waters is considered

in chapter 3, but in relation to actual pits the effect was mainly at the macro-scale, restricting amorphous spread of pits and providing authorities with a framework to operate development control. Despite changes in subsequent demand estimates most pits in the post-Waters era have been located in areas recommended as suitable. Thus it has affected location rather than individual pit characteristics, and acted against diffusion - at a time when economies of scale were, similarly, tending towards the creation of larger pits and pit-complexes.

A problem facing planning authorities was how to designate land suitable for gravel extraction in the development plan, because land not already being worked was generally agricultural land, and large agricultural areas could not be designated for mineral working when in all probability only parts would ever be needed anyway! This problem was avoided by only designating on the map areas with permission, and by having a paragraph in the written statement to the effect that recognizing the essential need for gravel, permission will be given for development having regard to the recommendations of the Waters Committee. Thus specific land was not allocated,

but broad areas of approval suggested. This point will be raised later in connection with 'structure planning', as envisaged in recent legislation. In such a situation as prevailed in the past a good working relationship between the planning authority and mineral extractors was essential, and we are forced to consider the social aspect later in order to appreciate the true nature of the way planning proceeded in this delicate position, marginal to the legislation.

The trends that are distinguishable, then, regarding actual gravel pits are (1) increasing size and uniformity of pits, (2) development of pit-complexes, (3) growing predominance of wet pits.

The second theme to be explored in this chapter is the changing nature of leisure and outdoor recreation, both in their own rights and in their planning contexts. Recreation is clearly a sub-set of leisure, and the increasing availability and use of leisure time has been well documented in recent years. Much work has been and is being done on the planning context of leisure in general, and 'recreational' uses of leisure time in particular (e.g. Burton 1970a). Despite much disagreement over the precise meanings of the terms 'leisure' and 'recreation' due at least partly to the various approaches

adopted by different disciplinary specialists studying leisure, pragmatically "the planners overwhelming concern" asserts Rodgers is "with quite a small fraction of time (even of leisure) spent outdoors, actively, away from home" (Rodgers, 1969). Dumazedier (1968) avoids confusion by using the term "leisure" to describe both the time available and the activities pursued. Meyerson (1968) talks of "leisure time" and "leisure activities" and Parker (1968) refers to "characteristic ways of spending leisure time" and "leisure needs". Discussion of precise meanings can lead into a semantic wilderness, and is of more interest than practical value for the planner. Leisure considerations are surely relevant in much planning discussion, but here we can conveniently leave the debate to concentrate on the topic relevant to our discussion - outdoor recreation. This still occupies only a relatively small amount of leisure time, which is itself not growing as rapidly as some commentators would suggest (e.g. Brightbill, 1960, compared to Sillitoe, 1969).

From recent studies it is becoming abundantly clear that outdoor recreation is growing at an unprecedented

rate (Sillitoe 1969; N.R.P.C., 1969). Increased mobility, higher real incomes, and increased leisure time are interacting with other variables to change completely the pattern of leisure activities in Great Britain (B.T.A. 1967, 1969), much as had been observed somewhat earlier in the United States (Clawson, 1966). It is the active pursuits, still only using a small amount of total national leisuretime, that are growing most rapidly (especially if we include general-purpose 'car-day-tripping') and exerting tremendous demand for land and water. Sports such as sailing and fishing have very high growth rates, and current demand is rapidly exceeding supply of facilities. Recreators, by inference and experience, are being forced to undertake increasingly long journeys to enjoy their sports. (fn.)

The growth of fishing and other water using activities are of particular concern here, and the planner is faced with a number of problems. First, the problem of forecasting centres on the "several different concepts of

(fn) a) Royal Yachting Association grew from 405 to 1271 clubs between 1948-64 (Foster 1966)

b) Recent estimates by N.O.P. suggest growth 1970-80 of c.15% in number of anglers in England and Wales.

forecasting which are often loosely assumed to be identical - such terms as 'estimate', 'extrapolation', 'projection', 'prediction' and 'prospective', whereas 'estimate' implies the use of judgement. Extrapolation consists of the extension of past trends into the future ... 'projection' and 'prediction' ... describe the same process - the forecasting of trends based on the extrapolation of more than one variable .. and a 'prospective' is not really a forecasting technique at all, but, rather, a planning tool" incorporating (a) an objective and (b) a means of achieving this objective (Burton 1970,b). Up to now, Burton suggests, recreation forecasting has been predominantly by means of 'projections of recreation - related variables which have then been considered subjectively to produce informed judgements of future developments'. This, in fact, is the approach he opts for, and more elegant methods being worked out, such as Maw's 'leisure model', appear at the moment unable to offer anything better in the way of forecasting (Maw 1969) so for the want of something better Burton's approach is generally used here.

The main factors influencing recreation changes, Burton argues, are of three kinds: socio-economic, technological, and institutional. Of the former, we can see (amongst others) population size, distribution, and age-structure, income and behavioural norms. The overwhelming technological influence in recent years, and likely to operate into the immediate future at least, is the phenomenal increase in personal mobility due to the motor-car, though by introduction of cheaper synthetic materials the cost of a sport can be reduced and thus more people be enabled to take it up, e.g. cheap fibreglass fishing rods enable many people to take up fishing who would not be able to afford previously more popular built cane rods. Institutional factors (and here is some overlap with socio-economic variables) cover both the law, and general social organisation, influencing mainly the amount of leisure time available. Burton's discussion ends with his 'guesstimates' of expected recreation trends, and his list of activities likely to increase in popularity significantly includes all the water-users - fishing, sailing, boating, rowing, canoeing, and water-skiing.

In discussing recreation we continually get back to the problem of 'demand' for often facilities are provided free, as some kind of social service or a charge is made that bears little or no resemblance to 'economic' returns on capital. Kavanagh has recently discussed the whole question of economics of water recreation specifically in a planning context, and he has drawn together much diffuse material into a cogent and extremely valuable analysis of the current state of knowledge in the field. The main problems in the definition and measurement of demand derive from the fact that there usually is no market mechanism at work by which to assess current and future demand. Rather, in the past, researchers have been forced to use 'simulated prices' indicating the value of recreation benefits 'as if such payments were required'. Often (as in the case of reservoirs) recreation benefits and costs are but part of a complex cost-benefit consideration and as such are extremely difficult to isolate and evaluate. Clawson and others have derived a means of conceptualising recreation benefits in terms of the 'total recreational experience' identifying five phases, each of which is important in the process of recreational decision-making.

As defined by Kavanagh these are "(i) planning or anticipation, (ii) travel to the recreation site, (iii) on-site experiences, (iv) travel back and (v) recollection". Demand curves can be inferred using 'proxy' price variables, assessing demand generated from zones radiating from the recreation facility. The basic variables is thus travel costs; but this is a simplified approach, and although it is a valuable first step, Kavanagh and more recently Smith have shown that it is essential to treat Clawson demand curves with great care, especially over the matter of valuation of users' travelling time. Used well it is a valuable tool, but the results are extremely "sensitive to different assumptions made at various stages; the analysis may, at first glance look very easy but this sensitivity is a hidden danger" (Smith 1971). Progress is being made in the field of analysis of recreation demand, but clearly if this is still imprecise, then the problems of forecasting stated earlier become even more complex.

Planning is becoming much more concerned with recreation, and the White Paper 'Leisure in the Country-

side' and subsequent Countryside Act, 1968, stress the need for greater attention by local authorities to ensure recreational access to water, and the provision of new water facilities for the public. But the crucial problems, as seen by a planner, are (1) definition of 'demand' and measurement of that demand if it can be defined, (2) whether recreation is marketable or a social service and (3) measurement of benefits derived from recreational development (Lewis 1969). The models and analyses of recreational demand produced so far have usually started from the facility in question and measured or described demand for it - there appears to be a dearth of material that can make meaningful predictions for future economic demand other than 'guesstimates' such as Burton's (already cited). Such analyses would suffer anyway under conditions of changed variables, e.g. anglers becoming willing to pay more for their sport. In mixed use of facilities - e.g. reservoirs and to some extent gravel pits - it is unlikely that recreation is marketable on strict cost-benefit terms. Definitions of demand are chrystallising, but slowly, and measurement is in its

infancy. To take Lewis' point about recreation as a social service, this raises even more problems than it solves for if recreation is a social service, then we would have to have indices of need and relative apportionment of funds to different projects could then follow, but 'need' would be even more difficult to define than fundamentally market-derived demand. Measurement of benefits is at best highly subjective - true for any good, but perhaps more so in something as unquantifiable as recreation. This theoretical discussion at least highlights the question, in all probability the answers will be derived politically - in a situation of unquantifiables, a 'better' decision may be of more use than a fruitless search for the 'best'.

The problems of forecasting and analysis are present in all the water-using recreations, and none more so than in angling. (fn.) In some ways, this recreation is unique, and in others it is typical of all water using sports. One measure of its uniqueness is its current popularity. We can say with confidence that there are

(fn.) The terms 'fishing' and 'angling' are used interchangeably here. Some 'anglers' would argue that 'fishing' can only refer to commercial fishing, but this is an extreme attitude and certainly not one shared by the majority of anglers.

at least 2½ million anglers in England and Wales, and the total, including those who fish rarely, is probably higher, well over the 3 million mark. Of the total of 2½ million, around 2 million fish in freshwater, for 'game' and 'coarse' fish, and some of these also go sea-fishing, as do the other ½ million exclusively. The second striking fact about angling is the regularity with which it is pursued, with about half the anglers in the country going at least once a week. Angling is spread throughout the country geographically and throughout the population; though there are some regional variations in types of fishing, due largely to fishing available, and some significant class variations in participation rates. (fn.). In a recent survey of angling in England and Wales, anglers were found to be more mobile than the population as a whole, with higher car-ownership rates - suggesting that personal mobility is important to the individual wishing to fish. This is true largely due to the inaccessible nature of most angling sites, not being served by any means of public transport, with those

(fn.) N.O.P. study indicated high participation rates in social class C2 - skilled manual.

that are served becoming increasingly congested (as anyone who walks the banks of the Lea between Rye House and Enfield on a summer Sunday can testify). In any case it is extremely inconvenient travelling on a bus or train carrying fishing tackle, rods, chair, bait etc. and wearing soiled fishing clothes and Wellington boots!

Many anglers have tried to define what it is that makes people go fishing, and have offered vastly different explanations. There are in fact many varied and equally valid reasons, ranging from 'the hunting instinct' and 'lure of the wild' to 'getting away from the wife' (sic) - angling is still predominantly a male preserve. With such a large number of anglers in Britain there will be many reasons for taking up and continuing to go fishing, but whatever the causes the total is growing. A 15% growth rate is predicted between 1970 - 1980 by a recent survey using projected independent variables, (much will go into the sea fishing sector, but the majority of growth will still be in freshwater fishing) with more and more young people taking up the sport.

It is important to realise that angling is a very diffuse recreation, there are many types of anglers with different norms, attitudes and aspirations. The well-known crude distinction between 'game' (generally fly-fishing for salmon, sea-trout and trout) and 'coarse' (the rest of freshwater fishing) is breaking down today as more 'all-round' anglers enjoy both 'game' and 'coarse' fishing, rejecting the old value-laden distinctions between the two, though there is still a strong residual element remaining: the Test remains a preserve of the wealthy trout angler. But we can now contrast the 'specimen hunter' (probably less than 5% of the total number of anglers) who is concerned with catching large specimens of particular species (he may, for instance, decide to seek a large carp to the total exclusion of all other fish) with the broad category embraced by the term 'pleasure angler'. This latter group forms the vast majority of anglers, and ranges from the novice to the average club angler, who is selective in a small way, preferring to catch a fair-sized roach or bream but quite ready to 'make do' with a net full of 'tiddlers', and it includes the mass who are totally unselective and just

'happy to be out in the open'. Another section is the match fishing fraternity. It is difficult to estimate how many people fish in matches, but something like 20% of all 'coarse' anglers fish at least one match each season (often in closed 'club' matches). But a significant proportion also go in for competitive fishing very seriously, travelling round the country each weekend to the big 'open' matches. This is a highly organized expensive, competitive, and for the winners, lucrative branch of the sport. Thus Brian Lakey, the winner of the 1970 National Championship, won 'over £2,500 in pools and prize money' (Angling Times 17.9.70). The prizes are won by virtue of relative catch, i.e. total weight of fish caught in a specified time period compared to the weights of competitors' catches. Prizes are not influenced by absolute weight (though some special prizes are awarded in some matches, e.g. for a catch in excess of 50lb. in 4 hours fishing).

Whilst the class differential between game and coarse anglers is breaking down, trout and salmon fishing can be classified together with specimen hunting and match

fishing as 'specialist' pursuits. Indeed, the distinction between specialist and non-specialist angler is probably the most meaningful we can make.

The different attitudes of the different types of anglers result in different requirements for size and type of waters and fish. In a small survey carried out amongst anglers fishing some pits in Kent, the rivers Lea (Essex) Gipping (Suffolk) and others using a tackle shop in Ipswich, it was found that of all types of anglers match fishermen were least concerned with the type of water they were fishing, whereas all other anglers tended to express some preference for a particular type of water e.g. small river or large lake. There was also a general tendency for anglers to prefer small waters to big waters; and, not surprisingly, the anglers who were questioned at the gravel pits tended to prefer pits to other types of water, and those interviewed at the riverside preferred rivers. Tentatively thos would suggest that the actual type of water is not of major importance so long as the fishing is satisfactory. Testing attitudes towards gravel pits, anglers were asked to choose a preferred type of still water from six categories. Any angler who did not

choose a sand and gravel pit was then asked 'if the quality of the fishing were the same as in your choice, would you be satisfied to fish in a gravel pit which was cheaper and/or nearer than your preferred choice? Out of the 34 who had not initially chosen sand or gravel pits, only 3 said they would still not want to fish gravel pits, in each case because of the perceived inferior quality of the fishing, and in one case because pits are 'too deep'(!) The conclusion to be drawn from this is that in this small sample at least there were no particular prejudices against gravel pits 'per se' indeed of the 90 respondents, 49 initially preferred gravel pits to other types of still water and 7 had no preference. With a growing number of anglers, and increasing pressure on facilities, there would appear to be scope to continue to 'overspill' anglers to newly created wet-pits, and attempt to plan such pits as much as possible to fit in with anglers' requirements.

Generally, attitudes are still important regarding other problems facing the recreation planner, particularly measurement of benefits and pricing. Match anglers would

generally only want to fish (except during 'practice sessions') for, say, four hours around mid-day on Saturdays and Sundays, but might want the water 'left undisturbed' meantimes. Specimen hunters would tend to fish for longer periods, in the summer particularly fishing all weekend from Friday evening to Sunday afternoon, camping beside the water. Match anglers want plenty of fish, of varying sizes, to ensure large 'bags' all round and 'good sport' for all, but specimen hunters would prefer a water to hold good individual specimens and not concern themselves with large bags of small fish. This would obviously influence stocking policy, because the food supply of a water (without artificial feeding) is finite, and overstocking will lead to stunting - which the match angler may find agreeable, but which will ruin the specimen-hunter's sport. The general pleasure angler is least selective and most easily pleased, just wanting somewhere convenient to fish and the chance of something to catch, the 'anything that comes along will do' attitude. The types are not mutually exclusive, and can co-exist peacefully, but conflict can arise for instance when a

pleasure angler, not sharing the cautious camouflaged approach of the specimen hunter could unwittingly scare a large fish that the latter has been 'stalking' for an hour or more.

The different interests and expectations of these groups, as well as non-rational personal variations, mean that many different types and sizes of waters will be required. Some anglers prefer rivers, others prefer lakes, and the latter generally tend to prefer enclosed spaces, whether discrete water bodies, inlets and bays of larger lakes, or interlinked lagoons. Different species of fish survive best in completely different water environments, and breeding habits, times and requirements vary enormously. Probably only a small minority of anglers prefer very large, open waters, due mainly to the problems of fish-location that such waters present, especially if the angler is restricted to fishing from the bank. Trees, shrubs and 'controlled wilderness' are desirable along the banks, though convenient access to the water is clearly essential, especially for the match-angler who will require clearly demarcated 'pegs' which are the

sites from which competitors are allowed to fish.

Given the variety of demands and recognizing that most River Authorities and private owners prefer to deal with clubs (delegating control over behavious etc.) we would suggest that angling can be best catered for by as large a variety of waters as possible, both small (up to about four acres) and large, generally organised by local clubs or associations. Very large gravel pits, which will almost invariably have to be shared with other water-users, can be highly desirable fishing waters, especially for some specialists, as they both yield large specimens, and provide plenty of bank space for large competitions. But here an element of bank variety is essential, for large featureless straight stretches of bank present little interest or scope to the angler.

In my survey and experience, specialist anglers are generally willing to pay considerably more for their fishing than the other types, though all appear willing to pay more. Outlay on tackle for specimen hunters, match anglers and game fishermen vastly exceeds that of the other groups, and these categories will always outbid

other groups for waters etc. There is an observable, though in this instance not quantifiable trend towards more and more waters being closed to the public - observable particularly when clubs controlling waters stop issuing day permits and start to operate waiting lists for membership. Many clubs have waiting lists covering periods of at least five years. There is little water available to the novice and prices are rising rapidly. Despite some promising signs that more water is becoming available to the general public, usually an a season-ticket basis (see H.A.S. and Linesman, page 44), there is increasing pressure on waters: and although there may be a case for zoning between anglers, (fn.) this can initially only come via clubs, associations, and others in charge of waters because nearly all the fishing in the country is privately owned, publically-run reservoirs, lake and river forming only a fraction of the currently available supply.

The river authorities recognise this problem, but

(fn.) When asked what were the main problems facing anglers, after pollution and abstraction the respondents in my survey stressed TOO MANY ANGLERS and TOO FEW WATERS rather than competition from other water users.

are able to do little as yet to increase the amount of water accessible to the public. This increasing problem on the supply side has implications for forecasting - how much latent demand is unable to find an outlet at the moment? How much is congestion deterring would-be anglers? The ball is in the court of the local clubs (who tend to operate a closed-shop policy) and the associations (London Anglers Association, Birmingham Anglers Association and others) - and though the L.A.A. has recently opened its books to individuals (it used only to allow membership to people who were already members of associated clubs) the waters that it controls are spread throughout the S.E. and membership is only likely to appeal to the highly mobile angler, and the actual effect of such a move is very difficult to estimate. The angler joining the L.A.A. <u>individually</u> is already likely to be very keen, and to be mobile.

The questions of need for mobility, increasing pressure on resources, and rising cost place angling on a par with other water users. All ostensibly want clean water (though the discharge from some power boats makes

one wonder!) and all are facing pressure on the facilities they use - mainly due to thegrowth of the very recreations which they themselves enjoy. Different sports have different requirements, and the concept of carrying capacity is discussed later; but undoubtedly the use of zoning, and multiple and mixed use of facilities will become increasingly important. Thus there will be more need to plan for adequate provision of water recreational resources; and gravel pits appear already to be offering a desirable resource for anglers, and may prove more so in the future.

Since gravel pits first became part of the British landscape, they have been used, officially and unofficially for recreation. Most of the unofficial recreation has been fishing, for somehow fish of some sort, at first usually roach and perch, manage to find their way into wet pits, and these newcomers are soon joined by others either officially or surreptitiously put in. Many pits are now leased to fishing clubs and/or sailing clubs. The best example of this is probably the pit complex of the Lea Valley, where club activities have been growing since

before the Second World War (notably fishing in some of the oldest gravel pits round Cheshunt). The pressure that has been developed for the use of wet gravel pits was illustrated by an article in Anglers Mail (25.7.70) entitled 'Society purchase pit - with no water...' This referred to the acquisition, by Leeds Amalgamated Angling Society, of a wet-pit fishery of 20 acres, for which they had paid 'a high price'- with as yet no water in it; and it will not be developed for three years! 'We try to think ten years ahead in Leeds, because by 1980 it will be just about impossible to get new fishing in Yorkshire' - Mr. Harry Metcalfe, (president of L.A.A.S.) Pit Fisheries in East Suffolk are being purchased by the L.A.A. centred in London. Halls Co.Ltd. have a waiting list of sailing clubs wishing to purchase pits.

There has been much discussion of competition between water users, and certain fundamental conflicts have been noted, e.g. anglers and hydro-plane enthusiasts. But the average, non-specialist angler is apparently less concerned with other water users than with the angler-density on waters (source: Fishing Survey,

Appendix I). This is largely because he does not perceive the non-anglers as being in competition with him for the fish he is seeking to catch. Dick Walker, a regular columnist in 'Angling Times', and the most successful catcher of big fish in recent years (including the record carp of 44lbs.) is continually struggling to raise general angling standards, with little apparent effect. The contributors to angling publications are almost invariably specialists, which is hardly surprising, but this means that the attitudes and opinions of the majority are rarely voiced. It seems likely that whereas specialists are concerned about non-anglers sharing their waters, the non-specialist majority may not share their views. If multi-use is anathema to the specialist, it is less so to the majority; and whilst the price mechanism could be used to effect one form of compromise (Rodgers, 1969), voluntary time-zoning may offer more scope for amicable organisation of scarce resources.

We have already seen that the trends are towards larger pits, mainly wet pits (especially in the South-East), and to more and more use of existing water

recreation resources. The recent Lea Valley Regional Park Plan is an example of how pits which have been created in recent years can be comprehensively planned to combine with other recreation facilities to provide a progressively aimed recreation complex (Blenkinsop 1965; L.V.R.P.A., 1969). Work by Nottinghamshire C.C. on proposals for a major water sports complex at Holme Pierrepont, incorporating an Olympic Standard racing course, canoeing and water skiing facilities, are further evidence of imaginative reclamation and use of otherwise only poorly exploited resources (Notts.C.C., 1968,1969). But schemes of this sort, admittedly progressive, are still in some ways compensatory and for the time being necessarily and rightly so. But the time is surely ripe to adopt a more positive approach right at the actual formulative stage of mineral working policy. Contrast, for example, the quote Doubleday (p.12) with the more positive approach demanded by Lowe in 1967: "Whilst it is accepted that minerals can be worked only where they exist, there are areas within each mineral field where restoration or after-use is more certain than elsewhere and future operations should be systematically channelled

to such sites. The actual mineral extraction could then be thought of as a means of achieving the ultimate use of the area, which, if restoration to agriculture were completely impossible, could very often be developed to serve the increasing demand for leisure activities. In other words, the mineral exploitation, rather than being a producer of dereliction, would be an interim phase in, for example, the creation of a water sports centre, or a land-based sports complex. Instead of condoning dereliction we must insist on complete restoration or properly planned after-uses."

The scope for planned use of gravel pits is very great. Halls Angling Scheme, run by the sand and gravel company of the same name, started in 1968 and has steadily grown. Instead of leasing pits to clubs, Halls are selling permits directly to anglers on a season-ticket basis. Anglers can either elect to pay for a full permit and thus gain access to all of Halls' waters, or they can get a cheaper permit allowing access to one of the particular sub-regional groupings round London. A similar scheme, known as Linesman AC has recently started, selling permits for pits as well

as other waters. Holiday centres, based on gravel pits are extremely successful, as at Waveney Valley Lakes in Norfolk, where war-time ballast pits have subsequently been landscaped to provide the focus for a splendid caravan park. Halls are now actively incorporating consideration for future after-use of their pits for angling at the stage of applying for planning permission, and this type of development would appear to be satisfactory both from the industry's and recreation planners points of view. Whether or not it is enough to satisfy the ever-growing demand is another question altogether. Whether or not such a scheme as is being successfully operated by private enterprise is within the bounds of the planning process is also another question. Perhaps the role of the planner here is to understand and appreciate what is happening and act as educator to other mineral operators, pointing out the benefits to be derived from planned after-use of gravel workings. More important, however, is the co-ordinator role, bringing together via hitherto unrelated policies an integrated framework for extraction

of gravel and planned recreational after-uses of wet pits.

CHAPTER 3

THE SAND AND GRAVEL INDUSTRY IN ITS PLANNING CONTEXT

The sand and gravel industry, in terms of output, is one of the leading British 'growth' industries of the twentieth century. Output grew from two million tons in 1922 to 20.4 million tons in 1937 (Beaver, 1969). Further increases due to war-time demands and increasing mechanisation since the 1930's, when dragline and suction pump techniques had been introduced enabling wet working of pits, led to a spreading rash of pits, especially in the Thames Valley (fn.). Increasing land use, and planning conflicts, led in 1946 to the setting-up of the Advisory Committee on Sand and Gravel - the Waters Committee (Beaver 1969). This Committee reported first on the general nature of the problem, and was particularly concerned with means of filling in the growing number of wet gravel pits, mainly in the Thames Valley, and suggested ways of using different filling materials - rubble from

(fn.) Before the introduction of these techniques extraction had been confined to those seams or parts of seams above the water-table.

bomb-damaged buildings, pulverised fuel ash from power stations (as in the Trent Valley) and domestic refuse (fn.). The mood was 'anti-pit', concerned with filling pits as quickly and economically as possible, whilst admitting that there was some scope for the use of wet pits for fishing and other water-sports. Much of the reclaimed land was expected to be used for building, and perhaps this theme, and that of reducing dereliction (a theme that seemed to lie dormant during the 50's) were to be expected of a nation striving to recover from a long and costly war.

The Waters Committee examined the sand and gravel reserves of the country, and made recommendations for the areas for gravel working over the next 50 years. However, Waters forecast an average annual output of approximately 40 million tons, whereas output in 1969 was about 106 million tons (M.P.B.W., 1969). In fact, growth during the 1950's and 1960's, due to massive

(fn.) Following this suggestion a number of experiments were carried out by Egham R.D.C. in survey, proving quite hopeful. However, this work has not been followed up in other areas (Beaver, 1969).

increase in the use of concrete in the construction industry, greatly exceeded any anticipations, leading to constant upward revision of future demand, and increasing pressure on lands allocated by Waters for gravel working (e.g. M.P.B.W. 1964). In 1966 Barr could say that there were already over 1,550 sand and gravel pits in Britain, and that John Taylor of Associated Portland Cement Manufacturers had estimated that another 172,500 acres of gravel bearing land would be needed between that date and 1980 to meet the country's needs. Barr also noted that 5,500 acres of wet pits in 27 counties were already being used for recreational purposes. But 'the sheer size of future operations means that much more land will be scarred by active workings. This also means that there will be more derelict pits to deal with - even if the same proportion as in the past are restored or turned to leisure uses'(Barr 1969). This highly emotive, exhortory argument does not stand up to dose analysis however - much past dereliction has been due to weak and inappropriate planning controls, and

changes in planning, the sand and gravel industry, and both pit and recreation trends will allow for better, more positive planning in the future.

The tremendous growth of sand and gravel output has had obvious consequences for the organisation of the industry. When the industry began to expand, during the 1920's and 1930's many small firms set up, easily and cheaply obtaining land, unaffected by planning regulations, able to serve a rapidly growing market. There was something of a 'hit and miss' attitude to prospecting, and many early ventures failed due to poor seams, poor competitive position of operators and other reasons, but some very 'substantial profits were made, particularly in geologically and economically favourable areas'. Gradually 'the more successful producers acquired more pit and plant in the same or other areas. Economies of scale, vertical and horizontal linkages increased, so that by the time of the Water's Committee 4% of the firms were producing one third of the national gravel output (Wooldridge, 1950).

Although there are no corresponding figures available for the current situation, from discussions with planning officers in Essex, Suffolk and Norfolk it is apparent that the hold of the large firms has become much more pronounced and it appears likely that of the 33 firms in this area who are members of the Sand and Gravel Association of Great Britain (S.A.G.A.), about four or five are responsible for over 75% of the output.

Sand and gravel production is market oriented. There are many factors that the operator must consider before undertaking operations including: the size and nature of the deposit, location relative to markets, market forecast, available finance, local weather conditions, site obstructions, products to be produced, likely scheme of working, likely costs of acquiring the site/mineral rights, and availability (existing or potential) of planning permission. It is the relative combination of these factors which will decide whether or not any site is likely to provide a viable business proposition (S.A.G.A. 1967). Particularly 'clean'

gravel - that will not require extensive costly washing - can, for example, allow the operator to consider sites further detached than usual from the market. Generally speaking, however, transporting gravel over 15 miles will double the pit-head price. This effect can be reduced by double-hauling, i.e. carrying gravel in one direction and another material (possibly rubble from a demolition site) in the other. This is the case with large firms in Essex, with both vertical linkages with construction and demolition firms, and horizontal linkages with haulage contractors. Actual costs become difficult to assess because the different costs become obscured within the one company's books. In Essex there is an observable 'relay effect' with gravel from Central Essex being carried to Brentwood, and gravel extracted near Brentwood being taken into London.

The growing output of the industry has been accompanied by a reduction in total number of firms since the war, with the increased dominance of a few large companies. The general location pattern has been fixed largely by the recommendations of the Waters

Committee, and early 'wild cat'exploitation on a largely random basis has ceased. In the South East particularly the industry has tended to concentrate in river valleys, exploiting the best quality gravels, using increasingly mechanised production methods. Market areas have grown due to linkages, but the high cost of transport still has a very profound effect on the potential location pattern of industry.

We have already noted that any new extraction needs to have planning permission, and this has in fact been the case since the 1947 Town and Country Planning Act. Mineral working occupies a unique position in land use planning in that extraction is an essentially temporary phenomenon with site of works constantly changing. Unless the land is returned to former use (generally only possible in dry workings) the resultant nature of the land will usually be fundamentally changed. Planning attitudes have noticeably changed since the 1947 Act, and the approach of planners to the control of the industry has changed. Early control stressed the need for minimisation of dereliction and in the case of wet

pits the need to find suitable filling materials. Land could not be allocated on the development plan map for mineral working, other than that land which was already being worked or had planning permission, and consequently the operation of development control was forced to proceed without reference to any development map land allocations. The potential operator could not look to the map for land designated as suitable for mineral working, as could his counterpart in the construction industry. Individual applications were judged largely on local amenity grounds, depending partly on the case the mineral operator could present to justify his application - usually centred on demand and lack of alternative sources of supply. Any application for development that fell without the areas allocated by the Waters Committee was almost doomed from the start, despite Waters' urging that isolated pockets should be exploited if economically viable. The planning authorities were rarely in a position to argue with the mineral extractors over their judgement of alternative supplies of gravel because there was no information available

other than that supplied by Waters. An analysis of all applications for planning permission for sand and/or gravel working in East Suffolk between 1948 and 1968 showed the overwhelming dominance of local amenity considerations as the main reason for refusing permission. So long as the area was not failing significantly to satisfy local demand, and outstanding consents had not yet been fully taken up, the planning authority could argue that there was no case to be made for giving further permission. Indeed, other than in local amenity terms the planning authority rarely had any case to make. Whilst striving to minimise adverse environmental effects there was no positive attempt to influence actual gravel working. East Suffolk is not necessarily typical, but it does suggest the problems that a county authority can face when working in a situation of almost total ignorance about the phenomena in question.

The approach that was taken to mineral working generally was discussed in a report by the County Planning Officers' Society entitled Extractive Industries and Relevant Planning Conditions (1963). This report,

referring largely to the ministry publications relating to the control of mineral workings (especially M.H.L.G. 1960), stressed the need for flexible policies, especially relating to the granting of conditions. The report suggested that development control practice had previously fallen into three types:

" (1) The granting of a conditional consent in accordance with previously submitted plans and particulars.

(2) The granting of a conditional consent following the submission of a report or scheme of working and whereby the scheme and its provisions are conditional under the consent.

(3) The granting of a consent in principle whereby details of working and restoration are required as a condition of the consent."

Of these, the second method was preferred, as it was considered to be the most flexible, whilst from method (1) 'too rigid a framework will result' and method (3) was only favoured 'when difficulty in obtaining

detailed information at the pre-decision stage is experienced'. The main reason why flexibility was stressed was to allow for unavoidable economic and physical changes 'within the industry but more especially in the individual working.' The focus is clearly at the micro scale of control.

The sand and gravel industry was grouped together with those extractive industries which aaused dereliction by the production of holes, as opposed to those industries responsible for spoil heaps. The main problem was seen to be 'the shortage of filling material of the right type, available at the right time.' This attitude was hardly any progress from that of the viewpoint of Waters, still seeing pits largely in terms of dereliction, with solutions centred on land-use policies.

An important consideration was that of 'ultra vires' for conditions must directly relate to the development of land in respect of which the planning permission is granted. This may seem to limit consideration to that which is immediately relevant to the extraction of sand and gravel, but Paragraph 6 in the suggested draft wordings of conditions in the Appendix to the C.P.C.S.

report may well provide an insight into the scope that local authorities could have if they so chose, for this possible condition would relate the whole working to successive rehabilitation and includes the clause 'Concurrently with excavations being carried out in the land restoration shall be completed'. This paragraph is accompanied by an explanatory note 'Any special provisions required for restoration (such as permanent margins to Rivers required for after use as a sailing lake) can be added to Condition 6.' which suggests that it could, indeed, be within the scope of local planning authorities to specifically include conditions relating to recreational after uses. This point was not discussed in the main report, where concern for the future was directed at problems of supervision of workings and enforcement of planning control. The theme was that of control rather than development, of negating abuses at the local level rather than encouraging advantageous improvements.

The planning solutions that were attempted were essentially physical land use planning, trying to deal with an economic problem, and begs the vital question of

evaluation and quantification - how can national and local demand for gravel be evaluated against national and local agricultural needs, local amenity interests, and any other relevant considerations? As in the case of recreation benefits and costs the actual decision making process is working despite the lack of quantitative models, and is proceeding in its usual political manner. The Chairman of a county planning committee is perhaps more likely to be sympathetic to local amenity concepts than to an elegant cost-benefit analysis including acceptable margins of error for different discounting assumptions.

The state of knowledge that local authorities are in concerning mineral working varies considerably, as visits to departments in the study area, and glances at their files and maps can make perfectly obvious. Some departments are surely much better than others, and this is due at least partly to the organisational structure of the departments in question - a point which will be expanded in Chapter 5. Perhaps here

we can note that planning is at the moment passing through an apparent transition period. The process of 'development planning' is giving way to 'structure planning' (Chapter 4) more concern is being taken of planning issues at the national, regional and sub-regional levels (as seen by recent development of regional planning machinery - the Councils and Boards). Planning is attempting to broaden its scope, to concern itself more with the interactions of physical, social and economic activities, moving painfully towards a more advanced type of thinking than the largely negative land-use approach of the 1950's.

The 1960's have also seen an increased concern for the general quality of the environment. A growing and concerted conservation movement is today knocking loudly on the doors of the polluters and despoilers of rural Britain. The Civic Trust, journalists, academics and many others have increasingly publicised the problems that exist and the dangers that the country is facing in terms of potential future dereliction. 'Much' no longer 'equals brass', rather it equals an unacceptable attack

on our environment, and as such will be fought by every means available. Planners and gravel operators are becoming increasingly aware of this trend. Gravel operators, through their association S.A.G.A. are stressing the potentially beneficial after-uses of wet gravel pits (which are usually more conspicuous than dry because (a) they are generally in flat land (where machinery is a greater problem aesthetically), and (b) they are more difficult to fill in (eradicate). Planners are seeking both to improve past dereliction - though this is as yet not progressing fast enough by half, considering the grants available (Clark, 1969) - and guard against future dereliction.

The increasing demand for sand and gravel has slightly levelled off since the peak growth of 1964-6, and future demand estimates have been slightly lowered. This is not a cause for complacency, rather it is indicative of a recession, one hopes temporarily, in the construction industry. If the actual pace of growth has checked, absolute growth of the industry is large, and it is up to the planning authorities to control this growth through every means available to them. A larger, better organised sand and gravel

industry, more comprehensive planning machinery and the relationship between the two may in combination able to offer much more than the former diffuse industry and poorly integrated planning framework.

This planning machine and framework, however, are often only superficially understood. Many working planners never question their concepts and techniques, and the job they do is the worse for it. So before looking at the recent history of planning policies for the sand and gravel industry in the study area, and then going on to suggest possible ways of changing policy formulation, we move in the next chapter to a consideration of the very nature of planning policies. There have been many 'policies' in the past, and the word 'policy' has been used in different ways, so some clarification is needed before further discussion of the term.

CHAPTER 4

SCOPE FOR FUTURE POLICY FORMULATION

Town and country planning in Britain is currently being reorganised, with 'adaptive and flexible policies' (Cullingworth, 1970) set in an overall regional framework, replacing the outworn, largely negative land-use approach of the 1950's and 1960's. Both the local government structure and the role of the planning department within local government are likely to change in the 1970's. Recent legislation and ministry directives are aimed at changing the development plan system by means of the hopefully more positive structure plan/local plan system (M.H.L.G. 1970).

'Planning' is a universal activity, employed by many professions (e.g. 'military planning', 'business planning') and within the 'planning profession' at many levels:- national, regional, and sub-regional. Essentially goal- and future-oriented, it has no easy definition, but as practiced professionally by members of the Town Planning Institute (Britain), American Institute of Planners (U.S.), and others, planning can

be described ideally as 'a method of public decision-making which emphasises goal choice and rational goal - means determination'(Gans, 1968). This is a wide definition, and arguable, especially over whether planning, even ideally, could ever be 'rational'. The essential elements - 'public decision making', future orientation, and intention to affect that future - are covered. Comprehensive definitions of planning as an activity and as a profession are still not available, though much planning theory, by examining the nature of planning, has been concerned ultimately with clarifying the fundamental nature of planning.

Analytically there are two kinds of theory in planning: 'substantive', concerning those phenomena with which planning is concerned, and 'procedural', which relate to the nature of planning itself (Hightower, 1969), though Bolen (1969) has stressed the many links between the two, noting the delicate balance and feedback which inevitably exist between the process and substance of planning. Our definition of planning being placed in a pragmatic context

'planning theory' has been largely derived in Britain from practice, and has been practice-oriented. The bulk of 'procedural' theories have come from the U.S., where scope for planning practice has been more limited. There are profound differences in the history, institutuional and social contexts, approach, methods and concepts between British and American planning, and this has led to confusion over terms which are used on both sides of the Atlantic but not necessarily with quite the same meaning. Transliteration presents many problems, especially if the many differences (often slight) are not appreciated, 'Policies' with which this dissertation is concerned, may best be seen in the light of the different planning frameworks of the two countries, in relation to 'goals', 'objectives', ' strategies' and 'proposals'.

a) The Role of Policies in the Planning Process

Planning is probably best conceptualised as an ongoing process, as 'a set of procedures'(Davidoff,1962) which cannot be adequately described by one general theory, rather there are currently a number of partial

theories which in combination go some way towards covering the process of planning (Dakin,1962) Many procedural theories have concentrated on the public decision making aspects of planning and despite being normative rather than behavioural these have generally sought to analyse different stages in and components of 'the planning process' (e.g. Davidoff, 1962: Braybrook 1963). Terms such as 'goal' and 'objective' have been used loosely and interchangeably, leading to theorists such as Young (1966) seeking to add precision and meaning to the terminology describing the process. He differentiates between a 'goal' that is an ultimate direction and an 'objective' which is an achievable point which can be met in the partial achievement of a particular goal. This analytic distinction is widely acceptable, but is largely a function of scale and time, best seen probably as a working distinction which will not stand up to philosophical probing. Hill (1968) points out meaningfully that an objective is 'an attainable goal that has instrumental value in itself ..... defined operationally so that either the existence

or nonexistence of a desired state (qualitatively - defined objective) or the degree of achievement of this state (quantitatively - defined objective) can be established'(fn.). To Hill a policy is 'the specification in concrete detail of ways and means for the attainment of planned objectives. Thus a policy is derived directly from an objective, and relates to the effectuation of that objective, in terms of specific measures to meet that objective.

This view is not universal, for Chapin (1965) is able to recognise three uses of the term 'policy' (stated in terms of urban land use policies, but reducible to more general statements about the nature of 'policy'), these are:

1) General planning principles, formulated before planning development,
2) Part and parcel of a plan, whereby on the adoption of a plan specific proposals become 'policies'

(fn.) '<u>A qualitatively-defined objective</u> is one that following the execution of a course of action, is either obtained or not in terms of intuitive observation.
<u>A quantitatively-defined objective</u> is one that is obtained in varying degree, capable of measurement.

3) Statements of the directions in which planning (e.g. urban land uses) should proceed.

These are types rather than classes of meaning and should be treated as such, but clearly each will have different implications for the role of 'policy' in the total process. Chapin himself regards these as all contributing to a valid definition of 'policies' which he considers are 'guides' and 'decisions in principle' which direct the process. Policy formulation will proceed from the general to the particular, coming in at all levels of the process; thus 'policy' and 'objective' are not mutually exclusive terms, much as 'goal' and 'objective' are not necessarily mutually exclusive. Chapin's definition is normative in that he needs to make his own defined meaning clear before proceeding to further description and discussion; his typology of meanings was behavional in that he was describing how 'policy' has been used in the past. With a view to future policy formulation, one clear valid normative statement is probably of more use than a number of equally valid but conflicting behavioural observations.

Planning in Britain has until recently steered clear

of the terms 'goal' and 'objective' and before the work of McLoughlin (especially, 1969) theories of planning method had been very little explored. McLoughlin carefully distinguishes between the two; but his discussion draws almost entirely on the American literature. Recent academic work and planning studies have differentiated between the various parts of the planning process, but apart from cost-benefit analysis the whole of Roberts' recent article in Official Architecture and Planning (Roberts, 1970) is derived from American work. In the British legislation and ministry directives one is hard put to find the terms 'goal' and 'objective', rather in the manual on the form and content of development plans (M.H.L.G., 1970) we find the terms 'aims', 'strategy' and 'decision'.

'Aims' which are intentions, generally long-term, which underlie the development plan' appear at first to correspond with the concept of a goal. If this is so, then there is no equivalent to 'objective' as a decision is the 'determination of a course of action which is usually expressed in the development plan as an aim, strategy, policy or proposal' and can thus refer

to any level of the process, from the general to the particular. 'Strategy' supposedly co-ordinates the 'aims', and from it are derived policies and proposals, so perhaps we would do better to think of 'aims' as objectives, for the chapter on the form and content of structure plans refers to aims in terms of what are essentially objectives, which 'derive from the authority's general intentions to create an efficient physical structure and a good environment'. The problems of definition are due to scale and time-perspective. The conceptual problems come down generally to the use of inexact concepts which do not quite meet reality, which describe rather than explain, which simplify rather than analyse.

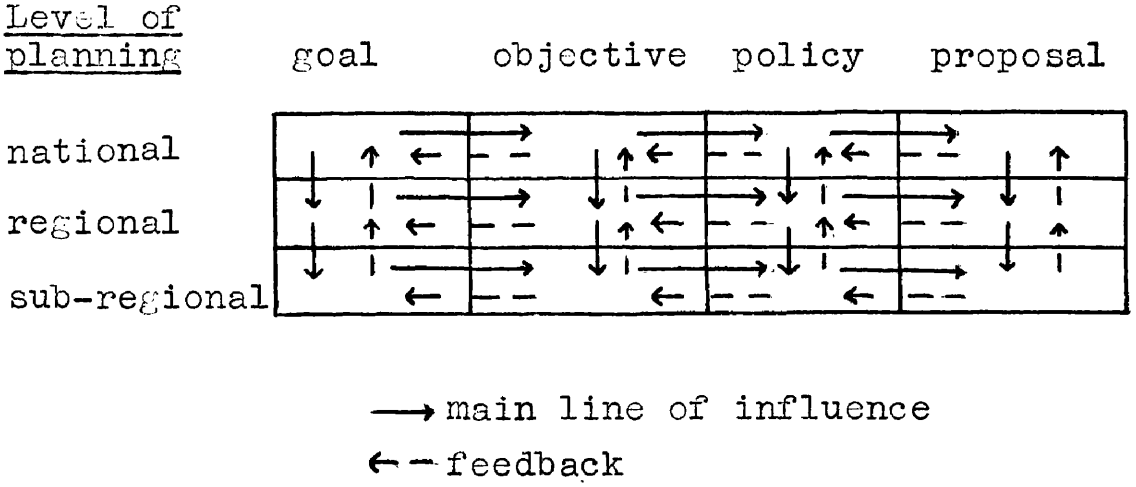
The manual uses 'policy' to mean a 'chosen course of action, in pursuance of an aim, which guides a continuing process of decision-making' while a 'proposal' is a 'chosen course of action, usually for the development or other use of land'. Thus a policy evolves from an 'aim' via a 'strategy' (co-ordinating 'aims'), and is

thus 'goal-oriented' decided after the explicit goals, which it is the planning authority's duty to state and explain (M.H.L.G., 1970, p.28). The proposals thus bear more resemblance to Hill's 'policy', being specifications 'in concrete detail' whereas the manual definition owes more to Chapin and to the thinking of the Planning Advisory Group (1966), calling for an essentially dynamic process, capable of influencing change, yet aimed at specific objectives. If there is no terminological breakdown in the manual, and 'aims' can be regarded as 'goals' and/or 'objectives' this is perhaps no serious drawback, and the interpretation of 'policy' is goal directed, continuous, and always relating to more general propositions. As in Chapin's definition there are as many levels of 'policy' as there are of 'planning', successive policy levels deriving initially from superior levels of policy formulation, and in turn feeding back to influence higher levels.

The successive levels of planning and stages of the process inter-relate in a complex and systemic fashion, and the numerous inter-relationships, can be

expressed in diagrammatic fashion, in a matrix combining 'level of the process' and 'level of planning':

Stage of the process



This illustrates the complexity of the many relationships that exist, and the problem is not made simpler by ambiguities deriving from the terms 'aims' and 'strategies' in the manual. However, theoretically and practically in this dissertation the manual definition of 'policy' is accepted. Whilst reserving that more consideration could have been given to the concept of 'aims' which any particular policy will be pursuing, a wide interpretation of this usually to mean 'objective' rather than 'goal' allows considerable scope for 'policy'. Whereas a policy is not a specific proposal

or set of proposals, such proposals as are made will relate directly to policy, and be instrumental in the carrying out of such a policy; and the effect of such proposals should feed-back and influence successive policy decisions which will be further implemented by later proposals. It is a question of scale which decides 'whether particular measures in the structure plan should be expressed as proposals relating to particular areas, or whether they should be expressed more generally as policies' (M.H.L.G., 1970) and will vary with authorities and their different problems. The 1968 Act does not as yet apply to all authorities, but will increasingly do so, and the difference between policy and proposals should become important, because policies will be set out in the structure plan along with 'general proposals', and specific land-use proposals will not come in until the preparation of local plans (including 'subject plans').

The policies set out in the structure plan will be translated into proposals in local plans; some subjects, such as mineral working may be deemed more suited to

'subject-plan' treatment, by which proposals will be made covering parts of a wide area, performing the usual local plan functions (fn.).

Policies are instrumental statements of intention, initiating and co-ordinating at the local level specific proposals. National and regional policies will influence policies at the county level, and these will eventually filter down to specific action proposals. Thus national demand for minerals will be considered, as will local factors, national and regional recreation needs will be translated into land-use and other proposals. The different levels of policy and problem will interact to produce specific proposals in local plans (or more likely 'subject plans'). The way in which different levels of planning, policy and problem interact is the crux of the question of the formulation of policy; and the way policies for different considerations - mineral working and recreation - can be brought together is the focus of this discussion.

(fn.) The four main functions of local plans are
(1) to apply the strategy of the structure plan
(2) provide detailed basis for development control
(3) provide a basis for co-ordinating development, and
(4) bring local and detailed planning issues before the public.

b) The problem-relating policy for sand and gravel working to recreation policy

The first and recurring problem in relating policies for mineral working and recreation via the provision of wet pits for recreators is the time lag between the formulation of such policies and their effects 'on the ground'. A policy relating to existing wet pits and their utilisation could be rapidly translated into proposals for particular courses of action, but policy relating to future gravel extraction will not result in the creation of fully useable wet pits for at least five years, and in many cases substantially longer. Meanwhile existing pits being worked, with planning permission, will not be abandoned, and may in many cases expand even though they are unlikely to produce wet pits at all in the future. Thus even if an authority decided to concentrate on only allowing workings likely to produce wet pits in the future, existing permissions, their likely extensions, considering the average life-span of gravel pits, may mean that the policy would have no effect for

at least ten years. Such a policy may well be progressive and ambitions but the recreation facilities could be (and are) needed much more urgently than this could provide for.

The actual working life of pits is important for another reason. Most objections, from planning committees and the public, boil down to issues of amenity, relating to the many forms of pollution caused by gravel workings - air (dust) water, visual, noise. The eventual provision of a landscaped lake, visually attractive and safe to use, will not alleviate the interim disturbance caused to residents during the actual period of extraction. Arguments based on the grounds of spreading dereliction may be effectively countered, and longer-term interests satisfied, but the short term problem would remain unsolved.

The next main set of problems relate to forecasting - national and local demand for sand and gravel and for recreation facilities. We have already demonstrated the growth of both demand functions through the present century, but the actual rates of growth for the future

are uncertain. The difficulties in estimating any 'demand' for recreation have been discussed already, though 'guesstimates' can be made, and there is no evidence at all to indicate any slackening off in the 'demand' especially for water-based recreations. The demand for sand and gravel has grown rapidly, and estimates of future demand were constantly being revised up from the end of the Second World War through to the boom growth of the mid-60's. But the growth in production has slackened off slightly over the last few years, and estimates have been revised down for 1975-81. Absolute growth is still predicted, but the rate is decreasing. A building boom could change this of course, but further recession could intensify the slackening off and even lead to declining production. Either way policy must be flexible and ready to adapt to changing circumstances. While we can confidently expect any wet pits produced to be fully utilised by recreators eventually, in the meantime recreation demand may well greatly exceed available supply and to pin excessive hopes on the future provision of wet pits may lead to severe short term shortages in supply of

recreation facilities. Many new wet pits are being created anyway, of course, and there is still scope for improvement of existing wet pits (L.V.R.P.A.,1969; Notts.C.C. 1968,1969) but it seems likely that other sources of recreation facilities may need to be found especially as our reserves of valley gravels are finite. We must note here, too, the increasing trend towards the excavation of marine and estuarine gravels, which, if it continues to grow, could lead to further diminuition of the potential supply of new wet pits.

Next we must consider the institutional and legal context of mineral working and recreation planning. The planning authority cannot require the mineral operator to put the land to any specific use after extraction of sand and gravel. The operator has often been required to leave the land in a condition comparable to that in which he found it, but this was of little use for the type of policy discussed here, where it would be the intention of the planning authority that the land should not return to former use. In the case of mineral working, what is effectively given is not permission for one change of use but two, (1) from present (e.g. agric-

ultural) use to mining operations, and (2) from mining operations to former use or other acceptable use. Thus if so desired, permissions could be given only for land expected to produce wet workings and conditions framed such that the mineral extractor had to leave the land suitable for recreation, e.g. by prudent use of landscaping. These conditions would have to be worked out between the mineral operators and the planning authority, and would constitute an important 'backstage' element in the effectuation of policy.

Depending on the level of generality of the policy, the problem of quantification will be of importance. This is more pronounced perhaps at the 'proposals' level of the planning process, but even so we must recognize the difficulties existing in any calculation of the likely number and size of pits which could be produced by alternative policies - partly at least doe to our current ignorance of the extent and nature of gravel resources. For instance, the general policy relating gravel working to recreation would still

be refined and applied to particular areas of specific river valleys, without proposing specific sites for mineral extraction. Changes in the height of the water table are crucial, and important too are drainage considerations, as new pits are likely to link up with existing water sources, and affect local river regimes.

Policies for the working of sand and gravel will only achieve partial overlap between the fields of sand and gravel and recreation because many other factors and interests are involved. Many of the variables influencing policies are inter-related:- socio-economic variables affecting recreation (higher real incomes, mobility, leisure time available) are interdependent with the state of the nation's economy, which directly and indirectly influences the construction industry. This generates the demands for sand and gravel, thus affecting the industry. Furthermore, both the internal working and planning control of the sand and gravel industry have in the past fortuitously provided recreational facilities, whilst the industry was often

attacked by the very recreators and home-occupiers whom it was indirectly serving.

In a situation of change, with changing technology and life styles, the exact nature and causes of change may be unquantifiable. Cause and effect are often cyclic, and we must recognise the fundamental nature of inter-relationships, of systems of interaction. In his discussion of the nature of the planning process, derived from Chapin's cycles of 'behaviour patterns' (Chapin, 1965, p.33), McLoughlin (1969) describes the 'planning cycle' which consists of five parts: (1) 'the decision to adopt planning', (2) 'goal formation and the identification of objectives', (3) 'possible courses of action are studied', (4) 'evaluation of these courses' and (5) 'action'. Then, 'as the process goes on it becomes clear that we must ..... (6) review the plan and its control mechanisms'. Attempting to control the complex system with which we are dealing we must plot 'a trajectory through time', continuously monitoring the system. This continual review is essential, as

actual events feed back and inevitably influence the next successive set of system inputs.

Control must be continuous, especially in the case of mineral working where the pattern of land using activity is constantly changing, and so the 'heart of the matter will be development control', for this is how the immediate developmental land use process is operated and regulated. Policies will most likely come in 'bundles', mutually leading to an objective via action-oriented proposals affecting 'changes of state through time' (McLoughlin 1969). The variables which need to be considered, and their interaction within the system, are of crucial importance in the manipulation of that system.

c) The significant variables

There are many variables to be considered here, and despite many external and internal relationships between these and other variables, four main sets of considerations appear to be of significance. These are (admittedly conceptualised in economic terms):-

i) demand for sand and gravel,

ii) supply of sand and gravel,

iii) demand for water recreations, and

iv) supply of opportunities for water based recreation.

Taking these in turn we see first that the demand for sand and gravel is a function of the economic and technological state of the construction industry. Currently gravel production is co-variant with housing and road construction, and would appear likely to remain so into the foreseeable future. Fluctuations in the state of the industry will affect demand for gravel, and gravel operators cannot easily overcome this by continued stockpiling as large quantities of relatively low value material would soon incur costs above the benefit to be derived from smooth working. Unless steady income can be maintained, stockpiling can at best be a short term manoeuver. Technological innovation in the construction industry (e.g. by the utilisation of plastic in concrete production instead of gravel) could reduce gravel demand; this, at the moment

however, seems unlikely. Demand will probably be less rapid than anticipated in 1966 after the National Plan, as recent estimates suggest.

The supply of gravels and sands is obviously related spatially to areas where the minerals can be found, but as was illustrated in Chapter 2, the nature and extent of gravels is often uncertain. The demand and hence amount needed will influence supply because as demand increases previously uneconomic seams may become economic, or output in certain areas can intensify. The effect could be spatial (dispersion of production) or basically aspatial (intensification of production). In any case, between demand and supply come a host of intervening variables. We must consider the economics of the firm engaged in extraction. With a low value: quantity ratio goods like gravel, there is a strong market pull due to transfer costs. The size of the firm and amount and price of mineral-bearing land will influence the economics of production in different areas, also the location of the operation will influence costs; capital, production and transport

costs will vary between cases and influence again the competitive nature of different locations and situations. Price of land will vary greatly, depending on whether the land is valued at agricultural, gravel, or urban land use prices. Social costs will also need considering as gravel working almost invariably affects amenity; everyone wants gravel to be produced but no-one wants production near their homes. Despite the obvious conflict here between public and private interest - one of the many causes for planning - this does constitute an influence pushing gravel working away from any suggested areas, both in rural districts where amenity and conservation interests are strong, and urban districts where the sheer mass of people affected by any one proposal can constitute a strong local pressure group. Another force propelling gravel operations away from urban areas is the effect of the land market raising land values and thus pricing the mineral operator out of the market. The land market effect can be overcome by planning controls, as local planning authorities have statutory responsibility to

guard against the sterilisation of gravel bearing land.

Naturally, supply and demand inter-relate, and both affect the economics of production. Social and economic constraints and opportunities vary between areas and the interests and values of different communities; different combinations, resolved through the political and planning processes (again parts of an integrated system) will tend to lead to varying physical distributions of the phenomenon. But the general trends already observed in Southern England at least are (i) increasing development of pit-complexes (Ch.2), (ii) growing proportion of wet pits, and (iii) increasing pit size. Policies influencing these have and will take account of the continuing need to supply minerals at economic prices and all that this entails with consideration of the economics of production, and local considerations notably amenity, also resultant worked-out pits that are either filled in or landscaped to minimise dereliction. Any wet pits so produced will be largely fortuitous.

The supply and demand of water recreation and its facilities are obviously linked considerations. 'Demand' in the economic sense is difficult to assess, but current

trends show it to be rising rapidly, co-variant with socio-economic factors, notably mobility, income, leisure-time available and education. Recreators are more mobile than the population as a whole and are often willing to travel quite long distances to enjoy their sports. In general the more specialised the recreation the greater is the propensity to travel and spend. Thus angling will be restricted by the amount of available (and/or known) opportunities available. Constraints include restricted access due to private ownership, and to rules which prohibit angling in many suitable reservoirs. The supply of rivers is finite, though much could and is being done to improve the quality of rivers, e.g. the work of the River Authorities and bodies such as the Anglers Co-operative Association. Growth in the supply of rivers is physically limited, though increasing mobility and 'weekend' recreation trips could well enlarge the hinterlands of currently little-used rivers. More scope for addition to our stock of waters lies in the creation of new reservoirs and gravel pits, especially in the relatively poorly-supplied S.E. The creation of waters purely for recreation is rare and the few cases that

do exist are all of lakes designed for fishing (e.g. Davison, 1965) and these are usually small trout lakes. In general, demand is outstripping supply, especially around the major urban areas, and it is the opinion of members of Essex River Authorities 'Fisheries' section that gravel pits have already played a major role in meeting recent demand increases. Without the county's pits, there would have been severe shortages of angling waters (source: private correspondence and discussion).

In any real planning situation policies should only be meaningfully discussed in the light of specific goals and objectives; and whilst this is recognised it is not the fundamental concern of this dissertation. For we are in effect simulating a situation where goals and objectives have already been chosen including the goals of efficient resource use and maximisation of recreational opportunities. We must minimise conflict between these goals whilst pursuing an objective of providing wet gravel pits to be used for recreation. Policies must be chosen to fit this objective. (Although

it could be argued that this 'objective' is in fact a 'policy', in practical terms this would be trivial, and in any case the policies would be broad land use policies and not proposals for specific plots of land, thus fitting the manual's concept of policies exactly). The objective could be stated in quantifiable terms, but given the uncertainty of the many variables this is clearly unrealistic, and so qualitative terms would appear to be preferable, set in a context of 'guesstimates' relating to future demand for gravel and recreation. Simulation of alternative predictions based on different assumptions would be valuable for the monitoring of ongoing charges through the implementation of these policies.

The trade-offs are basically locational, affecting the spatial organisation of the sand and gravel industry though it must be remembered that the non-spatial aspects of the industry are important and will be affected by location (e.g. labour supply, land costs). Assuming initially that the industry tends to locate not 'optimally' but 'satisfactorily' how far from current levels of satisfaction would policies designed

to increase the supply of wet pits push the gravel industry? If costs were increased, who would and should pay for this - the gravel operator, recreator, or general public in house costs?

Would such a policy significantly affect the costs of the sand and gravel industry or would it include greater potential benefits? Are there locational advantages for recreation facilities? Clawson demand curves suggest that recreation facilities benefit from being near large centres of population i.e. a market-oriented location - which is the same for the sand and gravel industry.

The question of scale, lastly, needs to be considered. For policies relating sand and gravel to recreation can be formulated at all levels of the planning process, from national to local, and down to specific land use proposals. Policies, as implemented by development control, will work down to the micro-level, influencing the very form and nature of the pits produced. To be effective the different levels of policy must interrelate to produce a coherent frame-work for the operation of development control at the local level, for this is where such policies will

operationally meaningful, this is where they will stand or fall.

CHAPTER 5

CHANGING POLICIES IN THE STUDY AREA

The last chapter was concerned with planning policies and mineral working largely at a general theoretical level, and noted that we are dealing with a situation which is characterised by change rather than by stability. A few areas of change were mentioned, and the planning context of the significant variables influencing the planning process was discussed. Here attention is focussed on a specific area, and an empirically based analysis is put forward suggesting how mineral working - in this case sand and gravel - has been accommodated by the local planning authorities.

The area under discussion comprises the administrative counties of Essex, Norfolk, East Suffolk and West Suffolk, and includes the county boroughs of Gt.Yarmouth, Ipswich, Norwich and Southend-on-Sea. These administrative authorities are also the local planning authorities in the area, while regionally Essex and Southend are part of the South East England Planning Region, and the other authorities fall within

the East Anglia Planning Region.

In a predominantly rural area, the greatest concentration of population and economic activity is in South and South West Essex, from Southend through the Thames-side 'corridor' to to North London, via Brentwood, Epping and the Lea Valley to Harlow. Throughout the rest of the area the population density declines progressively to the north, with some very low densities in rural Norfolk, but with slight increases along the north Norfolk coast. Concentrations of population occur in the major towns and cities - Ipswich and Norwich (around 120,000 each), Colchester, Gt.Yarmouth, Chelmsford and Lowestoft (approximately 50-60,000) and Felixstowe, Braintree, Kings Lynn and Bury St.Edmunds (20-30,000). These large settlements are all market towns, ports and/or resorts, and much of the study area's census 'rural' population is concentrated around the settlements and only classified rural because of administrative boundaries; indeed of the total population in the study area of about 2¼ million, at least 75% can be classed as urban. The pattern, with the exception of S.Essex, is generally one of an evenly distributed rural

population (the 'rural' element of which is declining) with high concentrations at market towns and on the coast (Fig.2 overleaf). The East Anglia Planning Region has the fastest population growth of the regions in Great Britain, with the population of West Suffolk, for instance, growing by 15.7% between the years 1963-68, representing a total increase of 22,000 people (W.Suffolk, 1968). The majority of this growth, due both to natural increase and high net migration gains, is concentrated either in the towns or immediately adjacent 'rural' districts. These latter districts, in fact, containing villages in easy commuting distance of the main urban centres throughout East Anglia, are exhibiting by far the highest rates of growth in these areas, with only coastal districts coming anywhere near to the same growth rates (E.A.C.C., 1968, 1969).

Planning in the area has almost wholly been done at the level of the eight local planning authorities mentioned above, though some efforts are being made at higher level, regional planning. The whole area was covered by the South East Study (M.H.L.G. 1964), but

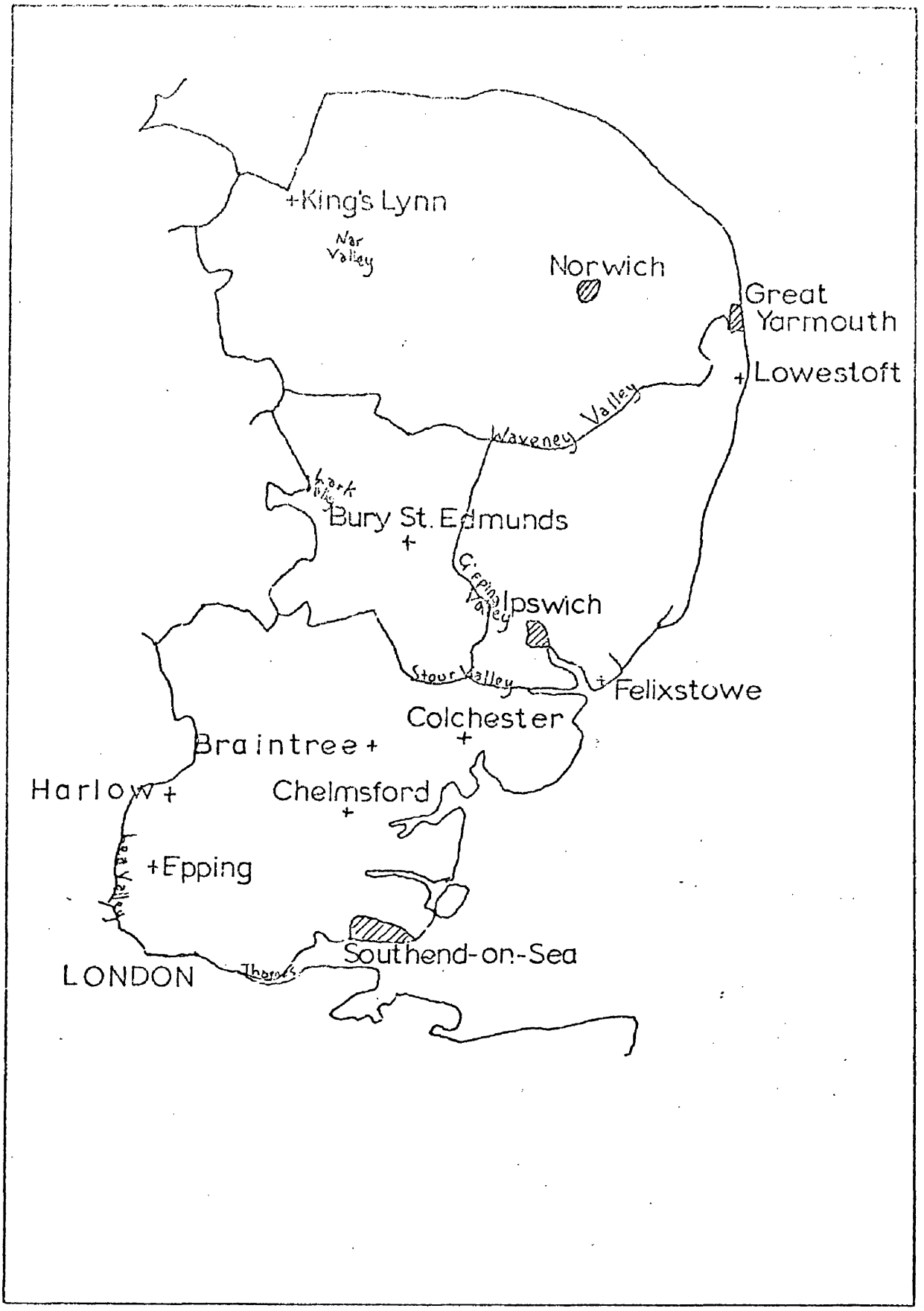


Fig.2, Main Towns in the Study Area

subsequent designation of planning regions divided the area, with Norfolk and Suffolk (East and West) joining Cambridge and the Isle of Ely, and Huntingdonshire to form the East Anglia Planning Region, whilst Essex fell into the South East England Planning Region (fn.). Progress at the regional level has been more rapid in the S.E.region, due both to the more pressing major problems in that region, and the progressive Standing Conference for the South East which initiated much early work on regional planning in Britain. Different regional problems and their interpretation will be discussed later to help explain the different policies that have grown up within the study area regarding the treatment of sand and gravel at the local authority level.

Information on the sand and gravel industry is in general sparse and superficial, usually limited to S.A.G.A. publications (e.g. Boorer, 1959; S.A.G.A.,1967). There has been little work done on the industry 'per se' and this general point is equally valid in the particular study area. Moreover the planning authorities (here

(fn.) The S.E.England Planning Region comprises Greater London, Essex, Kent, Surrey, Sussex, Hants, the Isle of Wight, Berks, Oxon., Beds., Herts., and Bucks.

referring to the County Planning Authorities) have published little pertaining to the control and development of the industry. Thus in order to find out anything about the relationship between planning and the sand and gravel industry in the area it was necessary, as a first step in the process of data collection, to visit individual planning offices and interview officers responsible for, or at least concerned with the industry in their respective counties. A useful second step would undoubtedly have been to interview gravel operators or their representatives, but considerations of time and cost unfortunately precluded this line of enquiry. Correspondence with S.A.G.A. was of help, but mainly served to highlight further the desirability of contacting individual operators.

Much useful information was gained, however, from structured interviews with the planning officers concerned. Discussion ranged widely, but was focussed by the use of a prepared outline questionnaire, filled in by the interviewer (Appendix II) It was suspected beforehand that this method would be superior to postally circulated questionnaires as complicated

follow-up questions could be asked, and new lines of enquiry be followed up in the less formal face-to-face situation. In practice the method proved highly successful both from the point of view of data collection and from the chance to meet the individuals concerned, discuss their attitudes, see the working organisational structure of the different departments, and the types of information they had readily available for their own use. Much of the information presented below was gained from these interviews, and reference will generally not be made to particular interviews, rather they will be viewed comparatively. Where the argument is derived from sources other than the interviews, then this is, of course, acknowledged in the usual way.

We have already discussed the changing context of (1) town and country planning in Britain, (2) the sand and gravel industry, and (3) recreation, and for a number of reasons closely associated with these changes, it is deemed appropriate to divide the following discussion of planning policies in the area into two broad divisions, the first dealing with the position up to the mid 1960's, and the second part looking at more recent changes in

policies. These two parts will then be drawn together in the final chapter, where they will be related back to the general and theoretical discussion contained in earlier chapters, and a synthesis and projection will be attempted. While recreational considerations are not discussed at length here, they will be examined in relation of changing planning policies in the final chapter.

Control of Sand and Gravel 1945-66

The development plans of the four local authorities were prepared in the light of post-war 'anti-pit' feeling, concerned largely with the preservation of amenity, in all cases limiting gravel extraction to the areas recommended by the Waters Committee. This had the immediate effect of stopping speculative dispersed extraction, and helped to focus extraction down to particular areas. But we have already noted that none of the counties could designate land which did not either have existing workings or planning permission, thus the Essex development plan written statement (1957) typically contained no policy for the development of mineral workings, and was concerned with control by reference

to the Waters Committee, notably on the issue of safeguarding certain high value agricultural land from development although it lay within the gravel area of eastern London. Indeed, this development plan contains no policy for future working other than the negative proviso regarding agricultural land, and brief reference to the need to consider minerals along with other local issues when local programmes are worked out. East Suffolk in their County Development Plan, amendment No.3 (1961) could only state that the development map showed areas of workings and permissions, and that 'it is recognised that more land may be needed for the working of sand and gravel during the period of the plan. Planning applications for this purpose will be considered on their merits as they arise, in the light of the recommendations of the Advisory Committee on Sand and Gravel' (Waters Committee). West Suffolk claimed to have a 'policy 'for mineral working, but this was again treating each case 'on its merits' (which are never actually analysed) and effecting development control regarding local amenity and agricultural considerations.

The approach throughout is negative, control-oriented, with no policy relating to specific, stated objectives - though by inference the one dominant objective underlying these policies is the need to meet gravel demand, with the subordinate objective of keeping dereliction down to a minimum. However, by the date of the East Suffolk plan cited above sand and gravel output, both nationally and locally, was proceeding at approximately double the rate predicted by the Waters Committee (M.P.B.& W. 1968).

The Waters report had urged local planning authorities to allow extensions to existing workings wherever possible in order to economise on existing infrastructural investment, and to reduce the spread of dereliction. This recommendation was generally followed, and in the light of increasing demand it is clear that the resultant large pit-complexes are the inevitable result (along with great increases in the size of finally worked-out pits). This development was neither desired nor anticipated and though it has not necessarily turned out to have particularly adverse

environmental effects (in fact potential advantages for recreation are often thus enhanced) it is this sort of unexpected effect which the planner should try to anticipate and control. The full spatial implications of this policy were largely ignored, and the approach was one of accepting the inevitability of mineral working, and then trying to ameliorate the worst local effects of the industry. The macro-scale demand considerations and micro-scale local issues were considered, and intermediate regional and sub-regional dispersion largely ignored.

That there is little in the Development Plan of the authorities to suggest positive policy formulation for sand and gravel is due to the limited information available to the planning authorities, the greater urgency of other problems, limited powers of intervention, and not least to a general lack of concern over the continuing growth of the sand and gravel industry throughout this period. The Advisory Committee had not foreseen this growth, and its land reserve recommendations were not based on such growth, yet local authorities, supposedly in possession of data pointing

out real ongoing changes, did not see fit to incorporate this real change into their development planning. Thus working in a fundamentally negative development plan framework, development control was hardly likely to be the agent of a more positive approach. Considering also the fairly high turnover of staff in the various departments, with those initially responsible for 'policy' moving on and others taking their place, whilst all the time the problem was changing, we conclude that 'policy' fell into Chapin's 3rd. category:

'Statements of the directions in which planning should proceed', but that these directions were vague and largely meaningless unless redefined operationally. No goals and objectives were set up, and the approach most closely represents 'marginal incrementalism' (Braybrook, 1963) - with partial solutions being offered to problems as they arise, with little appreciation of real long term trends of change - rather than by conscious efforts to assess and plan for such change.

The effect of such poorly formulated policies was to leave those operating development control in an a wkward position, largely unable to question any of

the 'facts' put before them by operators relating to yield, gravel quality and other operating concerns. Although operators were restricted to Waters' areas, the counties had no knowledge of likely yield in different parts of these areas, and so were able to offer no alternative sites to applicants when they wanted to refuse permission on grounds such as amenity. Arguably, however, the lack of policy and direction has not had profound, serious effects on the environment, due to a number of ways in which the policy has been interpreted and implemented. First, the very lack of clear direction, and the general restriction to the Waters areas meant that arguments against particular applications that the County Planning Officer strongly objected to could be focussed on amenity issues. Thus strong local interest and feeling could be generated, and it is certainly issues of such local importance and immediate appeal that tend to gain the sympathy of local planning committees who are, in general, very hard on mineral working. This is understandable on two grounds; first mineral working

clearly often has adverse effects on the environment in both the long and short term, and second, in a more cynical vein, the effects of mineral working on the countryside are easily seen and conceptualised. Mineral working is thus a topic about which it is superficially easy to form an opinion, and then state prejudices. Compared to some of the more sophisticated concepts that may be put to planning committees, and the many more routine and boring considerations, something like mineral working can become an interesting discussion point about which any councillor can speak with confidence in his own knowledge. The human element at the level of council committee discussion must at least be considered in this discussion of planning decisions, for to a certain extent the approach and recommendations of a planning official are likely to be influenced by his interpretation of the likely mood of the planning committee. A good planning officer will be able to utilise such knowledge to his (and thus hopefully the public's) best interest - an application, perhaps, of Professor Grieve's thesis that planning is 'the art

of the possible'. The argument followed by the local planning committee might go something as follows.... 'Applicant X wants permission to extract gravel at place Y in the eastern service area of county Z but this is good farmland, next to an attractive village and only served by a small, finely wooded lane. Surely there are other places in the county where this demand could be met? Then any other area on the far side of the county might be chosen at random. This is undoubtedly a highly simplified and generalised account, but it does at least draw attention to the type of analysis likely to be undertaken at this level.

This sort of question is hardly answerable as such. for the mineral extractor can hardly be expected to put down bores throughout the country due to the cost, and the planning authority certainly will have no such information. If permission is refused, and it is local amenity issues, which as usual, win the day, then the mineral operator could either appeal, submit a modified application, or give up and try again elsewhere. There is no clear and objective way of assessing such

applications, and although there was no clear aim in sight, the worst offences were usually deterred:- vagueness was used as a weapon by the planning authority instead of constituting a loophole for unscrupulous developers. However, on the grounds of efficient resource use it is wasteful to go through the business of trial bores, application, appeal and so on, only to be turned down in the end. A clear policy indicating areas where permission is most likely to be given (local demand estimates permitting) is surely of more use than vague non-committal statements which really say very little about what is likely to happen. These points particularly refer to the three northern counties for reasons which will be discussed later. Essex has not been quite so generally concerned with amenity considerations as the others. The general problem was that with little knowledge of the 'land use' they were dealing with, an inability to designate particular land on the development plan county map for future mineral working, and an ever increasing demand for gravel the planning authorities felt obliged to leave themselves as many open options as

possible, to make the best of a bad job.

The actual implementation of development control, at the beginning of this period, was in all cases delegated to the level of area committees responsible for control only within their own areas. Most counties had 3 or 4 sub-areas, and local officers recommendations on specific applications went before the local area committees for approval or refusal. Clearly there was much liaison between officers in individual counties, but there were no mechanisms for integrating decisions, separate areas largely going their own way. Thus we could get the situation described above, with local areas competing with each other to keep mineral working out. The general policy was effectively being operated in some cases via the conflicting interests of the lowest level implementors, and but for the statutory requirement for local authorities to provide sand and gravel, we can be certain that very little permission would have been given in Norfolk and Suffolk, and then only after long and bitter arguments.

From one point of view the most satisfactory situation was when operators came to the local planning

authority before applying for planning permission and unofficially worked out agreeable solutions before submitting their applications. During the period 1945-66 this was at first rarely the case, but both sides came to see advantages and there was an increasing tendency towards unofficial collaboration during the early 1960's. This tendency is actually one of the changes which can be described as a difference in degree becoming a difference in kind. Fewer refused applications and smoother operation of development control have resulted. The other side of the coin is that this kind of liaison, however beneficial, does to some extent go against the contemporary mood demanding greater citizen participation in the planning process, as it hints at secret deals being made between operators and planners, however well-intentioned and scrupulously honest they in fact have been. This may well be a case of justice needing to be seen to be done.

Though we have noted little difference between the general natures of the original policies for sand and gravel in the separate local planning authorities, there were in fact substantial differences in the nature of the

supply and demand for gravel throughout the study area. Essex has by far the greatest output and unlike the other counties has been aware of playing a regional role in the production of gravel, accepting the need for higher production than would be warranted by purely local demand. E.Suffolk and Norfolk cater purely for local demand, and W.Suffolk has limited linkages with adjacent areas (largely due to Newmarket's peculiar geographical administrative shape), but Essex sends large amounts of gravel into north London by barge and lorry, and even 'exports' gravel across the Thames to N.Kent. The difference between Essex and the other counties has been reflected in development control, where the planning officials and local councils have had to take less notice of local amenity interests faced with far higher demands. Though the agricultural reserve areas have remained sacrosanct, as has the Roding Valley, control in the rest of the Waters reserve areas, never initially intended to be used to such high density, has been relaxed. This is surely influenced by Essex's perceived role in the context of the S.E.England Planning Region, and is a case of regional responsibility outweighing local

considerations. The South East, dominated by the problems of London, is more concerned with large scale questions of housing, employment and communications than are the more parochially minded counties to the north of Essex. This theme has been noticeable in Essex from the beginning of the surge of growth in the gravel industry, and is continuing more so today with ever larger pits in the Lea Valley and to the south west of Colchester, which testify to the enormous appetite that the S.E. has for gravel (recent permissions include cases of pits of 145, 177, and 174 acres - substantial bodies indeed).

By about 1965, however, there was growing an awareness that the sheer size, nature, and speed of growth of the industry were creating new and bigger problems. Demand was more than double that estimated by Waters, national estimates of demand for 1975-81 were increased, and the land reserves, initially expected to last till the end of the century, were running out. At the same time there was emerging a strong and coherent conservation movement, focussed by the 'Countryside in 1970' conferences, started in 1963, and led actively by the

Civic Trust. Planning was beginning to take a more spatially comprehensive viewpoint, with regional planning beginning to expand and develop through the formation of regional Councils and Boards. About this time, too, there was dawning the realisation that our supplies of outdoor recreation facilities were soon going to be severely strained, especially near the main urban areas; and Dower's 'Fourth Wave' (Dower, 1965) was soon to be breaking on the shores of local government planning departments. In the light of these considerations, and also considering the continued change in the structure and organisation of the sand and gravel industry itself, we can more meaningfully examine developments of the last five years, and fit them into their evolving context.

Recent changes in the control of sand and gravel

We have already seen that effective policies for sand and gravel derived from the operations of the process of development control. This leads to the first recent change, namely the elevation of mineral working to a higher level of development control implementation. In Essex and Norfolk where mineral working presents

greater problems than in the other counties, control of mineral working is now carried out at a county level. Although local area officers are consulted on applications in their areas, in Essex since 1967, mineral working has fallen into the 'special' category of control considerations at the county-wide level, with effective policy decisions coming from an inter-group working party. The original 'flexible' (='vague') policy is maintained, derived officially now from the first review of the County Development Plan, where despite more discussion of 'policy' for the working of minerals the general vein is as before. In Norfolk mineral working is seen as an issue relevant to considerations at the county level, and along with other major issues is treated under the general heading of 'amenity'. E.Suffolk envisages few problems concerning sand and gravel today, as there are outstanding consents likely to suffice for at least five years, which is as far ahead as they are looking. Thus no more permissions will be given for at least three years and the control of future working is still delegated to area officers and committees. W.Suffolk falls between these positions

with substantially more concern than E.Suffolk but control is still rested with area officers (though there are now only two sub-areas instead of the former three).

Written 'policy' remains much as it was in the 1950's concerned with reconciling demand and amenity, concentrating extraction to the Water's areas - still perfectly feasible in the northern areas, if becoming a trifle difficult in Essex! There has emerged now, however, an increased awareness of the general inadequacy of the Waters allocations due to the massive increase in demand. Currently regional bodies are being set up to revise and renew local land allocations, although nothing has yet really got under way in our area.

In 1966 new estimates greatly increased the projected 1975-81 demand figures, leading to efforts on the part of national and local planning bodies to clarify the position. Essex was forced to loosen controls completely within the Waters areas to the east of London (except for the agricultural reserves), and W.Suffolk rapidly contacted S.A.G.A. and worked out which areas could best be worked to meet the revised demand figures. There was a general spate of

applications and permissions between 1966-68 due to the growing realisation of the rapid growth of the industry; though this tendency has subsequently declined, especially since these estimated demands have been revised down, mainly because of 'economic reasons' (M.P.B.W. 1970). Now, in fact, there is a slight excess of permissions over demand in some areas where operators are unlikely to get permission for new developments without pressing reasons, this excess however will soon be used up, and none are likely to be withdrawn due to the 5 year limit contained in the 1968 Act.

Excepting E.Suffolk, where sand and gravel working poses far fewer problems than in the other counties anyway, recent years have seen substantial improvements in the working relations between planners and mineral operators. With the growth of larger firms, often controlling operations in numerous different gravel areas, long-term planning has become essential from the industry's point of view. Greater concern with mineral working, especially in the well organised mineral-working sub-sections of development control in Essex and Norfolk, combined with the growth of larger

organisations and consequent reduction in the number of personal contacts needed to maintain a satisfactory working knowledge of the industry, has progressively led to improving mutual understanding between planners and operators. W.Suffolk's early lead in contacting S.A.G.A. has been followed by the other counties, and effective planning of sand and gravel generally takes place 'offstage', through meetings between planning officials and industrial representatives. Schemes of working are agreed before planning permission is sought, and Norfolk now specifically follows a policy of relating the size of permission to the capital resources of the firm applying for permission. Here, as in all the counties, permissions are phased, with operators restricted from passing from one phase to another unless interim conditions are met.

All counties now demand more information from an operator than in the 1950's; and here, again, much of this is done behind the scenes. Still working in a situation of basically poor information, local authority planners often have to estimate production of individual pits using such indices as original estimates of

expected annual yield and rate of progress spatially. What data they do get is usually derived from the operators themselves, as central government does not release production figures for separate pits. In this situation there would appear to be a distinct danger of local planning authorities unintentionally co-operating with the more successful operators leading to a monopoly situation. The Waters Committee deliberately recommended more land than it expected to be needed (though in practice it has been used in the pressure areas) partly in order to allow room for the growth of new businesses. But as far as the local authorities seem concerned, in the words of one of the officers spoken to.."the days of the small man are over." Are the planners then still fulfilling their obligations regarding avoidance of monopoly situations? - a moot point, if somewhat tangential to our present discussion (Boorer, 1959, p.62).

Recent effective 'policy' changes relate to varying degrees of pressure on sand and gravel resources, and differential interpretation of the scope of planning

intervention. East Suffolk can be most easily dealt with, as most permissions are now in the Waveney and Gipping Valleys, and are sufficient for the short term future at least. Most applications are for extensions to present pits, and minerals are not considered important enough to warrant detailed planning study at the moment, though undoubtedly if the expansion of Ipswich had come off, these demands would have risen sharply. West Suffolk and Norfolk can in many ways be discussed together. Both, being essentially concerned with only local demand considerations, are currently favouring extensions to current workings, with any new workings being channelled into river valleys, notably in W.Suffolk, in order to produce a chain of wet pits in the Lark Valley ultimately intended to provide a valuable recreational resource. W.Suffolk are quite confident that the areas where they are encouraging development, worked out in co-operation with local operators, will produce wet pits. Similarly the Nar Valley near King's Lynn, which is the area to which Norfolk are focussing extraction, is confidently

expected to produce wet pits, though this was not originally due to considerations of recreational after use, rather channelling development into this area was expected to reduce dereliction and avoid costly objections (it is a little populated area, and not particularly attractive compared to nearby rural areas). Incidentally, officers in Essex remarked that local incidence of clay bands can make prediction about whether a pit will be wet or dry very difficult as the local water tables are often very confused. In both Norfolk and W.Suffolk amenity interests are strong, and 'conservation' is now a strong force in local politics. Gravel working is conceptualised as a local issue, and it is convenient to direct operations to these river valleys, and effect control by phasing and considerations relating to suitable landscaping of pits for subsequent uses. For example, a scheme of working in one local planning area was recently agreed between the authority and an operator, whereby the local planning authority's landscape architect co-operated with the operator to produce plans for the final landscaped lagoon to be

produced by operations. These plans have been incorporated into the officially agreed scheme of working. Thus there is here a specific orientation towards the production of useable recreation facilities, though this is more a case of a 'policy' deriving not from specific objectives, but out of 'ad hoc', marginal adjustments to the original approach taken to the working of sand and gravel. This latest policy is, moreover, not currently set out as a policy, and is being operated again 'offstage', with the internal workings of the process, whereby planners and operators effect the policy, not clear without specific investigation into this phenomenon.

Norfolk is currently producing a report on mineral working in the county, including specific policy proposals, but this document is not as yet available. W.Suffolk has probably the best system of information pertaining to individual pit operations (though this sort of information is confidential).

The problem of confidentiality is an interesting one at this level. The planning authorities obviously

feel more competent in a situation where they have a reliable, continuous inflow of information. However, any information that comes to them is confidential, and must be treated as such, so how can the planning authority then fully present suitable information to the public for debate on particular issues such as the siting of a new pit near a particularly attractive village? The public responsibility of the planning department probably constitutes as much a force deterring the mineral operators from supplying full information about workings as the 'usual' business considerations of not wishing to let competitors know about the state of the firm's business.

We have already noted the different approach taken by Essex in the past, and recent trends have only emphasised this difference. The much greater pressure on gravel reserves in Essex, whilst being managed most competently by those actually operating development control, force a different approach. Local amenity issues cannot be rated so highly, and here the crucial nature of the decision-making process becomes

apparent. For considerations such as local a menity versus national and regional demand cannot be evaluated in commensurate terms. The essential compromise inherent in this situation has meant that a different balance in the mix of factors has altered the approach taken to the issue of policy, formulation, evaluation and effectuation. This accounts for the different types of policy which have evolved out of basically similar initial situations and similar wording in the four development plans; for in Essex the after-uses of pits have not yet begun to be seen as a significant variable affecting policy formulation, rather the demands for gravel are such that gravel must be got rapidly, and this must then be done with as little injury as possible to the environment, and in Essex the 'environment' does not seem to be valued in the same light as in the other counties. Thus intensification near London, and large extensions of workings near Colchester are continuing despite growing public objection. The most basic goal would still seem to be the provision of sand and gravel, and we must stop to

question how much the 'progressive' policies in other counties only exist because as yet local (and/or regional) demand is not strong enough to counter them. There is no real evidence to suggest that any other goal is ranked above the meeting of such demand as may exist.

While there are clearly no comprehensive policies relating to the gravel industry in the study area, policies have been evolving, particularly in W.Suffolk and Norfolk, which are beginning to attempt a positive approach to the planning for this industry related to after-use of gravel pits. This view, which is influencing the distribution of pits in these areas is the most comprehensive yet relating to the control of the industry in the study area, though we must question what it owes to logical construction based on specific objectives and how much it has just grown up in an 'ad hoc' manner, and only co-incidentally relates to any particular objectives other than meeting demand.

The pressure currently existing in London and S.Essex is likely to increase with planned development in S.Essex proposed in the Strategic Plan for the

South East (S.E.J.P.T., 1970). Extraction is progressively intensifying in N.Essex, with current demands being met mainly from the Colchester area. As such areas become worked out, we must surely expect pressure to spread further north, and the other counties may be forced to make unpleasant revisions of their position regarding the conflict between demand for gravel and amenity. The conflict between 'progress' and 'environment' will have to be faced squarely and seriously.

This, then, is the changing position in the study area. Now we can go on to look again at some other considerations, mentioned briefly in this chapter and discussed at some length in earlier chapters - namely recreational considerations, and especially angling - and attempt to bring together the numerous strands of this discussion.

CHAPTER 6

SYNTHESIS AND CONCLUSIONS

The discussion has so far ranged widely over the many issues and considerations that affect planning policies for the sand and gravel industry. If there has not consistently been a clear unifying theme then this is due as much to the nature of the topic as to the organisation of the material being considered, because there has probably been no attempt in the past to integrate mineral working policies with potential after-uses of worked sites. This section will attempt to illustrate more clearly the salient points already made, and bring them together to focus upon considerations of future policy formulation.

In chapters two and three the basic considerations of the actual industry, the effects of the industry on the shape, size and distribution of pits, and recreation, especially angling, were discussed. The main points raised concerning the industry were (1) increasing dominance of large firms, (2) increasing mechanisation and scale of production and (3) market orientation.

These factors and others, notably the impact of the report of the Waters Committee as implemented by local planning authorities, and the physical characteristics of gravel seams, have caused three trends in the nature of gravel pits (1) increasing size of pits, (2) production of complexes of pits rather than a dispersed pattern, and (3) increasing proportion of wet pits.

Thus the trends are towards more, large, wet pits, near urban centres, grouped together in large complexes of pits, owned and run by large companies whose holdings will cover many pits in different parts of a region.

On the recreation side, it was noted that whilst total leisure time is still only growing slowly, and that physical recreation occupies still only a relatively small proportion of leisure time, it is the active, outdoor physical recreations that are growing in popularity very rapidly; and these are the leisure activities which generate the greatest demands for space. The water-using activities, notably sailing and fishing are growing at unprecedented rates and generating great demand for space.

However, we also discussed some of the problems raised concerning the question of 'demand' for recreation, and concluded that probably the best available techniques, such as Clawson demand curves, were still inexact tools. In any case, a Clawson curve only tells the demand hinterland of a resource, and can only by inference suggest the likely recreation demand generated by urban areas. One method of forecasting demand, though it is difficult to know whether this will constitute real 'economic' demand is by the use of Burton's type of 'guesstimate', where the major socio-economic determinants of various recreations are projected, and likely estimates then revised in the light of informed judgement - an inexact science to be sure!

The unquestionable growth of water sports and particularly angling is very well evidenced, and some further evidence was put forward which suggested that anglers have no prejudices against gravel pits, and that pits can indeed constitute highly desirable angling waters. Most anglers are probably willing to pay more

for their sport than they currently pay, and would be most willing to pay for less-crowded waters - indeed, many other problems can be seen as ultimately deriving from the consideration of overcrowding. Pollution is a major worry amongst anglers, but other anglers are often seen as more of a problem than non-angling water-users.

The great variety of angling, with many specialised groups (such as specimen hunters, match anglers and trout anglers) means that different anglers will have very different requirements relating to size and nature of water, stock of fish, availability of fishing time, and whether or not to share the water with non-anglers.

If planning has so far had little intentional effect on outdoor recreation, then this is certain to change as more people in the planning profession, and their political masters are taking an effective interest in such recreation. The sand and gravel industry has long been subject to planning control, but planners have been troubled by problems of evaluation and quantification when trying to wrestle with conflicting demand

(derived from a higher level in the process) and amenity (issuing from the very grass roots of the process). An increasing concern in recent years for the quality of the environment is at least partly instrumental in forcing a new approach to the working of minerals.

The fourth chapter was initially intended to contain a brief definition of the role of policies in the planning process and then discuss the implications of this for future policy formulation. However, it soon became apparent that in the past the term has been used in many different ways, and it was necessary to seek some normative definition. In the light of practical considerations, we opted for that definition contained in the recent Ministry of Housing and Local Government publication Development Plans - A Manual on Form and Content (1970) which is likely to be most influential amongst practicing planners: 'Policy:- Chosen course of action, in pursuance of an aim, which guides a continuing process of decision making.' A policy is thus derived from a 'strategy' which is the broad co-ordinating set of principles which guide lower level policies. This division is in fact pragmatic

for theoretically a strategy is a higher level 'policy'. 'Policies' can be evolved at higher and lower levels, but practically the term is used as defined above.

Such a policy becomes meaningful only in relation to 'objectives' which are themselves derived from 'goals', thus the policy must be essentially purposive. An incremental approach, based on ad hoc decision, when faced with unanticipated problems, using negative land-use controls is hardly a 'policy' in this meaning of the term.

With policy defined, we turned to a consideration of the problems which needed to be overcome when relating policies for sand and gravel working to policies for recreation. The main problems centred on the time lag between the need for recreation and the likely provision of useable wet pits, the continuing problem of amenity considerations during the working life of the pit, forecasting demand for recreation and gravel, and the planning legal context of mineral working (especially regarding 'ultra wires'). The significant variables were discussed - supply and demand of sand and gravel

and recreation - and it was suggested that these are best conceptualised in terms of inter-relationships. Planning was described as a cyclic process, with definitions derived from McLoughlin and Chapin, and the essentially dynamic nature of the phenomena under discussion was stressed.

The fifth chapter then looked at the changing planning context of the sand and gravel industry in Norfolk, Essex and Suffolk. The early development plans of the four administrative counties paid little concern to the sand and gravel industry, and drew their argument from the reports of the Advisory Committee on Sand and Gravel. 'Policies' as we have defined them were vague and generalised, and provided no positive framework whatsoever for the day-to-day process of development control. the rapid growth of the industry through to about 1966 did not greatly concern local authority planners, who were hardly monitoring the survey data used in the development plans, and the land allocated by the Waters Committee was becoming rapidly exhausted, due to rates of demand twice as high as

predicted. Increasing demand led to greater efforts at co-operation between planners and operators, and effective planning was increasingly done 'offstage' at unofficial meetings between operators and authority representatives, who worked out acceptable schemes before planning application was sought.

Development control, which had previously been delegated to area level was elevated, in Norfolk and Essex (the counties with greatest pressure on resources) to special sections which took a county-wide view of the situation. The issues of confidentiality and danger of monopoly were discussed, and it was clear that the demise of the small operator is being influenced partially by planning controls. Essex faces more pressing problems than the other counties, and the trade-off between amenity and demand is more crucial in this county; this is reflected by the fact that whereas Norfolk and W.Suffolk are consciously considering after-uses in the formulation of policy, Essex is more concerned with meeting demand. This is undoubtedly also a function of the division of responsibility within the separate planning departments, but is probably more due

to the tremendous demand function in Essex. The basic consideration is still demand for minerals, and the more progressive policies being adopted in Norfolk and W.Suffolk - which are not actually set out anywhere as policies, rather they are internalised within the development control sections of the planning departments - may only be operating effectively due to this lesser demand; for in this situation the planner undoubtedly has more power to argue for amenity and other considerations. With an increase in demand in the counties north of Essex, the conflict may well intensify, and fundamental values may be questioned. It is in this light that we may consider these values, and seek to influence subsequent policy considerations. Planning authorities have an obligation 'to ensure the free flow of minerals at economic cost' (Cullingworth, 1970, p.198) also to protect amenity; but with increasing concern for the environment, these may be, in some cases, directly contradictory. Thus compromise will have to be made, and if other considerations can be brought in to add yet further social benefits in the case of certain

policy compromises, then perhaps the loss of benefits on either side may be more than compensated for.

To bring policies for sand and gravel working and recreation together is to do what is called for in the development plan manual, for this stresses (p.20) that 'In counties .... the emphasis in the strategy for the whole county will be on the inter-ralationships of policies - between one area and another, between one type of development and another, between measures for greater efficiency and those for the improvement or conservation of the environment'. In structure plans, the emphasis 'on the co-ordination and integration of strategic issues is essential because few planning issues can be determined in isolation.'(M.H.L.G.,1970). Issues will be interrelated, policies, by their very nature, interdependent.

We have seen that recent developments, with special reference to the study area, have led to the evolution of effective policies for sand and gravel that have fortuitously been of potential benefit to recreators. Such developments, in the form of wet pits, will with

relatively minor landscape modifications be of great use to anglers. The importance of the actual form of waters from a fishery management point of view has not yet been elaborated, but it probably suffices to say that by the provision of adequate shallows and deeps a water can be greatly enhanced. From actual fishing considerations the form of banks, bankside vegetation, access and cover are important, but would not necessarily involve any costly work. (Davison, 1965).

Another recent development of particular significance is the increasing co-operation between local planning authorities and the industry. Increasing discussion of common objectives is helping to replace the negative, land-use approach by a more positive, developmental, management role. If the increasing liaison between planners and the industry appears to contradict moves towards a greater democratization of the planning process, arguably this can be countered by greater consultation of other interested groups.

This must be done before policies are worked out, and here citizen participation and further research are essential. The ideal forum for recreators is at present

surely through the regional sports councils, though at least one such council feels that local sportsmen are not concerned enough about their sports, that they tend to pay little attention to the future, (source: private discussion).

The planner could take the view that if recreators cannot be bothered to come to him, then he will not go to them, but this surely smacks of the very worst kind of paternalism - the potential 'clients' will often not be aware that there is any point in meeting local planning officers. The average fishing club secretary has probably never dreamed of going to the local planning authority to discuss his problems, but contact, even if initiated by the local planning authority, would undoubtedly be of mutual benefit.

The best way of politicising anglers on this issue would apear to be through the national angling press. The magazine Fishing now no longer being produced, was very active, and its very capable editor Jack Thorndike constantly urged for greater co-operation and co-ordination amongst anglers. The need to meet local government officials was stressed, and much of the movement towards united angling bodies derives from his editorship. A

regular contributor, Ewan Clarkson, consistently urged anglers to take a wider view of their situation, to realise that the needs and requirements of angling 'go to the very roots of our country, and are affected by the way in which our society uses our heritage' (Clarkson, 1964). Present angling publications do not appear to have quite the same crusading spirit, but Angling Times and Angler's Mail the two weekly newspapers, have very wide circulations amongst anglers, and there is surely scope for using this medium to urge greater co-operation between anglers and their local planning authorities. It is useless for anglers to damn 'the planners' on the one side, and planners to bemoan their limited informational basis on the other. Someone must make a move, and the planners are, after all, the professionals in the public service sector.

With more liaison between planners and anglers, relevant research carried out often by the latter, can then be incorporated into the survey material needed before the construction of structure and local plans. Other recreators can be met and their requirements can be discussed and meaningful alternative policies

formulated. Here the co-operation of the different groups is essential, and the planner's role will be that of mediator rather than arbitrator.

The locational effect on the sand and gravel industry of incorporating recreational considerations will be negligible, as recreators are generally highly mobile, and specialist recreators even more so. Most water using activities, especially angling are 'water-centred', and less concerned with the surrounding countryside than with their activity. Thus market orientation, acting both on gravel operators and recreation facilities, plus landscaping of wet pits to provide attractive recreation sites means that little or no relocation of extraction would be necessary - far more influential here are considerations of amenity and land shortages which will inevitably occur. Any extra costs involved in preparing sites for recreation would be negligible, especially as, if necessary, a planning authority could just require that the site be left in a condition which would be capable of development into, e.g. an angling lake. This would in fact be little different from standard practice.

Short term amenity considerations remain at issue. Incorporation of recreation considerations would perhaps strengthen the mineral operators' case for extraction in areas of high amenity. With increasing demand for minerals more land is undoubtedly going to be needed near large urban centres. Local residents may well object not only to gravel extraction but also to recreational uses near their homes. These considerations were recently discussed in a New Society (8.4.71) editorial, and it was suggested that there is scope for revision of the compensation laws 'to include those who are injuriously affected by a development even if their land and property remains.' This seems to be a sensible argument, and the compensation could possibly be met from a central fund raised by taxation of gravel operators. The details are of less relevance here than the principle, though if recreation facilities are operated by clubs then this type of small-scale responsible management would tend to reduce antagonism between anglers/sailors and residents, and offers the best scope for future organization of such sports.

The problem of time lag between recreational

demand and provision of wet pits can in part be overcome, (1) by taking up of what slack already remains (unused pits),(2) by trying to influence current operations, which possibly do not have conditions pertaining to recreational after-uses, to incorporate such considerations, and (3) by phasing future operations so as to produce useable wet pits at the end of one stage before moving on to the next stage of extraction. There is scope for co-ordination of this type of policy with the long-term creation of country parks, and infrastructural expenditure, e.g. on roads for gravel lorries and access to parks would be reduced.

In the study area, demand for gravel is rising, especially in Essex, and there is a likelihood that with more development in the outer metropolitan areas more pressure will develop in Suffolk and Norfolk to meet more than just their own internal needs. Similarly, recreation demand is growing and diffusing, and though the Broads have long been popular in their own right, they are now becoming highly congested and pressure is likely to build up throughout this area (Nature Conservancy, 1965). If current extraction can be

phased to provide wet pits in anticipation of growing regional demand (the question of the Broad's national role would need to be considered in another context, though there are undoubted correlations), then this would be amply justified on planning grounds. That mineral demand is the ultimate consideration at present is undeniable, and it is unlikely that this will change in the near future at least, but this point must be reviewed constantly by the planning authorities. However, if there were no mineral extractors creating wet pits as a by-product of their work, it is possible that recreators may by now quite seriously have been considering creating them themselves!

The true 'cost' of gravel extraction in environmental terms is impossible to quantify objectively, as are recreational benefits, as both depend heavily on subjective assessments of particular elements. Cost-benefit analysis and Clawson curves are the start, but research in such topics clearly has a long way to go yet. We are dealing, largely, with incommensurables. In any case, the current developments in the Nar and Lark Valleys surely offer promise for future work by

the local authorities (especially if revised and enlarged) in the Waveney and Gipping Valleys, and in the area to the south west of Colchester.

The policies that will be adopted and applied by local authorities will vary with their own problems, but the question of economic demand versus amenity will undoubtedly remain central. Such policies will be most appropriately applied via subject plans, which emphasise 'co-ordination and integration of strategic policies' (M.H.L.G., 1970, p.59). Suitable conditions can be agreed before planning permission is sought, and can be worked out via consultation between operators, recreators and planners. The process of development control will remain central, but will be based hopefully on continuously improved and renewed information.

If the effect on the ground in terms of sand and gravel extraction would be minimal even with the inclusion of recreational considerations in the formulation of policies, the conceptual basis would have changed. Instead of a negative, land-use, development-

control-derived approach, we would have a positive, management approach, clearly set out in statements of principle and intent in the structure plan, with areas for the safeguarding of mineral reserves shown on the explanatory diagrams used to accompany the written statement. The process would be then goal-oriented, capable of monitoring and revision, with review accepted as central to the whole process. Alternatives, in terms of cost as well as locational distribution would be set out, and the effectuation of development control could be carried out in a framework of meaningful policies in the light to continuously accumulated data about ongoing charges in the system.

APPENDIX I

ANGLING QUESTIONNAIRE

1. What types of fishing do you usually do? (Please rank the following types by putting the figure 1 beside the type of fishing you do most frequently, figure 2 beside the second most frequent type, and so on with all that apply. If you never engage in a certain type of fishing, please leave that box blank.)

Match fishing	trout fishing
specimen hunting	sea fishing
selective pleasure fishing	other (specify)
general pleasure fishing	

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2. What types of water do you prefer? (Again, rank all those types of water you like, putting figure 1 beside your favourite type, 2 against the second favourite, and so on. Two or more can be given equal rank. Only give a rank to those you ever fish in or would like to fish in; leave blank any type of water you would not want to fish in. If no preference at all, tick last box.)

large river	large lake or pit
small river	small lake or pit
canal/dyke	reservoir
	no preference

3.a) When lake fishing, what type of lake do you prefer? (Please tick appropriate box.)

gravel pit	millpond/country estate
sand pit	type of artificial lake
clay pit	other (please specify)
reservoir	no preference

b) If 'Gravel Pit' or 'Sand Pit' what is it that you prefer about gravel or sand pits compared to ther still waters?

c) If neither 'Gravel Pit' nor 'Sand Pit'

(i) If the quality of the fishing were the same as in your choice, would you be satisfied to fish in a gravel pit which was cheaper AND/OR nearer than your preferred choice?

(Tick appropriate box) YES NO

(ii) IF NO what is it that you prefer about your choice that could not be satisfied in a gravel pit or sand pit?

---

4. What fishing clubs (if any) do you belong to? (Please give full names.)

---

5. a) Approximately how many days do you spend freshwater fishing each year?

b) Do you fish mainly in summer, winter, or both

---

6. Approximately how much money do you spend on freshwater fishing tackle each year?

---

7. Approximately how much money do you spend on licences, permits etc. each year?

---

8. Approximately how much money do you spend on travel connected withfreshwater fishing each year?

---

9. How much do you spend on an 'average day's fishing'?

permits: travel:
bait: other costs:

total cost:

---

10. How far do you generally travel to fish? (Please rank the following distances by putting the figure 1 in the box beside the distance you travel most frequently the figure 2 beside the distance you travel second most frequently and so on to all those that apply, e.g. if you usually travel under five miles, put a figure 1 in the first box, if you never travel 5-10 miles, leave that box, if you sometimes travel 11-50, but never over 50 miles, put figure 2 in the box 11-50. You can, if you wish, rank two boxes equally.)

Less than 5 miles
5 - 10 miles
11 - 50 miles
over 50 miles

---

11. a) Carefully read the following list, and then indicate what in your opinion, are the main problems facing anglers today. (As in earlier questions, give a rank to the problems - 1, 2 and 3 only. Thus just rank the 3 major problems. If you think that 'pollution and abstraction' is the main problem, give this the rank of 1 and so on.)

Not enough accessible waters
pollution and abstraction
too many anglers
too many other water users
not enough fish
restrictive rules and regulations
others (specify)
don't know (please try to avoid this line if possible.

b) What do you think should be done to solve these problems?

c) How should these solutions be financed?

12. a) Would you be willing to pay more for your fishing if the quality of a day's fishing could be really improved? (Tick appropriate box).

YES
NO

b) IF YES which of the following would you be most willing to pay extra for? (Tick one only).

more fish
better quality fish
fewer restrictions on fishing
less disturbance from non-anglers

c) IF NO Why not?

---

13. What is the most you would consider spending on 'an average day's fishing?'

Total:
Comment:

---

14. A number of other water uses are listed below. Please fit them into the columns provided, depending on how well you think they get on with fishing. (For example, if you think that sailing generally causes some disturbance, but not enough to make fishing impossible, put (c) in column (2) if you think that sailing causes no disturbance at all, it would go in column (1).)

a) canoeing
b) rowing
c) sailing
d) sub-aqua diving
e) water ski-ing
(f) hydroplane and motor boat racing
(g) motor boat cruising
(h) nature study
(i) swimming

NO DISTURBANCE	GENERALLY MODERATE DISTURBANCE	GENERALLY EXCESSIVE DISTURBANCE
(fishing not affected)	(can still fish but with some difficulty)	(fishing impossible)

15. a) Have you a job? YES No (please tick appropriate box)

IF YES

b) In what type of firm/factory/establishment do you work

c) What is the exact nature of your job?

d) Is the job: unskilled semi-skilled skilled
managerial professional
don't know (Please tick appropriate box)

---

16. a) What is your age group? Under 15/15-24/25-44/45-59/60 and over.

b) Are you male/female?

c) Are you single/married/other?

d) What is your home town/village?

THANK YOU FOR YOUR HELP.

APPENDIX II

LOCAL AUTHORITY INTERVIEWS

The interviews were carried out using a structured interview sheet. Discussion was focussed by use of this, and reference was made to a series of headings in order that similar ground would be covered in each interview. The following points were covered:

1. Whether there were sand and gravel pits in the area.
2. For authorities with pits:
   a) How many pits.
   b) How many i) wet
      ii) dry
      iii) pre-legislation (i.e. 1947 Act)
   c) Area of wet workings (differentiate areas before the 1947 Act).
   d) Area of planning permissions.
   e) Size variation or uniformity of pits/permissions.
   f) Output in recent years.
   g) Location of i) wet pits
      ii) permissions
      iii) areas allocated by Waters.
   h) Miscellaneous.
3. All authorities
   a) Whether there are sand and gravel reserves, (- if no reserves nor pits - terminate interview).
   b) Location of reserves.
   c) Estimate of amount.
   d) Estimate of quality.
   e) Areas to be worked first.
4. What markets the authority's operators served.
5. Policy
   a) Whether authority had specific policy - apart from in Development Plan - for sand and gravel. If so - what? and - where was it set down?
   b) If not - how was policy derived?

6. What are the effects of 1968 Act and Manual on Form and Content of Development Plans on sand and gravel policy (if any)?

7. Planning applications

a) How many for sand and gravel since June 1948? (plus any details).
b) How many approved/refused/still undecided?
c) Main grounds for refusal.
d) Whether 'standard' conditions were operated.

8. After-Use

a) How many wet pits in area 1948-70?
b) How many filled in - why/how?
c) How many left wet and developed for recreation?
d) How many merely abandoned?
e) Enforcement notices.
f) Future wet pits - expected numbers, uses, etc.
g) Miscellaneous.

9. a) Co-ordination 1948-70 with sub-regional, regional and national bodies in formulation of policies for sand and gravel.
b) Future pattern - local demand vs. national demand. Policy at local level or from above.
c) Construction industry.
d) Co-ordination mineral policy/provision of wet pits/recreation demand.

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