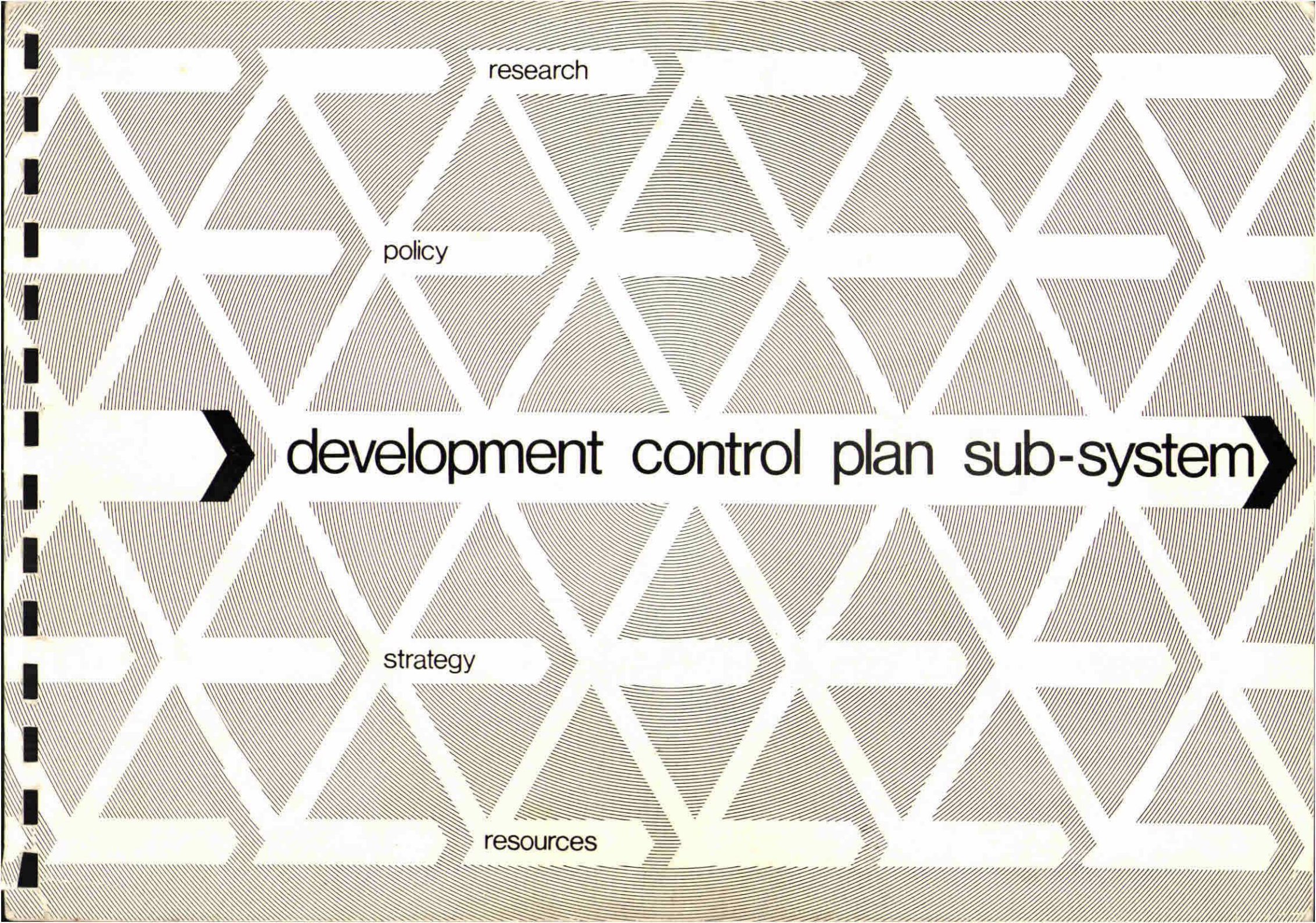
research
policy
development control plan sub-system
strategy
resources

development control plan sub-system

INTERIM REPORT BY THE WORKING GROUP

to the

DEPARTMENT OF HEALTH & SOCIAL SECURITY

June, 1971

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foreword

This is an interim report on Part 1. of an incomplete commission on development control planning. The work was originally planned in four parts.

1. The system flow, to provide skeletal support for the data base structure, management and costing.

The flow chart shown is based on existing procedures - it is not machine orientated although relevant automatic techniques are noted. The flow is divided into five Work Sections, each leading to a management decision. Individual professional responsibilities are related throughout to input, task and output, to give an adequate base for later infilling.

2. Analysis of development control planning to give a detailed background for computer aided design techniques.

The 'Harness' programme is already exploring C.A.D. techniques, but it is essential that any decision sequence is adequately recorded to give an interface with related work, and to permit infilling of the supporting data base.

3. Cost factors for hospital shape, site, foundations, roads and external works.

Some work has been done on this by a Q.S. group, but the external commissions have now been terminated. A related commission on engineering services still continues.

4. A practical exercise to test the basis of the system.

That part of the system described in this book could, in its present form, be used as management control against a building project.

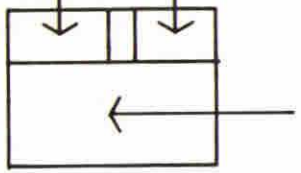
Development control planning and Activity data together form the bulk of the present BRIEF sub-system. Future work will allow the system to accept standard outputs from a pre-Brief information/decision system on national and area planning now being developed within the DHSS, and to marshal inputs for the DESIGN sub-system. Structuring of the Data base and linear faceting for extension through all systems will also be developed.

Alan Bedford.

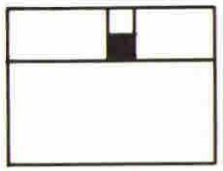
June, 1971

Alan Bedford
Architects Division
DHSS

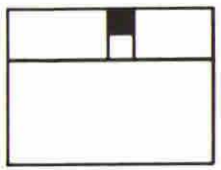
contents



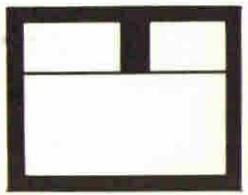
Individual task



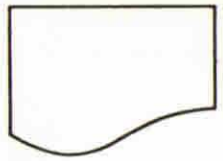
Design Team task



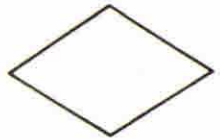
Project Team task



Combined task involving adoption of output of preceding work section



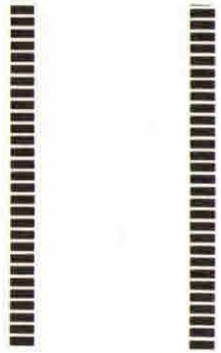
Data or document output of an individual task



a decision that determines which alternative path is to be followed

Input to task reviewed from Data Base

Milestone which should not be passed until all preceding work section tasks have been completed



Boundary of work section

key to symbols used

THE NEED FOR A SYSTEM

Although there is an established procedure for processing health building projects by the Central Department which lays down defined steps by which schemes brought forward by the Regional Boards are considered, there is, at present, no overall systems approach which ensures that every matter relating to a scheme has been gone into and that at the end of each stage all information is available in order that once approval is given the next step can be taken in absolute confidence.

Such a situation makes the control of a building programme on a national scale involving diverse projects of varying scope and complexity extremely difficult. Not only is it difficult to bring forward schemes at a consistent rate, but when setbacks occur it is not always easy to discover what has gone wrong.

If a systems approach was generally adopted the discipline of a consistent methodology would make control much easier. It would also ensure that before commencing any stage of the planning process, all previous decisions had been taken in the light of all relevant data. It would also make sure that at the end of that particular section of the system, the project and all its documentation was organised in such a way that it could go forward without let or hindrance.

A systems approach would co-ordinate the activities of all those concerned with planning a project and ensure that their work was directed towards the common objective.

THE SCOPE OF THE STUDY AND ITS CONTEXT

The scope of the present study is limited to that part of an overall health building system which is concerned with the Development Control Plan.

This stage of the system starts with the Project Team formulating the project requirements and appointing a Design Team and ends with the adoption of an agreed Development Control Plan. For the purposes of this study, only those activities which are the responsibilities of the Design Team have been considered and related to the decision that the Project Team will have to take in order that work can proceed.

To obtain a complete picture of all that is involved, it would be necessary to consider all facets which have a bearing on the production of a Development Control Plan. However, it soon became clear that it would be necessary to establish a basic network relating to the Design Team and to plot this central path through the system before related disciplines could be brought into the picture. If the work were to proceed to a further stage, the aim would be to broaden the scope to involve these related disciplines.

No worked examples have been attempted to test the system as at present drawn, although it was always intended that such an exercise would form the next stage of the study.

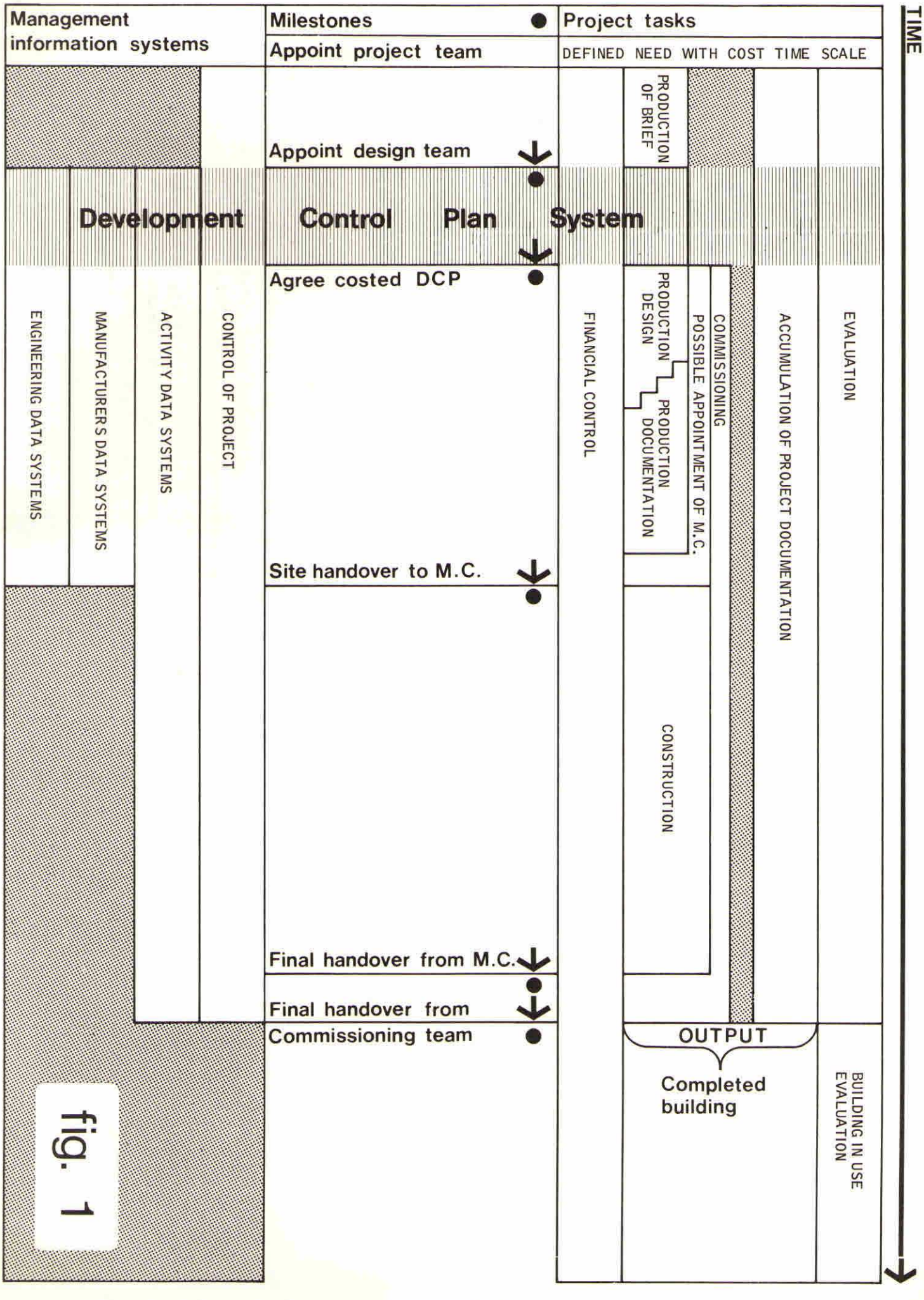

Management information systems
Milestones
Project tasks
Appoint project team
DEFINED NEED WITH COST TIME SCALE
Appoint design team
PRODUCTION OF BRIEF
Development Control Plan System
Agree costed DCP
PRODUCTION DESIGN
PRODUCTION DOCUMENTATION
COMMISSIONING
POSSIBLE APPOINTMENT OF M.C.
ENGINEERING DATA SYSTEMS
MANUFACTURERS DATA SYSTEMS
ACTIVITY DATA SYSTEMS
CONTROL OF PROJECT
FINANCIAL CONTROL
ACCUMULATION OF PROJECT DOCUMENTATION
EVALUATION
Site handover to M.C.
CONSTRUCTION
Final handover from M.C.
Final handover from
Commissioning team
OUTPUT
Completed building
BUILDING IN USE EVALUATION
TIME

fig. 1

THE OBJECTIVE OF A DEVELOPMENT CONTROL SYSTEM

The system should have four aims -

1. To produce a Development Control Plan giving the optimum solution to the problem of locating and planning the particular health and welfare building within the chosen area. It will have to pay attention not only to purely physical and material objectives such as economy and speed of completion, but also concern itself with accessibility and convenience in use to the population served.

2. To ensure that the project is correctly related to existing health service facilities within the chosen area.

3. To produce all the necessary information and documentation attached to the adopted plan in such a way as can be most easily used by the subsequent systems. For example, if a computer model of the building is produced at this stage, it should be in such a form that it can be used, with the minimum amount of manipulation, by computer systems used to produce drawings. However, this requirement applies just as strongly if the further stages are to proceed without computer assistance as it does if automated data processing techniques are envisaged.

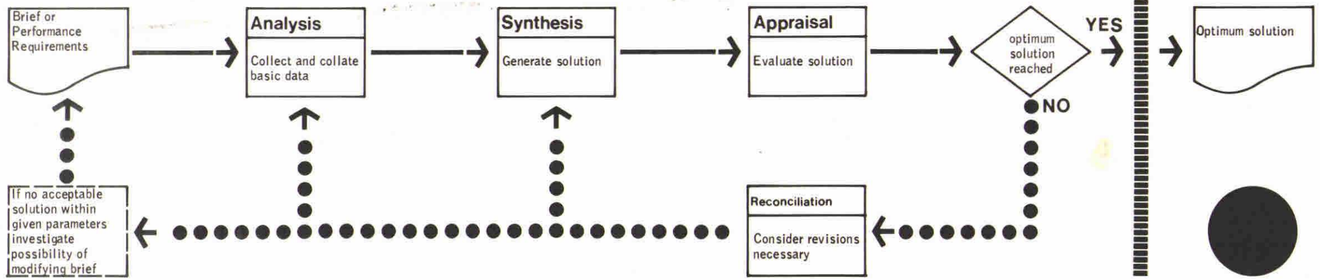
4. The system should ensure that all matters bearing on the project are considered at the appropriate time to minimise setbacks arising as a result of foreseeable and avoidable difficulties occurring at late stages. To obtain this objective, the systems analysis work aims to define and plot the overall flow of data and to identify where automated processing, or other mechanical or theoretical aids may be applied. Before this can be achieved, a viable model of the process itself is required.

Automated data processing techniques require that decisions be reached by a process of sequential steps as illustrated in Fig.2 opposite, and described in detail later in this report. (See Appendix 1).

The analytical approach has been adopted in arriving at the outline system illustrated in the following pages. It is, therefore, task orientated, and these tasks are allocated to the various members of the Design Team. It is also divided into sequential stages termed 'Work Sections'. The end of each stage requires a decision to be made before the next is proceeded with. The input of each stage is, therefore, the result of the decision taken at the end of that preceding. A diagram illustrating the Development Control Plan system divided into Work Sections is shown opposite in Fig. 3.

If this is to be used in order to draw up a timetable for the production of a Development Control Plan, provision will have to be made between each Work Section to allow a buffer period, during which time approval must be given before proceeding to the next.

fig. 2


Brief or Performance Requirements
Analysis
Collect and collate basic data
Synthesis
Generate solution
Appraisal
Evaluate solution
optimum solution reached
YES
NO
Optimum solution
If no acceptable solution within given parameters investigate possibility of modifying brief
Reconciliation
Consider revisions necessary

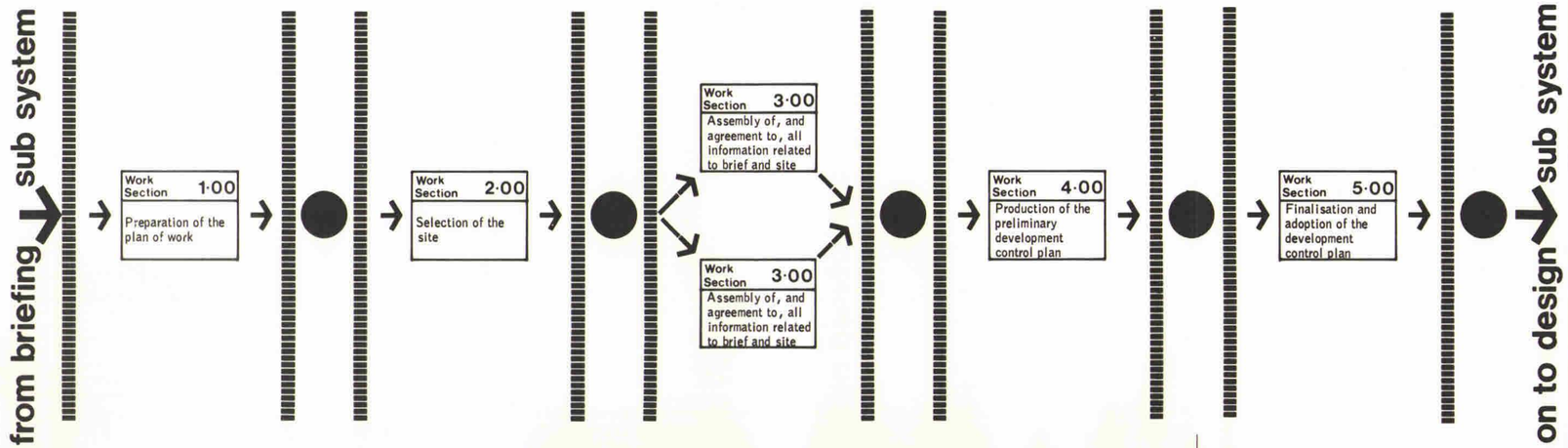

from briefing sub system
Work Section 1·00
Preparation of the plan of work
Work Section 2·00
Selection of the site
Work Section 3·00
Assembly of, and agreement to, all information related to brief and site
Work Section 3·00
Assembly of, and agreement to, all information related to brief and site
Work Section 4·00
Production of the preliminary development control plan
Work Section 5·00
Finalisation and adoption of the development control plan
on to design sub system

fig. 3

WORK SECTIONS OR MAJOR TASKS

The whole of the Development Control Plan Sub-system is divided into five 'Work Sections'.

This division has been derived from an analysis of the activities necessary to prepare a viable plan and the identification of five major tasks which must be completed in sequence if work is to proceed smoothly.

The accomplishment of each of the five major tasks requires a number of minor tasks to be completed. These can be carried out in parallel and together make up each 'Work Section'.

Once all the tasks within a 'Work Section' are complete, it is necessary for the work to be approved and adopted by the Project Team. Once adopted it becomes the output of the 'Work Section' and goes forward to form the input data of the next 'Work Section'.

The major tasks of each Work Section are -

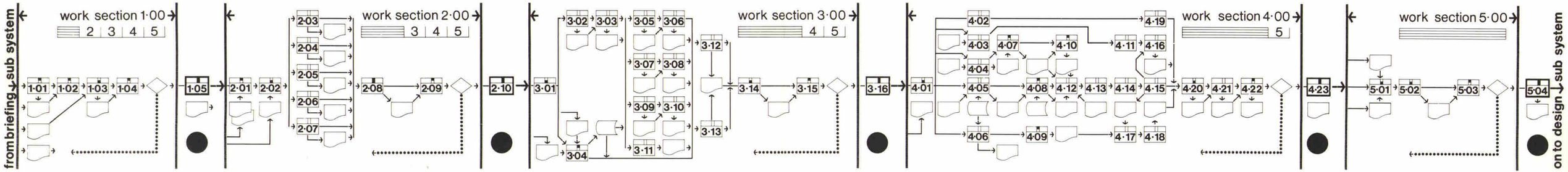
Work Section 1.00	PREPARATION OF THE PLAN OF WORK
Work Section 2.00	SELECTION OF THE SITE
Work Section 3.00	ASSEMBLY OF, AND AGREEMENT TO, ALL INFORMATION RELATED TO THE BRIEF AND CHOSEN SITE
Work Section 4.00	PRODUCTION OF THE PRELIMINARY DEVELOPMENT CONTROL PLAN
Work Section 5.00	FINALISATION AND ADOPTION OF THE DEVELOPMENT CONTROL PLAN

Within each Work Section the minor tasks to be carried out by the Design Team are identified and cross-referenced by the adoption of a decimal indexing system.

Just as each sub-system within the overall network is identified by the major milestones along the route, so each Work Section spans the minor milestones which have to be passed as the project is processed through the system.

The procedure would not require all the tasks to be undertaken in the case of a small project.

Fig. 4 on the opposite page shows the configuration of the whole Development Control Plan network with the major tasks and Work Sections identified, each stage being dealt with in detail on the following pages.



preparation of the plan of work

selection of site

assembly of, and agreement to all information related to the brief and chosen site

production of the preliminary development control plan

finalisation and adoption of the development control plan

fig. 4

input

TO THE DEVELOPMENT CONTROL PLAN SUB-SYSTEM

To enable a start to be made on Work Section 1.00, the following input data will be required to be provided by the previous briefing sub-system.

The input to the sub-system is the specification from the Client. It consists of -

1. Money allocation

2. Performance Criteria
   (a) functional content
   (b) phasing requirements
   (c) project timetable
   (d) traffic access requirements

3. Project Philosophy
   (a) national and regional policy
   (b) medical care policy, early discharge, intensive care, etc.
   (c) staffing policies
   (d) revenue policy
   (e) shared facilities
   (f) preference for particular shape
   (g) preference for building technique

4. Possible Sites
   (a) site details
   (b) requirements for maintaining excess, amenity and services of existing development

5. Details of related services within catchment area

work sections

work section 1.00

PREPARATION OF THE PLAN OF WORK

At the commencement of this Work Section, the information previously referred to is made available from the briefing sub-system.

The object of this Work Section is to assess the scope of the project and agree a plan of work for the preparation of the Development Control Plan.

The input data is used by the Project Team to formulate the project requirements. The Project Team then appoint the Design Team, Task 1.02, who in turn prepare the plan of work.

The Design and Project Teams' adoption of the final plan of work, Task 1.05, represents a milestone within the Development Control Plan sub-system and this, together with the outline of the project, possible sites, etc., comprise the output of Work Section 1.00. See Fig. 5 opposite.

See APPENDIX 4: Work Section 1.00

from briefing → sub system

work section 1·00 →

PREPARATION OF THE PLAN OF WORK

2 | 3 | 4 | 5

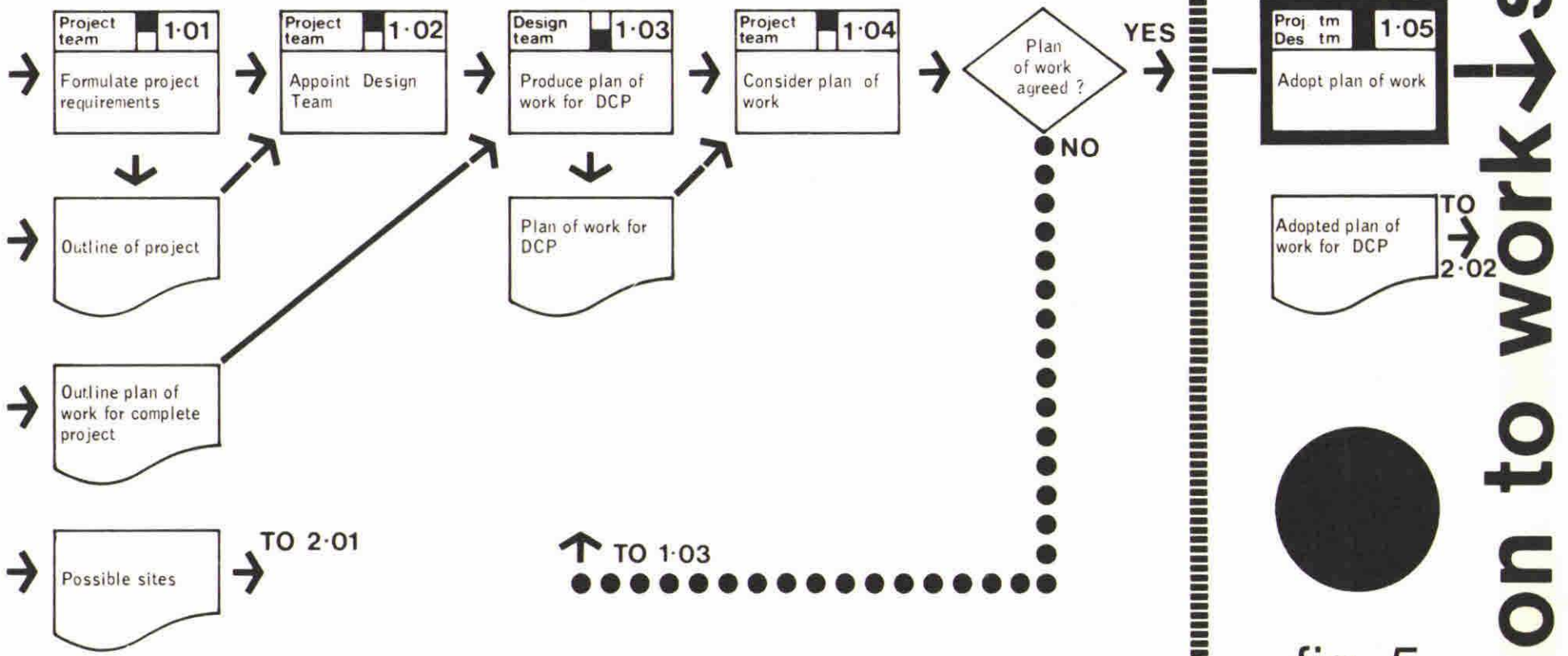


fig. 5

on to work → section 2

work section 2.00

SELECTION OF SITE

At the commencement of this Work Section, the information previously referred to is made available from Work Section 1.00.

The object of this Work Section is to take account of all matters bearing on the selection of the best available site for the project.

The input data is used by the Project Team, Task 2.01, to instruct the Design Team to carry out an appraisal of the alternative sites, Task 2.08, for their consideration, Task 2.09. The Design and Project Teams' approval and adoption of the selected site, Task 2.10, represents a milestone within the Development Control Plan sub-system and this, together with the data collected, comprises the output of Work Section 2.00. See Fig. 6 opposite.

Tasks 2.03 to 2.07 within this Work Section involves the various disciplines, forming the Design Team, carrying out surveys and processing the information gleaned in such a way that an appraisal can be made for submission to the Project Team. This is in order to get the best match possible between the project requirements, the site available, and the characteristics of the catchment area, taking account of already established health service facilities. It should be noted here that a national survey plotting the location and size of existing health buildings would be of great assistance, especially if maps could be prepared indicating the catchment areas for particular services. The activity of appraising a number of different sites, Task 2.08, involves analysis and presentation in varying forms of the information collected in Tasks 2.03 to 2.07. As such it offers considerable scope for the use of automated data processing techniques.

See APPENDIX 5: Work Section 2.00

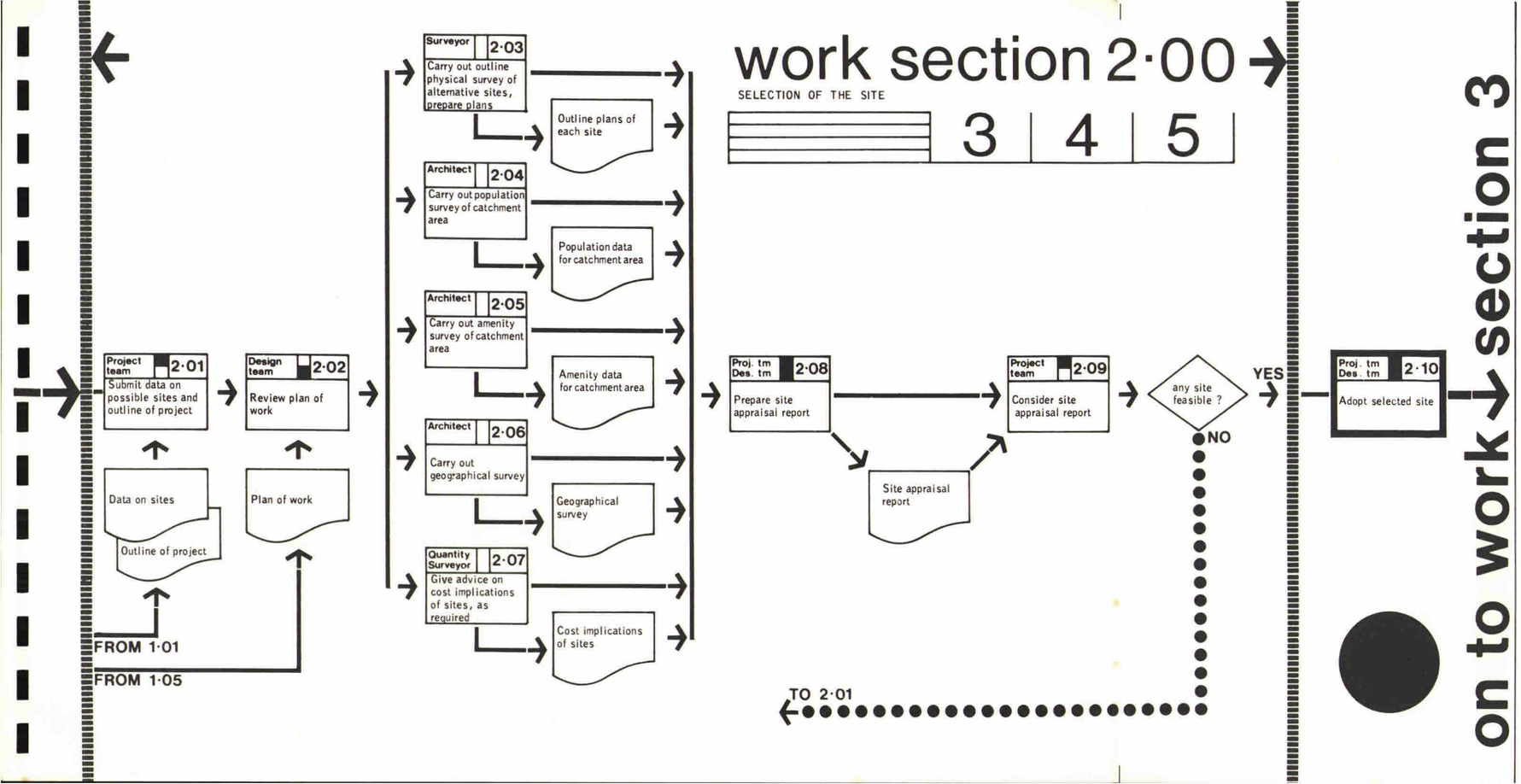

work section 2·00
SELECTION OF THE SITE
3
4
5
Project team 2·01
Submit data on possible sites and outline of project
Design team 2·02
Review plan of work
Data on sites
Outline of project
Plan of work
FROM 1·01
FROM 1·05
Surveyor 2·03
Carry out outline physical survey of alternative sites, prepare plans
Outline plans of each site
Architect 2·04
Carry out population survey of catchment area
Population data for catchment area
Architect 2·05
Carry out amenity survey of catchment area
Amenity data for catchment area
Architect 2·06
Carry out geographical survey
Geographical survey
Quantity Surveyor 2·07
Give advice on cost implications of sites, as required
Cost implications of sites
Proj. tm Des. tm 2·08
Prepare site appraisal report
Site appraisal report
Project team 2·09
Consider site appraisal report
any site feasible ?
YES
NO
TO 2·01
Proj. tm Des. tm 2·10
Adopt selected site
on to work section 3

fig. 6

work section 3.00

ASSEMBLY OF, AND AGREEMENT TO, ALL INFORMATION RELATED TO THE BRIEF AND CHOSEN SITE

At the commencement of this Work Section, the information previously referred to is made available from Work Section 2.00.

The object of this Work Section is to carry out a detailed investigation of the slected site and to assemble the information collected together with the brief in its final form, in order to prepare the ground ready for planning to commence.

The input data is used by the Design Team in order to review the plan of work, Task 3.01, and by the Project Team to review the functional content, Task 3.04. The Design and Project Teams' approval and adoption of the assembled site information and final brief, Task 3.16, represents a milestone within the Development Control Plan sub-system and this, together with the data collected, comprises the output of Work Section 3.00. See Fig. 7 opposite.

It is necessary for the Design Team to review the plan of work, Task 3.01, once the site is finally selected in order to take account of any new considerations brought to light. It is necessary for the Project Team to review the functional content, Task 3.04, once the site is finally selected, since its relationship with the catchment area and existing development, on or off site, could materially change the original project requirements. Tasks 3.05 to 3.13 require the individual disciplines within the Design Team to make detailed investigations of the site and draw up proposals which will place constraints on the development plan as in Task 3.12. However, before this work can start, it will be necessary for the Land Surveyor to carry out a detailed land and building survey, Task 3.02, and prepare site and building plans, Task 3.03, which can be used as base material by the other members of the Design Team in making their own searches and preparing their recommendations.

All this material is brought together by the Design Team in Task 3.14 and submitted to the Project Team, Task 3.15. If the work up to that stage uncovers a constraint which would prevent the project from proceeding as originally intended, it will be necessary for the Project Team to go back to Task 3.04 and review again the content of the project. Provided that the work carried out in the previous Work Section 2.00 had been properly executed, the best possible site would already have been selected, and any such amendment as is made necessary under Task 3.04 would not render the project unviable.

In carrying out the work in this sub-section, it will be important to ensure that the final constraints placed on the project inherent in the chosen site, provide for the requirements of growth and change within the boundaries of the development.

As in the previous Work Section, many of the tasks to be carried out involve the analysis of information obtained and its presentation in various forms. Here, sophisticated techniques in one form or another, including the use of aerial surveys, are particularly suitable.

work section 3·00

ASSEMBLY OF, AND AGREEMENT TO, ALL INFORMATION RELATED TO THE BRIEF AND CHOSEN SITE

4 | 5

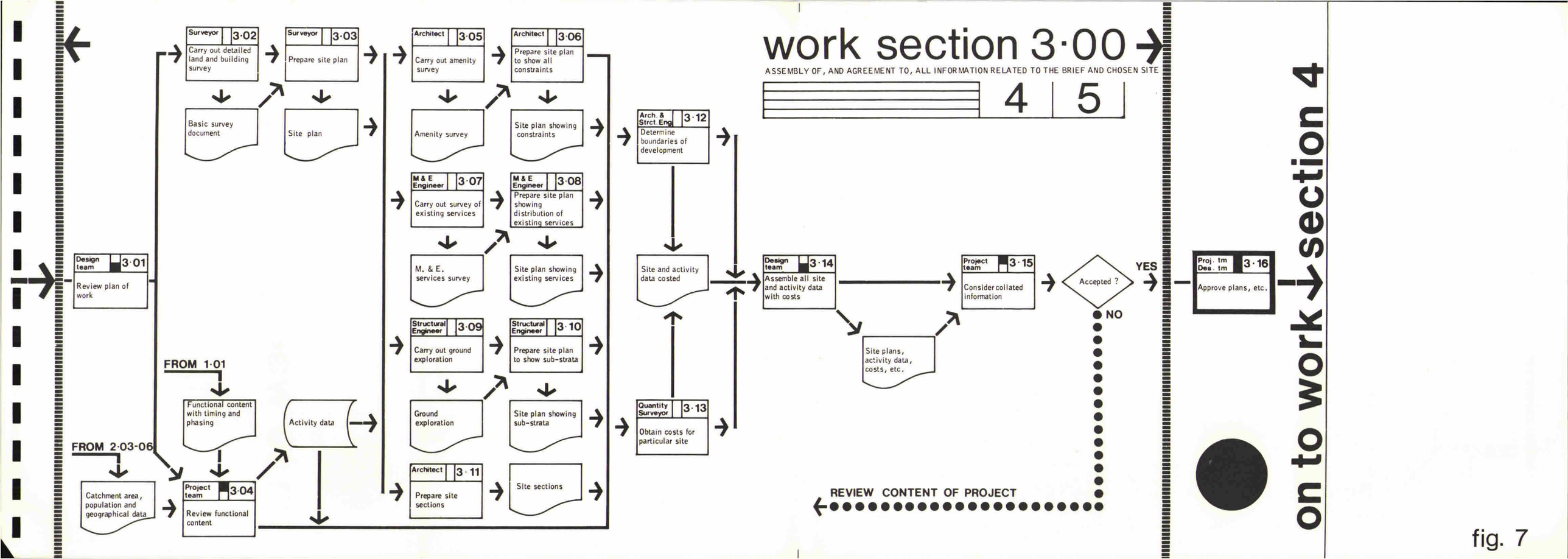


fig. 7

work section 4.00

PRODUCTION OF THE PRELIMINARY DEVELOPMENT CONTROL PLAN

At the commencement of this Work Section, the information previously referred to is made available from Work Section 3.00.

The object of this Work Section is to prepare a preliminary Development Control Plan to meet the requirements of the final brief on the chosen site. The input is used by the Design Team to review the plan of work, Task 4.01, in order to allocate responsibility between the various members of the Design Team, and to co-ordinate the planning activity and direct it towards the formulation of the preliminary Development Control Plan, Task 4.25. Once the preliminary Development Control Plan has been considered, amended, and finally adopted by the Project Team, Task 4.22, this, together with the details collected to date, comprise the output of Work Section 4.00. See Fig. 8 opposite.

Tasks 4.02 to 4.19 can be summarised as follows -

1. For the Architect this involves preparing, or selecting, abstract operational networks relating rooms, or activity spaces, within departments, departments within family clusters, and interdependent functional and clusters of departments within the overall movement network of the site as a whole, including relationships with existing development, vehicle movement, etc. This is followed by the distribution of the activities volumetrically in a spatial, three-dimensional relationship on the site determined by the selected structural system.

2. For the Structural Engineer this means the formation of structural proposals based on the results of the site investigation and the examination of the requirements as these are determined by the built form of the plan.

3. For the Mechanical & Electrical Engineer this means the selection of routes for main distributing services and the siting of major plant elements within the built form and without, as in the case of boiler house, ventilation plant, etc.

4. For the Quantity Surveyor this means a continuous activity involving cost advice on alternative proposals as these are brought forward, together with the preparation of an estimate to accompany the preliminary Development Control Plan.

During the whole of the planning process there must be continuous interaction between the various disciplines in order to allow Tasks 4.02 to 4.19 to proceed in parallel and to avoid the necessity of going back to correct abortive work.

Once the Design Team's proposals are submitted to the Project Team, Task 4.22, the consequences of the original project philosophy can be seen for the first time. It is possible that at this point the Project Team decides that the original philosophy when realised in practical terms requires revision. In these circumstances, that is to say, when the Design Team's proposals are not acceptable, it will be necessary to return to Task 4.01 in order to reappraise the plan of work.

See APPENDIX 6: Work Section 4.00

work section 4·00

PRODUCTION OF THE PRELIMINARY DEVELOPMENT CONTROL PLAN

5

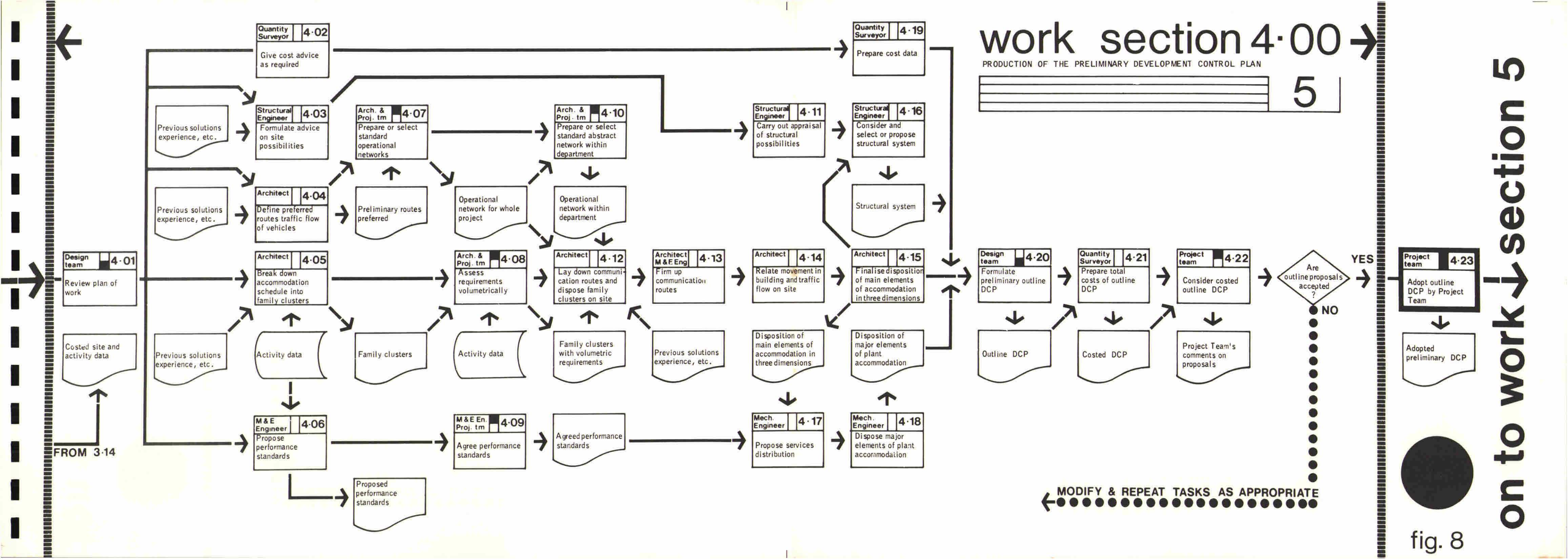


fig. 8

work section 5.00

FINALISATION AND ADOPTION OF THE DEVELOPMENT CONTROL PLAN

At the commencement of this Work Section, the information previously referred to is made available from Work Section 4.00.

The object of this Work Section is to prepare the documentation necessary in order to obtain departmental approval of the Development Control Plan. The input is used by the Design Team to revise their proposals in the light of the comments of the Project Team, Task 5.01, in order to present their final report to the Department of Health & Social Security, Task 5.03. Approval by the Department of Health & Social Security and agreement to proceed with the project, Task 5.04, represents the final milestone within the Development Control Plan sub-system. This, together with the data collected, comprises the output of the Development Control Plan sub-system. See Fig. 9 opposite.

If the Development Control Plan is presented, Task 5.03, and is not accepted, then it would be necessary to return to Work Section 1.00 in order to commence work again with fresh requirements for the project. However, this does not imply that it would be necessary to repeat all the tasks within each Work Section before preparing a revised Development Control Plan, but merely that the work already carried out should be reviewed and revised as necessary in the light of the Department's findings.

work section 5·00

FINALISATION AND ADOPTION OF THE DEVELOPMENT CONTROL PLAN

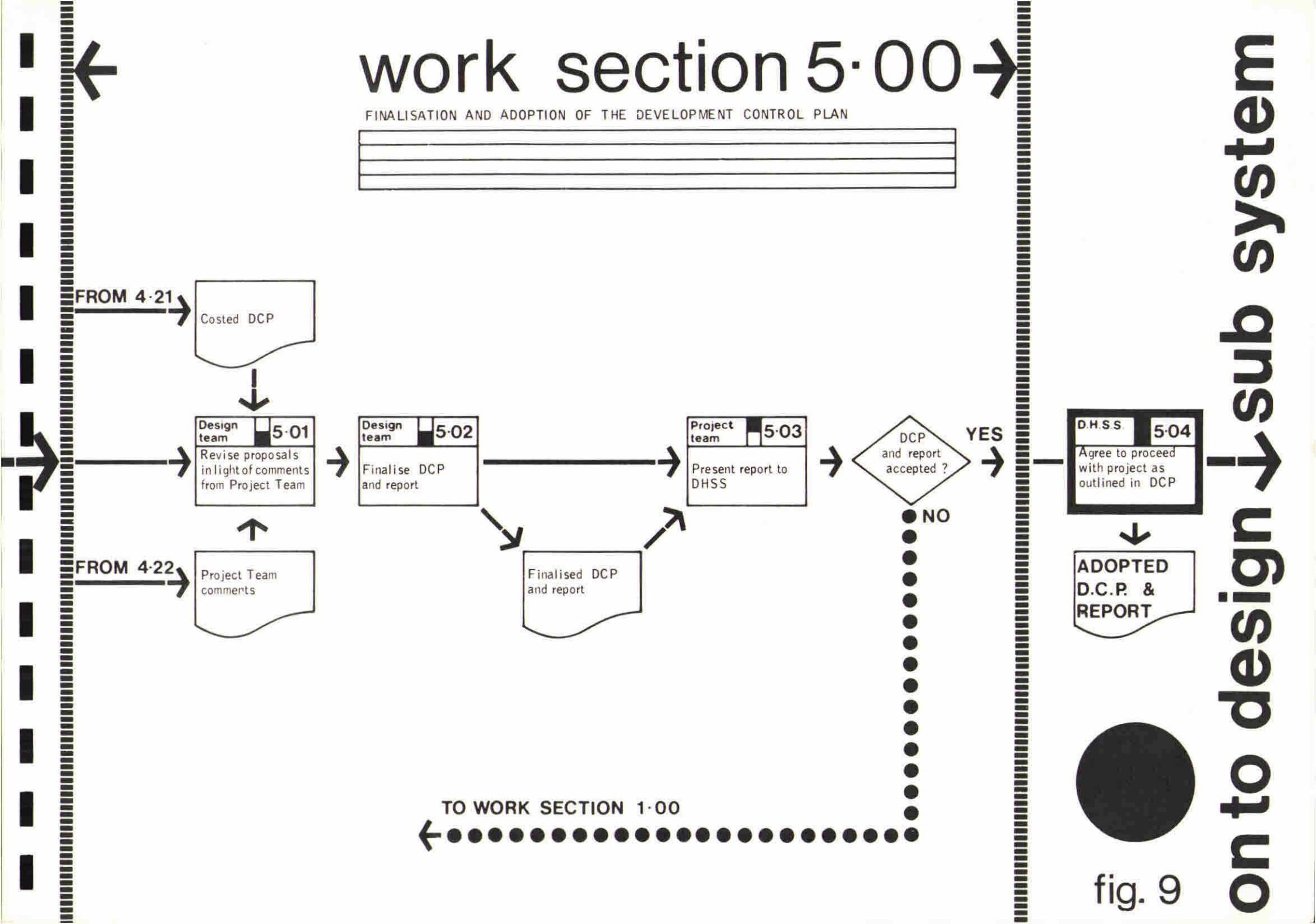


fig. 9

output

OF DEVELOPMENT CONTROL PLAN SUB-SYSTEM

The output as seen at present includes:

ANALYSIS OF CATCHMENT AREA
Area base map, i.e. Ordnance Survey Map scale 1:100,000 or 1:10,560 (6"), depending on size, showing -

population distribution
transport network
district services
topography of demand

plus supporting statements and statistics.

SITE APPRAISAL REPORT
(a) Local maps 1:10,560 or 6" to mile, with transport services, major features, shown -

(b) Individual site location drawings 1:2,500

(c) Site appraisal matrix

plus supporting statements and statistics.

ANALYSIS OF EXISTING SITUATION ON SELECTED SITE
Site plan 1:500 scale showing -

physical history
projected future development of existing medical and engineering services
survey of existing traffic

STATEMENT OF FUNCTIONAL CONTENT
(a) Original statement updated in light of experience gained during the preparation of Development Control Plan

(b) Abstract network diagram showing agreed operational requirements both within catchment area and on selected site

plus supporting statements

REPORT ON DEVELOPMENT PROPOSALS
(a) Plans, sections, elevations and three-dimensional exposition, i.e. perspective sketch or model, all to 1:500 scale to show, broadly, information given in Hospital Building Programme Note 5, Appendix 1, but amplified to demonstrate, for instance, potential growth and change, flexibility in use, etc.

(b) together with statement setting down design philosophy

(c) all above to incorporate structural and engineering implications.

STATEMENT OF COSTS BOTH CAPITAL AND REVENUE
At this stage, capital costs are divided into two main categories:

(a) Departmental

(b) On costs

It is important that the revenue costs resulting from a particular Development Control Plan are identified at an early stage.

appendices

appendix 1

THE SYSTEMS ANALYSIS APPROACH TO THE DESIGN PROCESS

As a pre-requisite for computer-aided design, a large amount of work has been carried out in an endeavour to produce a viable model of the architectural design process. At the present time the majority of the work shows the results of trying to divide the traditional design process into a number of distinct phases. The next step is to bring these together to give a practical definition of the whole process.

The decision making process can be represented in a number of ways, all of which are essentially feedback loops with the designer working within accepted parameters and evaluating a number of possibilities until he reaches an optimum solution. The figure shows the stages of analysis, synthesis and appraisal Normally this sequence will be carried out a large number of times, each cycle getting more and more detailed.

ANALYSIS where the basic data is collected, manipulated and ordered. This stage is divergent in that the boundaries of the design situation are extended, the brief being taken as a starting point. Since, at this stage, the catchment area, available sites, facilities and resources will be investigated in detail, the possibility of modifying the brief (after, of course, obtaining the Client's approval) must be considered if solutions outside the original specifications seem appropriate.

SYNTHESIS when partial or total solutions as they seem appropriate are proposed but not yet proven. This stage is called transformation by J.C.Jones* who describes it as the "stage of pattern-making, fun, high-level creativity, flashes of insight, changes of set, inspired guesswork, everything that makes designing a delight".

APPRAISAL when the characteristics of a solution are measured and compared with existing criteria. In architectural design, these criteria are of three types -

(a) optimum, i.e. comparing a particular solution with other possibilities to obtain the BEST in the specified conditions

(b) mandatory, e.g. lighting levels

(c) the accepted norm in the particular situation.

The aim is to select a single design as quickly and cheaply as possible, whilst reducing the likelihood of unforeseen snags arising at a later stage. By defining the criteria on which the design solution is based and documenting the stages on the way, any changes which may become inevitable can be more easily accommodated.

This decision making process can be thought of as one dimension in the overall design process, the other dimension being design management. This includes the production and management of a plan of work which must allow appropriate time for decision making at all levels, the organisation of communication routes, information retrieval systems and documentation of the particular design process.

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*J.C.Jones. DESIGN METHODS. Wiley - Interscience 1970

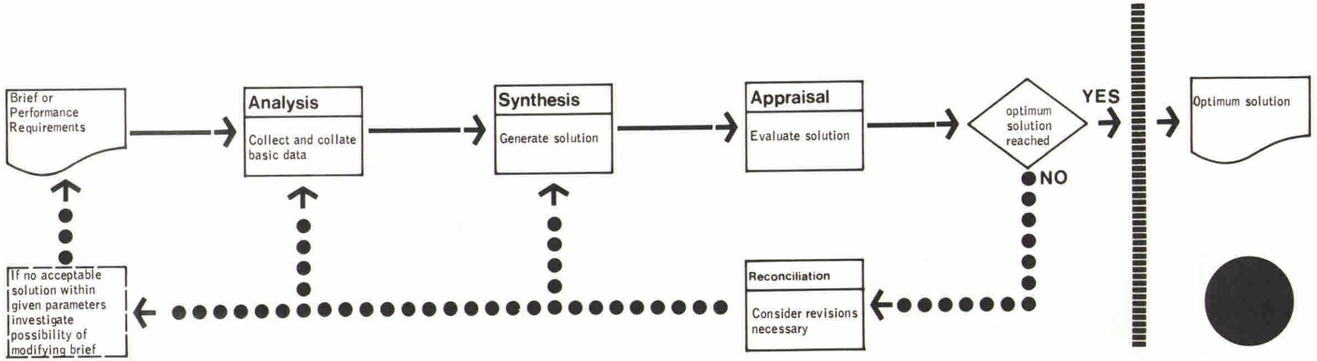
Brief or Performance Requirements
Analysis
Collect and collate basic data
Synthesis
Generate solution
Appraisal
Evaluate solution
optimum solution reached
YES
NO
Optimum solution
If no acceptable solution within given parameters investigate possibility of modifying brief
Reconciliation
Consider revisions necessary

fig. 10

appendix 2

APPLICATION OF AUTOMATED DATA PROCESSING TECHNIQUES

Over the last few years, developments in the computer field have made it possible to use computers not only to perform conventional mathematical operations, but also to assist in fields such as architectural design, which are less easily defined.

Computer input and output devices such as video-display units and multi-access 'time-sharing' systems, enable a designer to communicate with a central computer in a 'conversational' manner so that the designer and computer form an interactive partnership. Programming languages have been developed which are easily learnt by the designer himself, thus bringing him nearer to the computer processes.

As in the traditional types of batch-processing, the results achieved can only be as good as the information supplied to the computer. However, the fact that large quantities of information can be stored and manipulated makes it possible to present the data in a variety of forms and compare a large number of design solutions.

The information required takes two forms -

(a) the data itself

(b) methods for manipulating the data, i.e. the computer programs. Data which can be held centrally must be identified and suitable methods of storage devised. Its reliability will depend on a number of factors and the designer will need to know the sources and the date of the latest up-date in order to assess the weighting he should give to various items.

Richard Baxter[1] amplifies these points, explaining how a data bank can be established and breaking down the process into a number of stages.

Before computer programs can be written, a viable model of the architectural design process itself is required. This is discussed in the previous Appendix where three stages, analysis, synthesis and appraisal, are identified. Two ABACUS[2] papers describe the ways in which a computer can be used as an aid to architectural design and identify gaps in the 'architecture machine'. Three types of computer programs can also be identified and each is generally most suitable for one of the design stages:

MATHEMATICAL MODELLING used where the relationship between the variables can be stated in mathematical form. This is usually appropriate at the analysis stage of the design process. Examples are:

(a) site levels converted into site sections

(b) cluster analysis - a technique for structuring large multivariate problems into parts. For example, the relationships between a number of space elements (storeroom, reception, laundry, etc.) could be given and a cluster analysis used to express the physical grouping. This technique is described by M. Milne[3].

HEURISTIC MODELLING used in situations where a BEST solution is sought from an effectively infinite range of possible solutions which is limited by a number of search rules called heuristics.

Programs have been designed to arrange a number of departments on a site. The strength of association between each pair of departments can take the form of an association matrix and one of the heuristics, determined when the program is written, is the order in which departments are to be located. T.M.Willougby describes[4] a variety of computer-aided planning methods of this type and suggests[5] that automatic mechanisms are best used within a subjective framework.

Although generative programmes of this type would appear to be appropriate to the synthesis stage of the design process, the description of this stage as one of high-level creativity shows the difficulty of using automated processes here. T.W.Maver and J. Fleming[6] in their discussion of the generative program STUNI, come to the conclusion that although it is classified as a generative program and contains elements of analysis and appraisal, its main function has been as an analytical tool for the investigation of the spatial implications of varying site conditions, functional associations and the weighting between these.

SIMULATION MODELLING where a solution produced either manually or by a generative program is the input and a performance index for particular criteria are calculated. An early example of this type of program for the layout of a hospital building based on the pattern of movement of staff, patients and visitors is described by J.J. Sander[7].

The Land Use and Built Form Centre at Cambridge University have designed a number of programs for use in evaluating the environmental performance of buildings. Daylight factor calculations, artificial lighting installating design, thermal performance and accoustic evaluation are provided at present. In order to carry out these calculations, a computer representation of the building had to be devised. This is described by Dean Hawkes and Richard Stibbs[8]. A different approach to the problem of representing complex building forms in a computer is described by Lionel March and Philip Steadman[9] who develop point set theory for this purpose.

The availability of appraisal programs gives the designer the facility for evaluating a large number of possible solutions before making a decision

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1. Richard Baxter. "Data Bank for Urban Models". Architectural Design, May 1971
2. T.W.Maver. "The Computer as an Aid to Architectural Design, Present and Future". Abacus Occasional Paper No. 10. University of Strathclyde. December 1970
2. Bradford, Coleman, Lowe & Robertson. "The State of CAAD and Proposals for Further Investigations." Abacus. University of Strathclyde. December 1970.
3. M. Milne. "Cluster: A Structure Finding Algorithm." Paper presented for the Design Methods Group Conference, Cambridge, Massachusetts. June 1968.
4. T.M.Willoughby. "Computer Use, a Direction for Computer Aided Planning Methods". Building. 5th February 1971.

5. T.M. Willougby. "A Generative Approach to Computer-Aided Planning". Working Paper No. 42. Land Use and Built Form Centre, University of Cambridge.

6. T.W. Maver & J. Fleming. STUNI. "A Generative Approach to Built Form Layout". Abacus Occasional Paper No. 3. University of Strathclyde, May 1970.

7. J.J. Sander, et al. "Planning for Hospitals: A Systems Approach using Computer-Aided Techniques". American Hospitals Association. Chicago 1964.

8. Dean Hawkes and Richard Stibbs. "Computer Representation Architectural Design". May 1971.

9. Lionel March and Philip Steadman. "The Geometry of the Environment". RIBA Pulications Ltd. April 1971.

appendix 3

NOTES ON DATA GATHERING AND ANALYSIS PROCEDURES

During the Development Control Plan system, particularly in Work Sections 2.00 and 3.00, a wide variety of data is collected and processed. Although a number of different disciplines are involved, there is an overall similarity in each of these tasks in that the Design Team request, from the particular expert, certain specified information. This expert then has to decide what data is already available, if external data is required, how it is to be obtained and how the data is to be processed to give the required output.

These procedures are shown in outline in Figure 11 (overleaf).

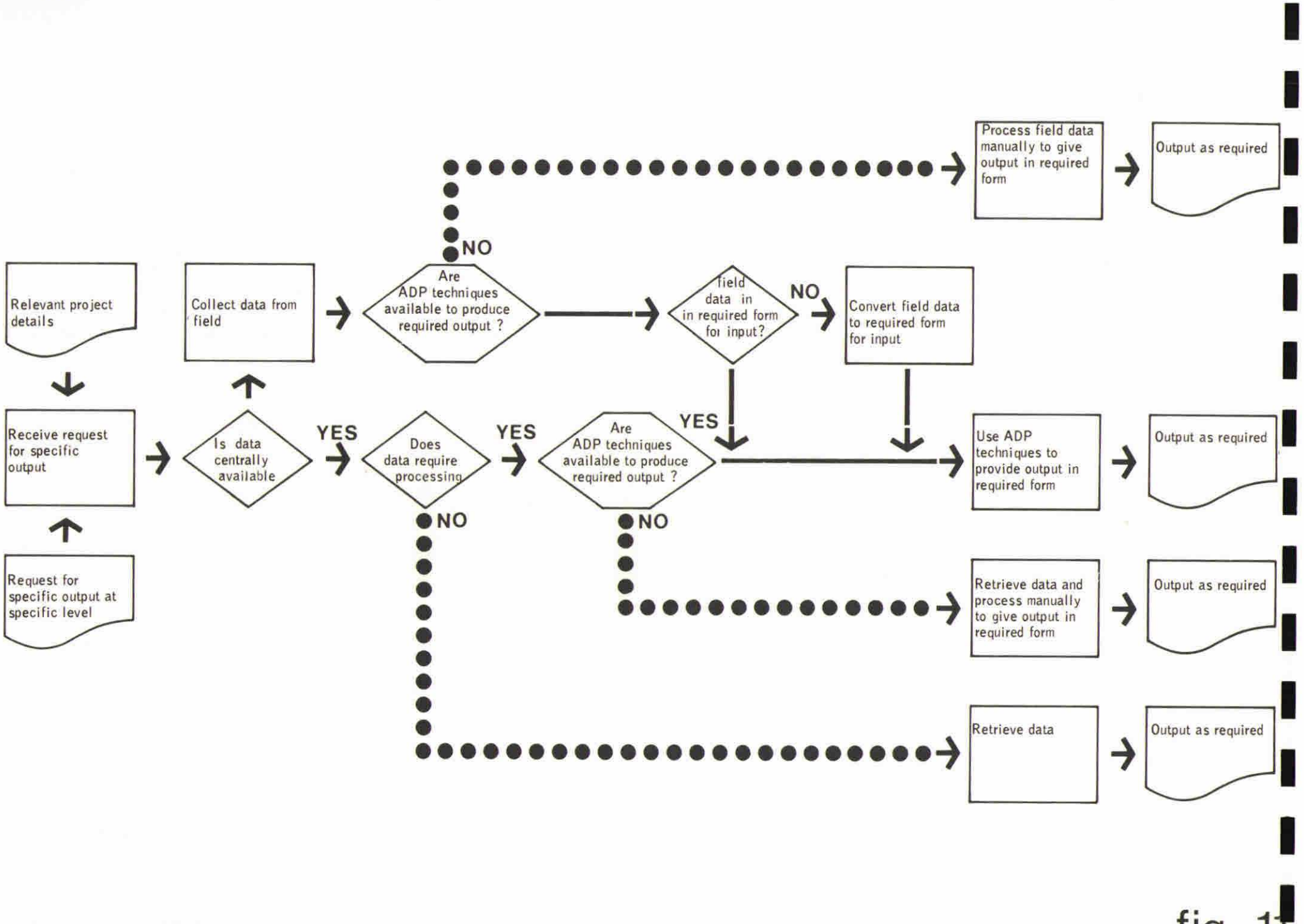

Relevant project details
Receive request for specific output
Request for specific output at specific level
Is data centrally available
Collect data from field
YES
Does data require processing
YES
Are ADP techniques available to produce required output ?
NO
Are ADP techniques available to produce required output ?
NO
field data in in required form for input?
NO
Convert field data to required form for input
YES
Process field data manually to give output in required form
Output as required
Use ADP techniques to provide output in required form
Output as required
Retrieve data and process manually to give output in required form
Output as required
Retrieve data
Output as required

fig. 11

appendix 4

WORK SECTION 1:00
PREPARATION OF THE PLAN OF WORK

The first task of this work section is for the project team to formulate the project requirements. In the case of projects with ample precedent, such as general district hospitals, most of the data will already be available, however other projects, such as community care or psychiatric care projects will involve collecting information relating to the catchment area served and building up a schedule of requirements. Once the design team is appointed, their first task, no. 103, is to produce a plan of work and examples of these are given on the following pages.

NOTES ON EXAMPLES

EXAMPLE NO. 1 is a typical plan of work for the preparation of a development control plan setting down the various stages and critical decisions. In this case the project team is termed "working party".

EXAMPLE NO. 2 is a notional programme relating tasks set down in the plan of work shown in the previous example to a definite time scale. Again this was submitted to the working party or project team for adoption as the overall project timetable.

EXAMPLE NO. 3 shows an overall timetable related to the same project. It indicates the growth of the population, the requirements in terms of buildings to provide the necessary health services, the phasing of their construction and makes provision for the time required to prepare plans and contract documents. It also indicates population's requirements for temporary facilities pending completion of the permanent buildings.

EXAMPLE NO. 4 shows a typical timetable related to one of the individual buildings forming part of the above overall project. As such it indicates those tasks which are the responsibility of the client or the project team as well as those carried out by the design team. It draws attention to the most critical activities. These are connected by lines indicating the principal sequence of events to form a "link bar chart".

A. FIRST STAGE OUTLINE BRIEF

1. Define terms of reference.
2. Determine scope of project in terms of area.
3. Determine needs of community in terms of services and population.
4. Determine philosophy of Medical Plan.
5. Consider effect of future inovations.
6. Compare long and short term objectives.

B. INITIAL SITE APPRAISAL

Preliminary information search completed while "A" in progress, then:-

1. Identify related activities in community.
2. Define operation principles and characteristics of Thamesmead.
3. Define population distribution, type, density, work pattern, etc.

N.B. Principal task for stage "B" is to consider optimum distribution of facilities required to meet first stage brief.

C. INITIAL DEVELOPMENT CONTROL PLAN

1. Define functional elements and establish their inter-relationship.
2. Define links with Thamesmead community.
3. Define environmental requirements of site.
4. Establish form and growth characteristics of functional elements.
5. Identify phasing problems.
6. Select site.

D. PRESENT PRELIMINARY PROPOSALS AND DISCUSS WITH WORKING PARTY

E. SECOND STAGE OUTLINE BRIEF

As "A" above, but refined with additional data.

F. FINAL SITE APPRAISAL

Reconsider issues set out in "B" above in light of revised brief, adjust and confirm siting.

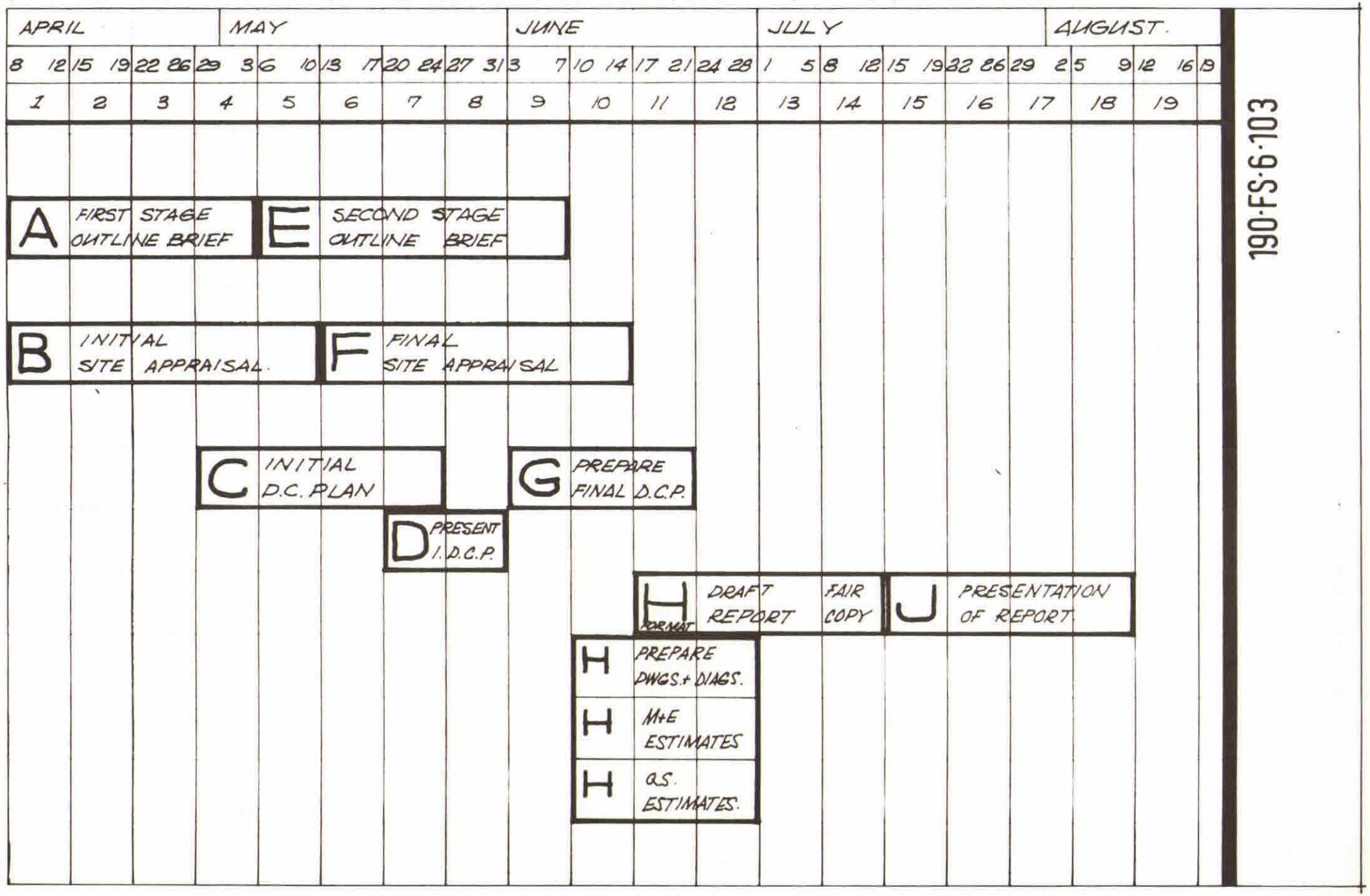
G. FINAL DEVELOPMENT CONTROL PLAN

1. Reconsider and amend "C" in the light of "E" and "F" above.
2. Prepare estimates of capital and revenue costs for final development and interim phases.

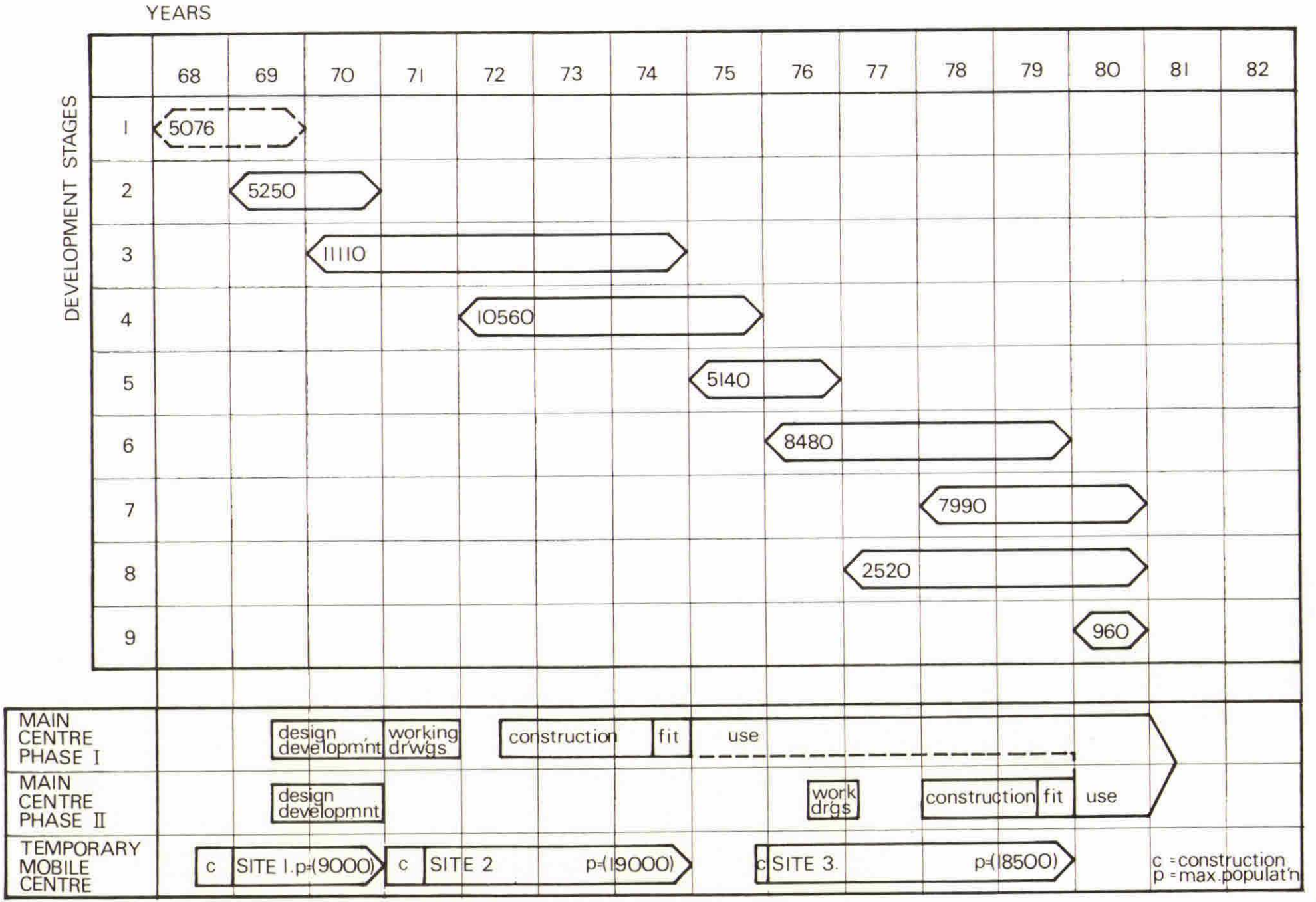
H. PREPARE REPORT AND PRESENT TO WORKING PARTY

J. PREPARE AND DRAFT ADDITIONAL COPIES OF REPORT FOR JOINT HEALTH SERVICES COMMITTEE, ETC.

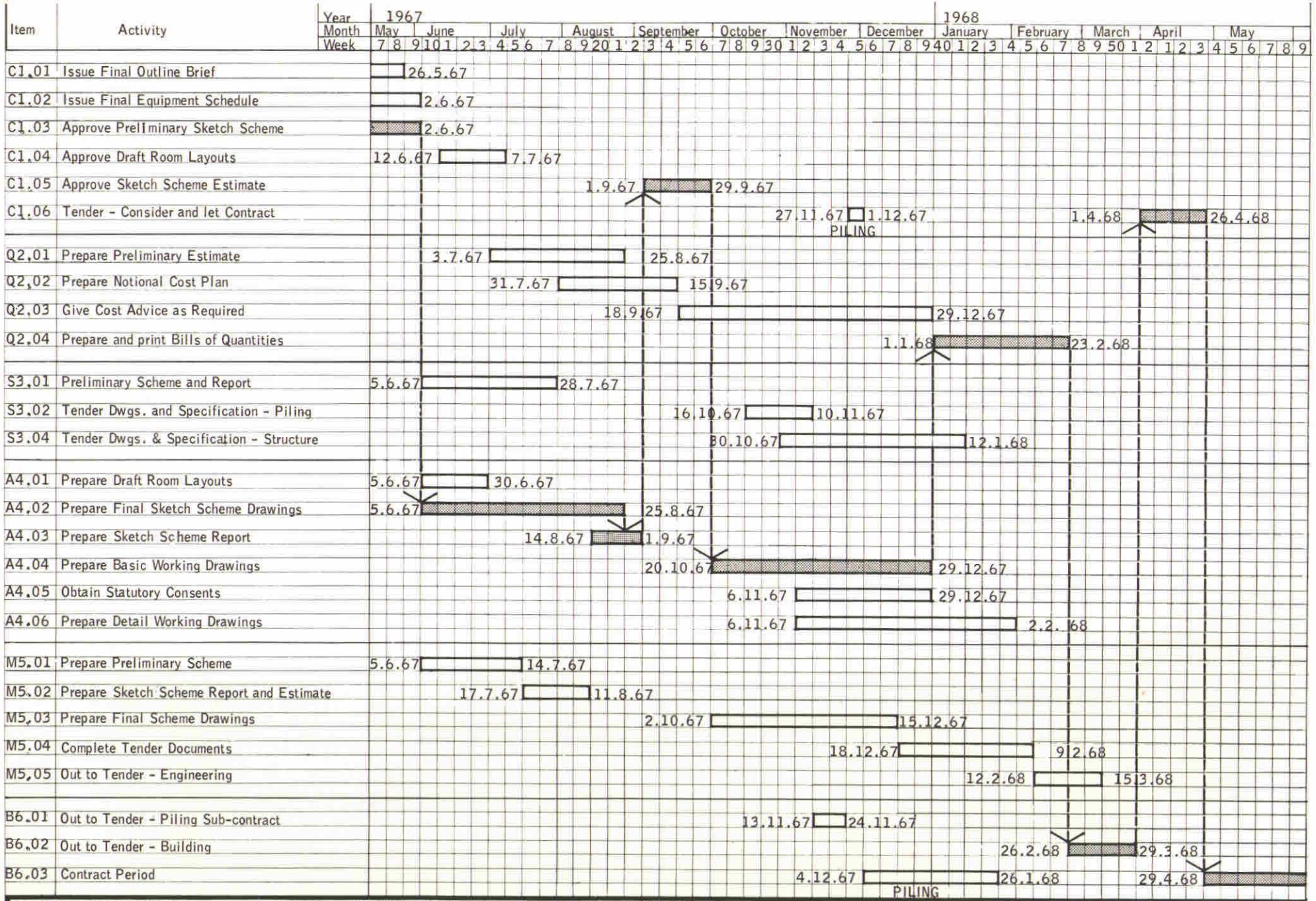
THAMESMEAD MAIN HEALTH CENTRE FEASIBILITY STUDY NOTIONAL PROGRAMME



EXAMPLE 2



PHASING DIAGRAM EXAMPLE 3


Item
Activity
Year
Month
Week
1967
May
June
July
August
September
October
November
December
1968
January
February
March
April
May
C1.01 Issue Final Outline Brief
26.5.67
C1.02 Issue Final Equipment Schedule
2.6.67
C1.03 Approve Preliminary Sketch Scheme
2.6.67
C1.04 Approve Draft Room Layouts
12.6.67
7.7.67
C1.05 Approve Sketch Scheme Estimate
1.9.67
29.9.67
C1.06 Tender - Consider and let Contract
27.11.67
1.12.67
PILING
1.4.68
26.4.68
Q2.01 Prepare Preliminary Estimate
3.7.67
25.8.67
Q2.02 Prepare Notional Cost Plan
31.7.67
15.9.67
Q2.03 Give Cost Advice as Required
18.9.67
29.12.67
Q2.04 Prepare and print Bills of Quantities
1.1.68
23.2.68
S3.01 Preliminary Scheme and Report
5.6.67
28.7.67
S3.02 Tender Dwgs. and Specification - Piling
16.10.67
10.11.67
S3.04 Tender Dwgs. & Specification - Structure
30.10.67
12.1.68
A4.01 Prepare Draft Room Layouts
5.6.67
30.6.67
A4.02 Prepare Final Sketch Scheme Drawings
5.6.67
25.8.67
A4.03 Prepare Sketch Scheme Report
14.8.67
1.9.67
A4.04 Prepare Basic Working Drawings
20.10.67
29.12.67
A4.05 Obtain Statutory Consents
6.11.67
29.12.67
A4.06 Prepare Detail Working Drawings
6.11.67
2.2.68
M5.01 Prepare Preliminary Scheme
5.6.67
14.7.67
M5.02 Prepare Sketch Scheme Report and Estimate
17.7.67
11.8.67
M5.03 Prepare Final Scheme Drawings
2.10.67
15.12.67
M5.04 Complete Tender Documents
18.12.67
9.2.68
M5.05 Out to Tender - Engineering
12.2.68
15.3.68
B6.01 Out to Tender - Piling Sub-contract
13.11.67
24.11.67
B6.02 Out to Tender - Building
26.2.68
29.3.68
B6.03 Contract Period
4.12.67
26.1.68
PILING
29.4.68
C1.00 = CLIENT BODY
Q2.00 = QUANTITY SURVEYOR
S3.00 = STRUCTURAL ENGINEER
A4.00 = ARCHITECT
M5.00 = MECHANICAL & ELECTRICAL ENGINEER
B6.00 = BUILDING OPERATIONS
26·5·67
D.A.S.
THAMESMEAD FIRST MEDICAL CENTRE
NOTIONAL PROGRAMME
191·FU·6·103
DEREK STOW A.R.I.B.A. ARCHITECT
181, Camberwell Grove, London, S.E.5.

EXAMPLE 4

appendix 5

WORK SECTION 2:00
SELECTION OF THE SITE

TASK 2.01

The first task in this work section involves the project team submitting data on the sites under consideration to the design team together with supporting information defining the boundaries of the catchment area to be served and its geographic relationship with other services already existing within the region. The project team should also provide information establishing the status of each of the sites under consideration, for instance -

(a) ownership, whether leasehold, freehold or crown hold

(b) any restrictive covenants

(c) any easements, rights of way, rights of access, rights of light, air or support

(d) any other legal constraints arising from the use of consecrated ground, disused grave yards, etc.

(e) information on any existing town planning approvals granted for development of the site.

Apart from the "outline" of the project already referred to, the design team will require to know the ultimate intended use of any existing developments on the site, the possible dates for possession and an overall project timetable.

ANALYSIS OF CATCHMENT AREA CHARACTERISTICS

OVERALL OBJECTIVES OF TASKS 2.04, 2.05 and 2.06

The objectives of these tasks are to provide broad information which, once analysed, will reveal the characteristics of the catchment area and its population in such a way as to make possible the assessment of the comparative accessibility and convenience to the community of alternative sites that the project serves, and also to confirm, or otherwise, the appropriateness of the various elements that make up the functional content. It is, therefore, not necessary that the information gathered should be in elaborate detail, or that the procedures should be carried out to precise limits, since it must be assumed that the task is carried out in a dynamic situation where the population and its needs are changing over as time elapses. Although the following procedures are set down sequentially, they are interrelated and information gathered as a result of any particular search would be used by several of the exercises.

TASK 2.04: CARRY OUT POPULATION SURVEY OF CATCHMENT AREA

(a) Population characteristic of area
The object here is to discover broadly the characteristics of the population, whether it is an area of affluence or unemployment; whether it is industrial, rural, commercial, etc., whether the population trend is one of reduction or increase. Broad information of this type can be obtained from the Local Authority responsible for the area if it is an existing development, including the identification of any planned future development which will alter the population mix.

(b) Distribution by density, age and social class
The objective in carrying out this search is first of all to discover areas of high density in the population, to locate the distribution of those age groups with special needs, e.g. child population and geriatrics and, finally, to discover the distribution of the population by social class, thus identifying those centres where the population is at the lower levels of the social ladder and hence the demand for services will be the highest, and those at the higher levels where the population will be most mobile and the demand for services the least. For both existing and new developments, population densities can be obtained from the Local Planning Authority, whilst information on distribution by age and social class can be obtained from the Medical Officer of Health or Director of Social Services. The distribution of the population by density, age and social class can be indicated broadly on layered drawings over a base map of the catchment area. Here it must be understood that the information given can only be, and need only be indicated broadly, since the population mix will inevitably change over the years in its age and social structure, if not in its density, except in the case of the project which serves a new development where the objective is to maintain a constant mix.

(c) Day and night time population
The objective of this exercise is to discover the location of the day and night time populations and to assess the demands for an industrial health service. The information required will be an assessment, firstly of the working population, secondly the proportion of these who work within the catchment area and, thirdly, of those who commute to places of work outside and, fourthly, of the numbers of immigrant workers entering the area during the day. It is unlikely that anything but the night time population will be used to assess accessibility of the given site to the population it serves, unless special provisions are being made for the transient population. This is because the majority of the population make use of the services where they live rather than the services where they work.

(d) Daily migration patterns
The objective of this exercise is to discover the migration patterns formed by the population going about their everyday life. It is, therefore, necessary, in broad terms, to identify each centre of population with its place of work and to discover its shopping habits, journeys made to places of education, etc. This information can generally be obtained from the Local Planning Authority Department and once again, it is not necessary that fine statistical data be available before broad trends of movement can be identified.

(e) Population projection
The objective here is to discover both known and expected changes in size and mix of the population. Further, by inspection of data to reveal existing trends, or to forecast the likely effect of future changes. Information on expected population projections are available from Local Planning Authorities,

whilst the trends in demand for medical services are often available from existing medical facilities within the catchment area. Once again, it is not possible to obtain hard and fast information, however, it is easily possible to discover whether the population is ageing as a result of industry being moved to expanded towns taking with it the working population, to estimate the probable effect of dock closures , etc., or to forecast the consequence of a new large housing development importing special demands for services. The projected population, its location and demands can be shown as overlays to the maps referred to above, or incorporated as an additional overlay to (f) below.

(f) Topography of demand

The objective of this task is to produce a graphic illustration showing the main centres of demand for services. Such a map would be produced by taking the information already plotted above, and manipulating it in order to reveal the most critical problems existing within the catchment area. This can be done by adjusting the density figures by a factor to take account of the frequency of utilisation of the services made by certain sectors of the population according to age or social class. This can be achieved by utilisation factors as used in Sweden, and as is being developed by Sussex University, or by awarding a points system based on the frequency of use of the services. Thus, statistics can then be plotted on the catchment map and contours drawn to illustrate peaks of demand.

(g) Mobility of population

The objective here is to analyse the population of the catchment area in order to identify the location of those most, and least, able to travel to the services provided. This information can be derived from the distribution discovered under (b) above, since it can be assumed that those at the top of the social ladder are most mobile, and those at the bottom are the least, and that both the geriatric and the child population under 5 years old, represent the section of the community least able to travel. The results of this analysis will have to take into account any existing Local Authority arrangements which favour particular groups, for instance, the Local Authority may run a bus ambulance service to pick up geriatrics, or the local transport service may have buses designed to carry large prams.

(h) Transient population

The objective here would be to identify any existing or planned element within the catchment area which, by its presence, will generate a transient population which, in turn, will place demands on the services. Examples of this sort of element would be an airport, motorway, holiday camp, etc. The location of such elements would have an effect on the siting of the services within the catchment area if it generated a high demand, for instance, for accident and emergency services such as is the case with a motorway.

(i) Special characteristics, e.g. a population with proneness to particular diseases

This information will already be at hand since it will be used by the medical planners in determining the functional content. Its relevance here is that it may well be that a large number of patients suffering from an industrial disease is concentrated in a particular sector of the catchment area and may also, as a result of their social class or disabilities, be the least mobile section of the community.

TASK 2.05: CARRY OUT AMENITY SURVEY OF CATCHMENT AREA

(a) and (b) Trip time from centres of population by different travel modes and comparison of these times with normal trips to other amenities

The objective of this analysis is to discover the convenience to the user rather than the accessibility of the site. It is, therefore, concerned with the time taken by the population in travelling to the site rather than the physical distances involved. It is, therefore, necessary to take account not only of the various centres of demand within the population, but also the modes of travelling which are open to these sections of the community. From the information already gathered as a result of the exercises outlined above, it will be possible to plot from the chosen sites the limit of travel within prescribed times by foot, by bus, by rail, or by a combined trip involving more than one mode of travel. Although it may also be useful to plot the trip time of those mobile sections of the community who have access to car travel, it is more than likely that any solution which allows convenient access by public transport will automatically be convenient to car users, providing reasonable parking provisions are envisaged.

(c) Site location in respect of off site supply and disposal, or other health services

The objective here is to consider the site in connection with other related health service facilities. It is more than likely that a proposed development will be dependent on the support of existing health facilities, or will provide services to other units within the area. It is, therefore, important to establish accessibility to the site from the point of view of these related health facilities.

(d) Site location in respect of location of non-resident staff

It would appear to be the trend that an increasing proportion of employed staff live out and are not resident on site. It is, therefore, necessary to take account of the likely areas from which possible staff may be drawn, in considering the location of the project.

(e) Undesirable hazards near site, i.e. pollution, road and traffic noise, smoke and fumes

The location of these possible hazards can be derived from the information already gleaned above. The object under this heading, therefore, will be to obtain more precise information about the type of industry, or frequency of traffic, to be expected and the consequential effect of traffic noise, fumes, etc.

(f) Existing surrounding development, proposed changes in land use

The object here would be to discover the nature of the existing and projected development immediately adjacent to the site, and to reveal any factors which might impinge on its satisfactory use for the purposes intended.

TASK 2.06: CARRY OUT GEOGRAPHICAL SURVEY

(a) Location of existing and known future service facilities

The objective here is to discover the location of the existing health service facilities within the catchment area, to discover their future role and their relationship and interaction with the planned development. It is often the case that the project planned will draw on staff and supply resources from existing health services within the district. It is also probable that the new development itself will provide some sort of support

of those facilities which already exist. Therefore, it is obviously vitally important to ensure that the location of the intended project is conveniently accessible and in the right geographic relationship to existing hospitals, industrial zones, health centres, etc. It is also important to discover the future intended life of these existing facilities if the new development is dependent on these and is not in itself expected to offer a comprehensive range of services.

(b) Obstacles to movement

The objective here is to identify any existing or future obstades to movement which will interfere with the community's access to a particular proposed site. It will, therefore, be necessary to inspect the catchment area and discuss with the Planning Authority the possibility of any existing or future physical barriers to movement. Typical barriers are railway lines,canals, motorways, single direction traffic managements systems, sewer embankments, and the like. All these elements can be crossed at only limited points and their existence or projected introduction into the catchment area can easily isolate centres of population who have a high participation rate in the proposed facility. Even if such barriers do not severely limit access to the chosen site, they might easily make necessary detours which could have significant social cost implications. Once these obstacles are identified, they can be plotted on the base map and compared with the topography of demand and daily migration patterns plotted under Task 2.04 above, and related to (c) below.

(c) Aids to movement

Apart from the obstacles to movement noted in (b) above, there will, within any catchment area, be existing aids to movement in the form of bus and rail services, road networks and Local Authority bus ambulance services. It is, therefore, important to plot the probable routes of these services and relate them to the centres of population and peaks of demand already determined. At the same time, if any large developments are planned within the catchment area, it is probably advisable to take up with the transport authorities concerned any future recasting of services which may be intended. If this is done at an early stage it may be possible to agree minor modifications to existing public transport services to suit the demands generated by the new health facility. It may also be possible at this stage in the analysis, to identify any deprived sections of the community who are badly served by the public transport system and yet will be intensive users of the project. In this case it may be possible to agree with the Local Authority some upgrading of their ambulance pick-up services, the cost of which would offset the cost of a more accessible but expensive distribution of facilities.

(d) Transport Services

The objective here is to discover the convenience in use of the existing transport service to the community served, hence it is only necessary to discover the bus and rail timetable frequency. This information is obviously important, since it is necessary to correlate the frequency of the transport service timetable with out-patient clinic sessions and the like. If these are incompatible and not amenable to alteration, it is obviously of little advantage that a site be served by a transport network whose services do not relate, but involve long waiting periods. This information will also be required in order to prepare a map showing the trip catchment areas.

(e) Main Shopping centres

The objective here is to identify the existing and projected main shopping areas used by the population. This information is necessary, since it is an obvious advantage if the location of the project is compatible with the way that the population in the

catchment area order their daily lives in order that the use of the facilities planned can coincide and make use of transport facilities already existing.

(f) Main civic groupings

The objective here is to identify and locate existing or projected main civic groups housing related social welfare services. It is quite likely that episodes of illness, particularly if a policy of early discharge is envisaged, closely involve supporting services provided by the Local Authority. It is, therefore, an advantage to know the geographic relationship of the hospital to the Medical Officer of Health's department, and the headquarters of the domicillary and other services he provides.

(g) Future development plans for motorways, industry and city centre projects within the catchment area

These considerations have already been referred to above. They are mentioned here to draw attention to the vital importance of discovering all projected developments which could affect the nature of the catchment area, disturb the existing population pattern, interfere with access, or impinge on the local environment of the site under consideration. Such information can only be obtained as a result of collaboration with the Local Planning Authority.

NOTES ON EXAMPLES

EXAMPLE NO. 5 is a typical base map of a catchment area showing in simplified form the principal geographic physical features, rail and road transport networks, over which are plotted the population densities. In this case the population statistics were given by the GLC.

EXAMPLE NO. 6 is a map showing the trip catchment areas radiating from the chosen site. In this case the main health centre at Thamesmead. The boundaries of each area indicate the distance travelled from the centre within a given time period according to various modes of travel. The object is to discover the convenience of access to the site from the point of view of those dependent on the service.

EXAMPLE NO. 7 is a contour map plotting the level of demand for services arising from the population. As such, it indicates critical peaks and is useful when compared with the previous example in assessing the convenience of the site under consideration.

EXAMPLE NO. 8 is a map showing the district medical services surrounding the catchment area of the project which provide specialist services for the population under consideration.

EXAMPLE NO. 9 is a staging map showing the sequence in which the town is to be developed and the dates on which the population served will be taking up residence. At the same time it indicates the site of permanent and temporary health buildings.

EXAMPLE NO. 10 is a table showing the population projection by sex and by age deriving from statistics provided by the GLC.

EXAMPLE NO. 11 is a population pyramid plotted from statistics given by the GLC. As such it is a simple graphic illustration of the characteristics of the population showing the projected changes over a given period of time, in this case between 1975 and 1986.

EXAMPLE NO. 12 shows the occupational structure of the working population in the form of a table, together with an estimated distribution of employment, again related to the Thamesmead project.

EXAMPLE NO. 13 represents an alternative graphic form for illustrating a population projection. The graph indicates the build-up of the population within the catchment area and represents those of working age, school age, young children and retired, together with the cumulative total population.

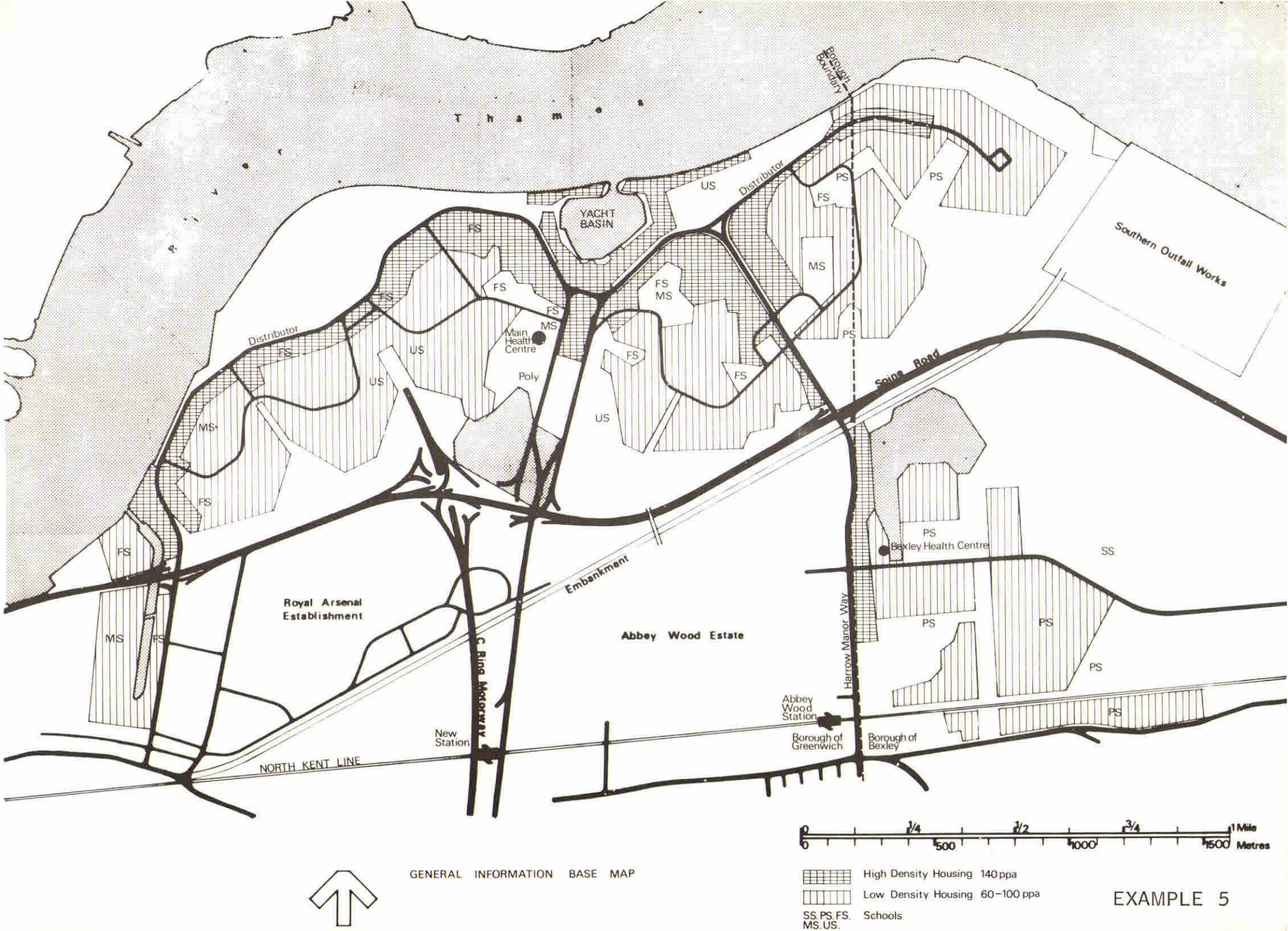
EXAMPLE NO. 14 There are a number of commercially available computer programs for producing contour diagrams. These could be used to show population densities and trip times as well as site information. They offer the advantages that large amounts of data can be manipulated rapidly and presented in a variety of ways. Once the data has been prepared, modifications can be made and new diagrams showing showing the effect of possible variations quickly produced. This example shows a sample contour map using CalComp's General Purpose Contouring Program.

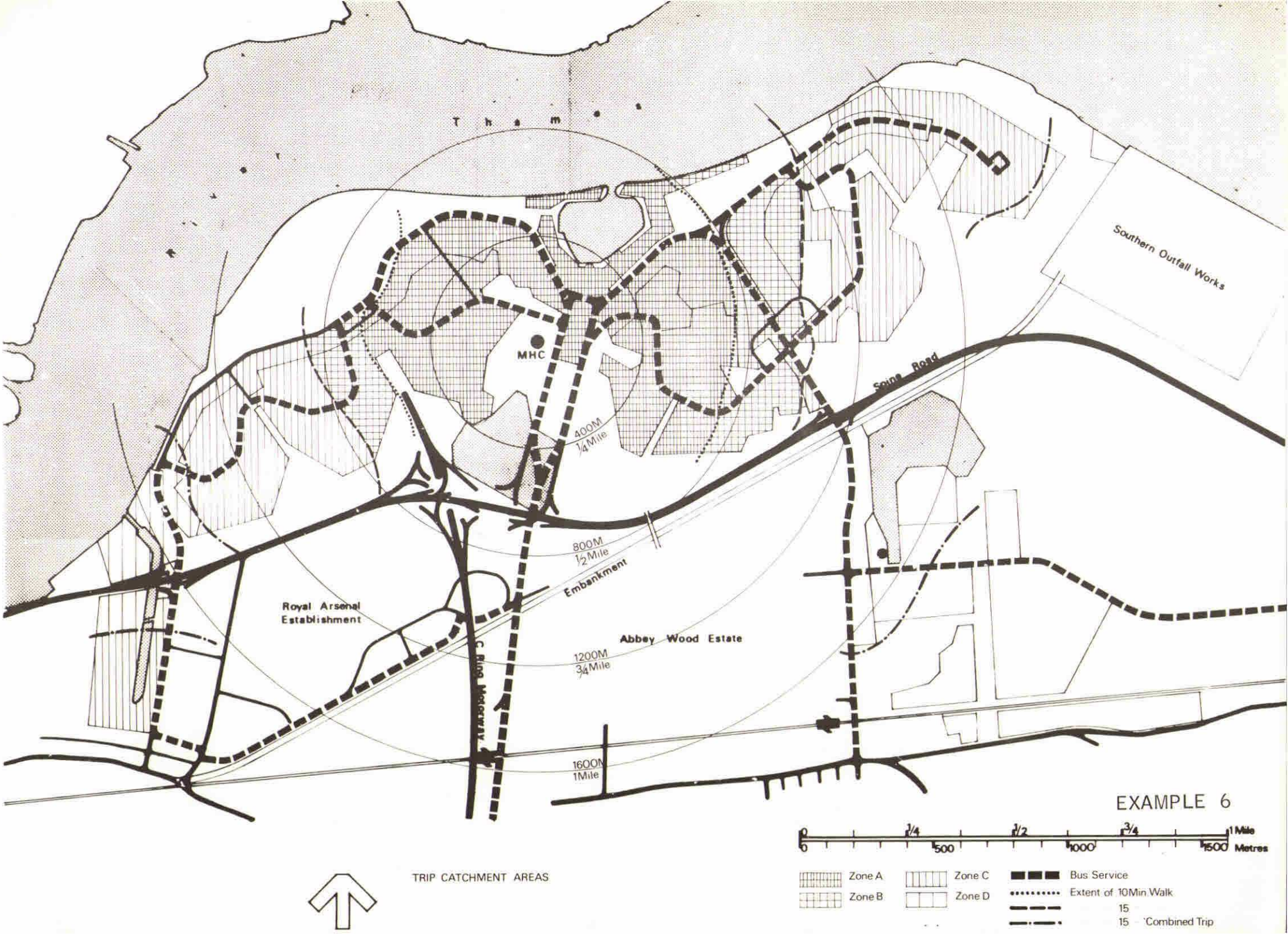
EXAMPLE NO. 15 is a map of a catchment area indicating four alternative sites under consideration, over which are superimposed the bus and rail services. It is the base map of a small project to be read in conjunction with example no. 16

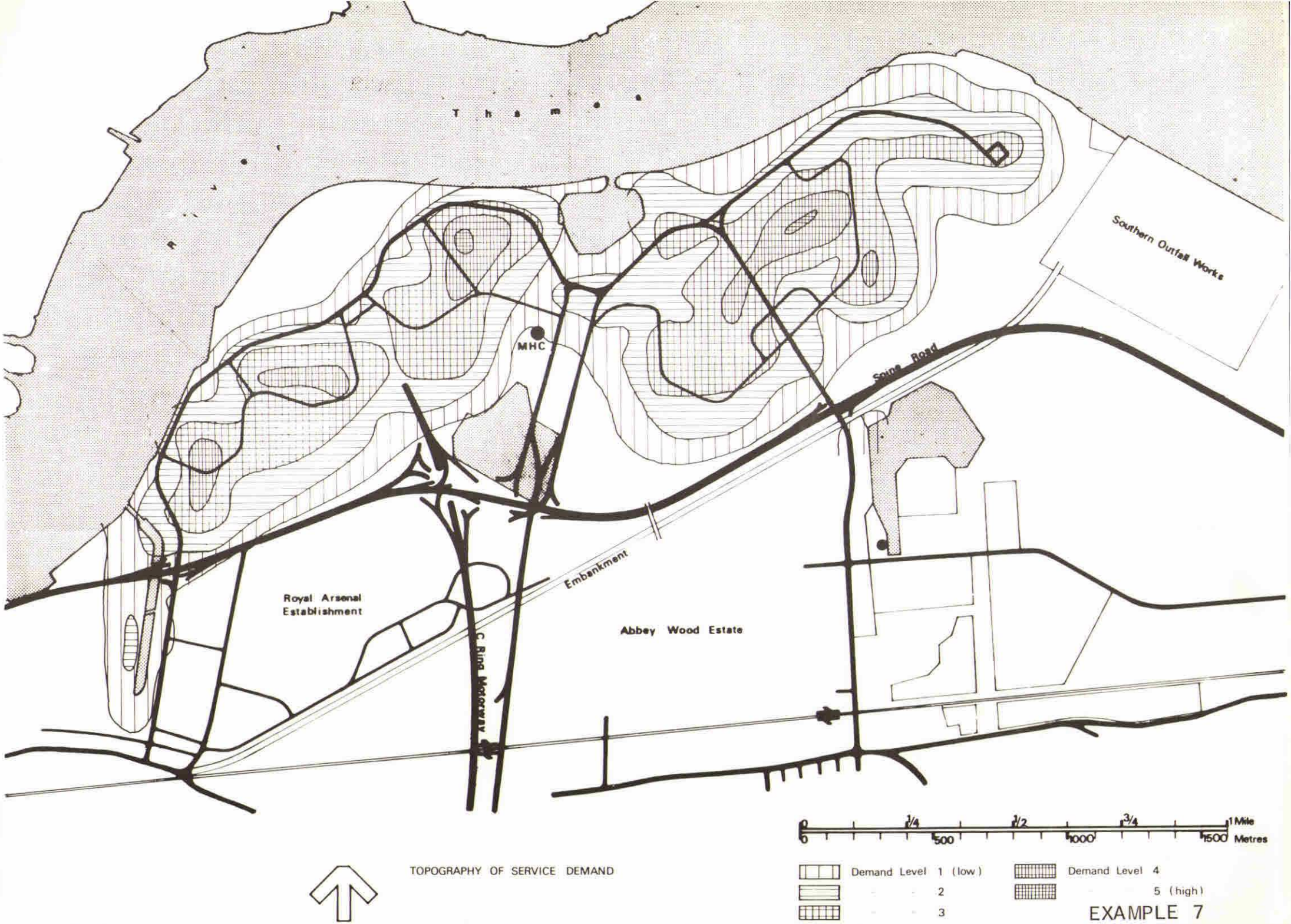
EXAMPLE NO. 16 is a simplified site analysis matrix used to assist the comparison of the characteristics of a number of different sites under consideration.

EXAMPLE NO. 17 is an alternative form of site appraisal matrix. This particular matrix was used to compare the characteristics of five alternative sites for a very large project, and is taken from the report on the Plymouth Clinical Area.

EXAMPLE NO. 18 is also taken from the report on the Plymouth Clinical Area and is a sophisticated cost benefit analysis which would only be justified in the case of a large project. As such it is a significant example since it puts a value on convenience and amenity in order that these can be taken into account in comparing alternative sites.

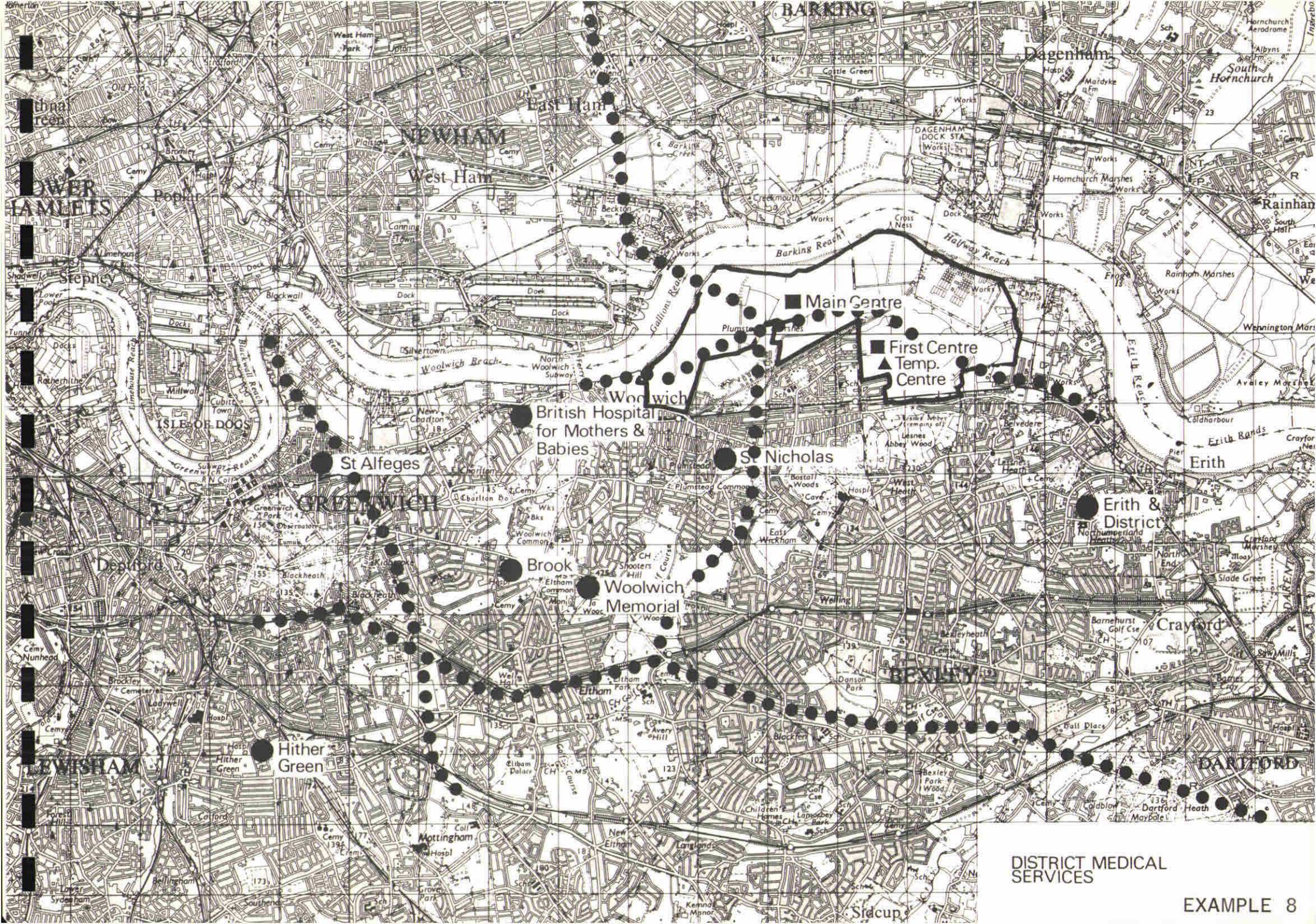

T h a m e s
Borough Boundary
YACHT BASIN
US
Distributor
PS
FS
MS
Southern Outfall Works
Main Health Centre
Poly
Distributor
Southern Road
Embankment
Royal Arsenal Establishment
Abbey Wood Estate
Harrow Manor Way
Bexley Health Centre
SS
Abbey Wood Station
New Station
NORTH KENT LINE
Borough of Greenwich
Borough of Bexley
0
1/4
1/2
3/4
1 Mile
500
1000
1500
Metres
GENERAL INFORMATION BASE MAP
High Density Housing 140 ppa
Low Density Housing 60–100 ppa
SS.PS.FS. MS.US. Schools
EXAMPLE 5

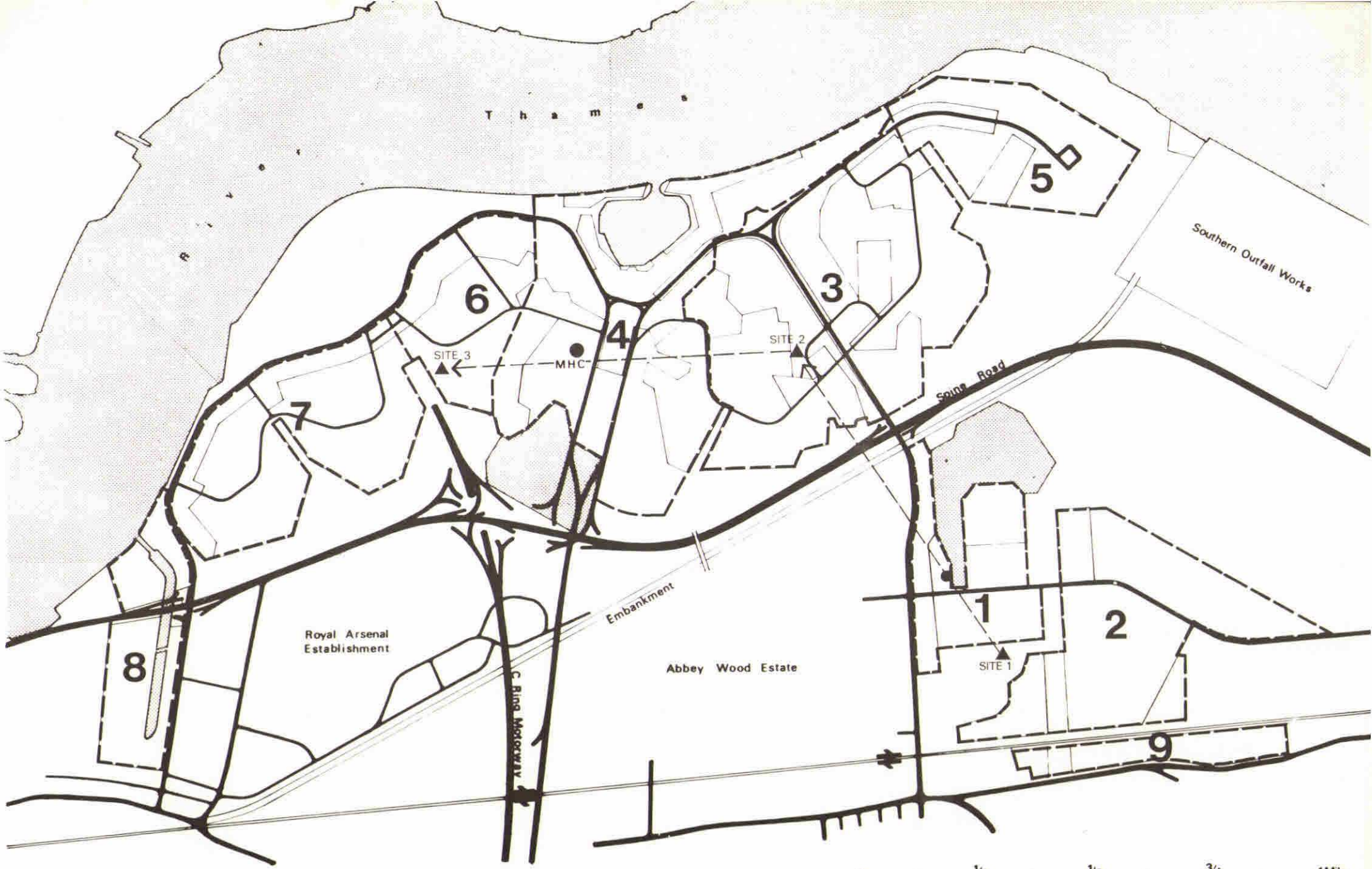

T h a m e s
Southern Outfall Works
MHC
Spine Road
400M
¼Mile
800M
½Mile
Embankment
Royal Arsenal
Establishment
Abbey Wood Estate
1200M
¾Mile
1600M
1Mile
EXAMPLE 6
0
¼
½
¾
1 Mile
500
1000
1500 Metres
TRIP CATCHMENT AREAS
Zone A
Zone B
Zone C
Zone D
Bus Service
Extent of 10Min Walk
15
15 Combined Trip



TOPOGRAPHY OF SERVICE DEMAND

EXAMPLE 7


Main Centre
First Centre
Temp. Centre
British Hospital for Mothers & Babies
St Nicholas
St Alfeges
Brook
Woolwich Memorial
Hither Green
Erith & District
Woolwich
Erith
Crayford
Dartford
Sidcup
Dagenham
Rainham
Barking
East Ham
West Ham
Poplar
Stepney
Deptford
Greenwich
Lewisham
Bexley
ISLE OF DOGS
DISTRICT MEDICAL SERVICES
EXAMPLE 8



DEVELOPMENT STAGING

1. 1968–70 pop. 5076
2. 69–71 5250
3. 70–75 11,110
4. 72–76 10,560
5. 1975–77 pop. 5140
6. 76–80 8480
7. 78–81 7990
8. 77–81 2520
9. 80–81 pop. 960

▲ Temporary Mobile Health Centre

EXAMPLE 9

YEAR	0 - 4		5 - 9		10 - 14		15 - 19		20 - 24		25 - 29		30 - 34		35 - 39		40 - 44		45 - 49		50 - 54		55 - 59		60 - 64		65 - 69		70 - 74		75 - 79		80+		TOTAL		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M&F
1967	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1968	250	270	120	110	80	90	70	110	170	210	150	140	110	100	100	110	90	80	60	60	60	50	40	50	30	40	20	30	10	20	10	20	0	10	1360	1500	2860
1969	660	720	340	330	220	240	180	290	420	530	400	380	290	260	260	280	240	210	170	160	130	130	120	130	80	100	50	80	40	50	20	60	10	30	3630	3980	7610
1970	1100	1200	610	600	370	400	300	480	660	850	670	660	490	440	420	460	410	360	290	260	220	220	200	210	150	170	80	130	60	80	40	90	10	60	6080	6670	12759
1971	1670	1810	990	1000	570	620	470	730	960	1260	1040	1060	770	680	640	680	620	570	450	400	350	340	300	330	230	260	130	200	90	120	60	130	20	100	9360	10280	19640
1972	2020	2140	1300	1350	720	760	580	860	1060	1430	1260	1320	950	840	760	780	740	710	560	480	430	420	360	400	290	330	160	250	110	160	70	150	30	130	11400	12510	23910
1973	2350	2450	1660	1760	870	900	680	970	1130	1570	1500	1620	1130	1010	890	880	850	850	670	580	510	490	430	460	340	400	200	300	120	200	80	160	40	170	12450	14770	28220
1974	2630	2680	2010	2160	1060	1060	760	1140	1240	1710	1710	1930	1320	1170	990	960	960	990	790	680	590	580	510	520	390	450	240	340	130	220	80	150	50	190	13450	16930	32390
1975	2920	2920	2350	2520	1260	1250	850	1300	1350	1860	1900	2210	1500	1360	1100	1060	1050	1110	910	800	680	660	600	590	440	500	280	360	140	250	90	150	60	210	15460	19120.	36600
1976	3200	3160	2680	2860	1500	1500	960	1450	1450	2010	2060	2440	1690	1580	1230	1140	1150	1210	1030	930	770	740	680	650	500	550	330	430	160	280	90	160	90	230	17480	21320	40840
1977	3490	3420	2980	3130	1780	1820	1080	1590	1570	2190	2170	2610	1880	1830	1360	1250	1230	1290	1140	1070	860	820	760	730	560	600	370	470	180	310	90	170	90	240	19520	23540	45110
1978	3770	3690	3260	3370	2100	2170	1220	1720	1660	2370	2270	2750	2000	2100	1500	1370	1310	1350	1240	1200	970	900	830	810	630	660	410	520	210	350	90	190	70	250	21570	25770	49400
1979	4060	3970	3530	3580	2430	2550	1380	1870	1750	2550	2370	2880	2270	2380	1650	1500	1390	1410	1330	1330	1070	1000	910	890	710	710	440	560	240	380	90	210	80	250	23630	28020	53720
1980	4340	4240	3790	3800	2740	2890	1580	2060	1840	2710	2480	3020	2430	2620	1800	**1650**	1470	1480	1410	1440	1190	1110	990	970	730	770	490	610	270	420	100	220	80	260	25700	30270	58050
1981	4450	4330	3980	3970	2990	3150	1770	2180	1810	2720	2470	3060	2480	2750	1900	1770	1490	1490	1440	1480	1260	1200	1030	1020	840	820	520	640	300	440	100	240	80	260	27780	31520	60430
1982	4400	4270	4090	4070	3150	3290	1960	2270	1680	2580	2360	3000	2420	2760	1950	1860	1460	1460	1420	1460	1290	1250	1030	1040	870	860	550	660	310	460	110	240	70	260	28910	31790	60910
1983	4340	4190	4160	4141	3300	3410	2170	2420	1600	2440	2230	2930	2330	2730	2000	1990	1440	1440	1380	1420	1310	1290	1060	1060	900	900	590	670	330	480	110	250	80	260	29120	32020	51330
1984	4270	4110	4220	4190	3420	3500	2390	2610	1600	2330	2060	2850	2240	2680	2040	2120	1430	1420	1350	1370	1320	1330	1070	1080	910	930	630	700	340	500	120	200	70	260	29310	32240	61720
1985	4180	4020	4230	4200	3550	3500	2600	2810	1660	2270	1890	2740	2150	2630	2060	2230	1440	1430	1310	1330	1320	1350	1110	1120	920	960	660	720	350	520	140	270	70	260	29480	32450	62060
1986	4110	3950	4210	4160	3670	3690	2790	3000	1800	2280	1730	2600	2040	2570	2030	2300	1470	1480	1270	1290	1300	1350	1140	1160	920	980	700	750	270	530	150	290	70	260	29630	32640	62410
1987	4050	3890	4160	4090	3770	3790	2950	3140	1990	2370	1590	2460	1930	2510	1970	2310	1520	1570	1249	1280	1280	1330	1170	1210	920	1000	730	790	400	540	160	300	70	260	29900	32820	62720

NOTES: 1. Young children are M. & F. 0 - 4

School age covers M. & F. 5 - 15 up to 1971, 5 - 16 from 1972

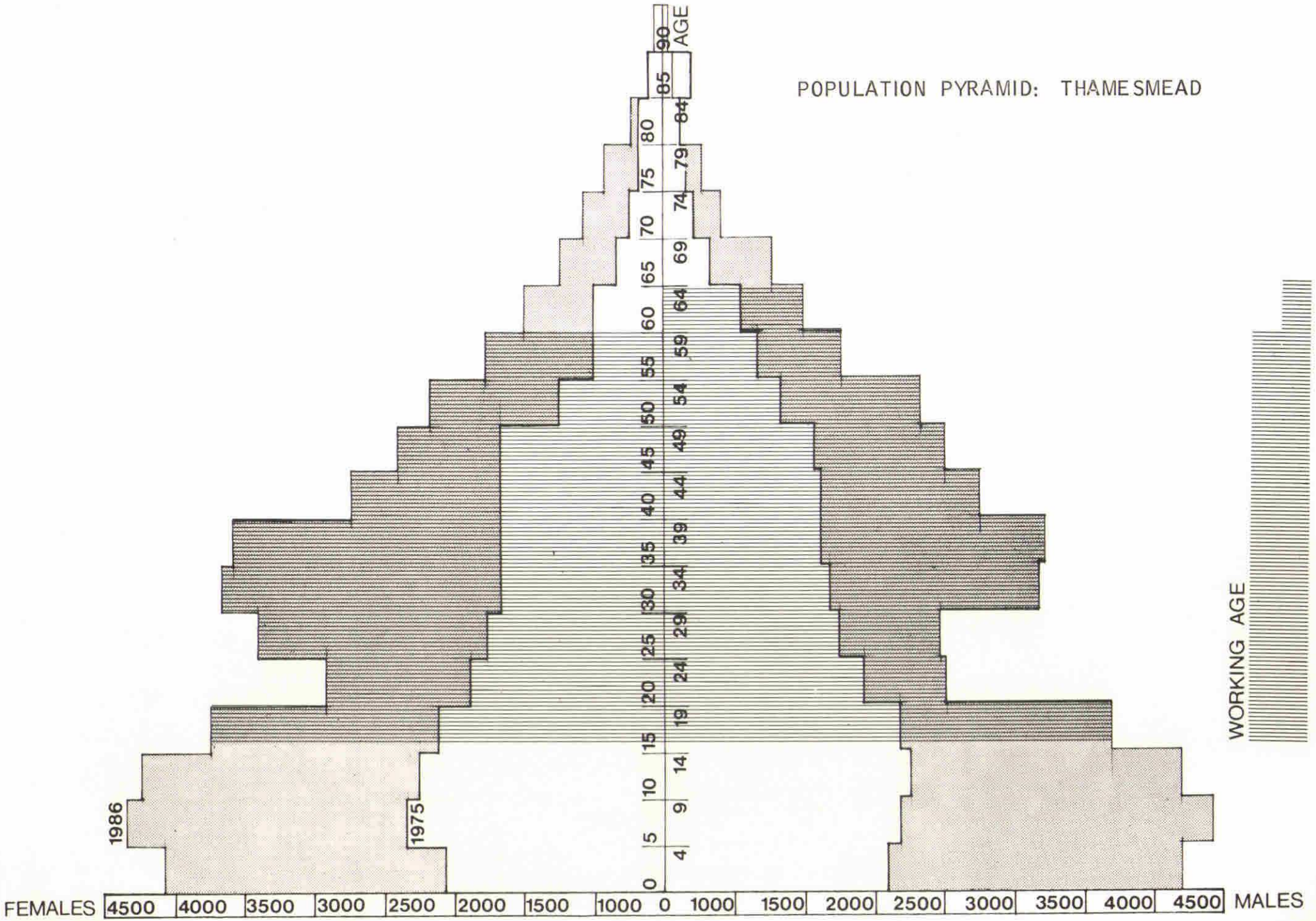
Working age covers M. 16 - 64 and F. 16 - 59 up to 1971, M. 17 - 64 and F. 17 - 59 from 1972

Retired covers M. 65 and over, F. 60 and over

2. Single ages are taken as one-fifth of the relevant group.

POPULATION PROJECTION: THAMESMEAD

EXAMPLE 10


POPULATION PYRAMID: THAMESMEAD
AGE
90
85
84
80
79
75
74
70
69
65
64
60
59
55
54
50
49
45
44
40
39
35
34
30
29
25
24
20
19
15
14
10
9
5
4
0
1986
1975
WORKING AGE
FEMALES
4500
4000
3500
3000
2500
2000
1500
1000
0
1000
1500
2000
2500
3000
3500
4000
4500
MALES

EXAMPLE 11

EMPLOYMENT STRUCTURE: THAMESMEAD

ESTIMATED OCCUPATIONAL STRUCTURE OF WORKING POPULATION
TABLE

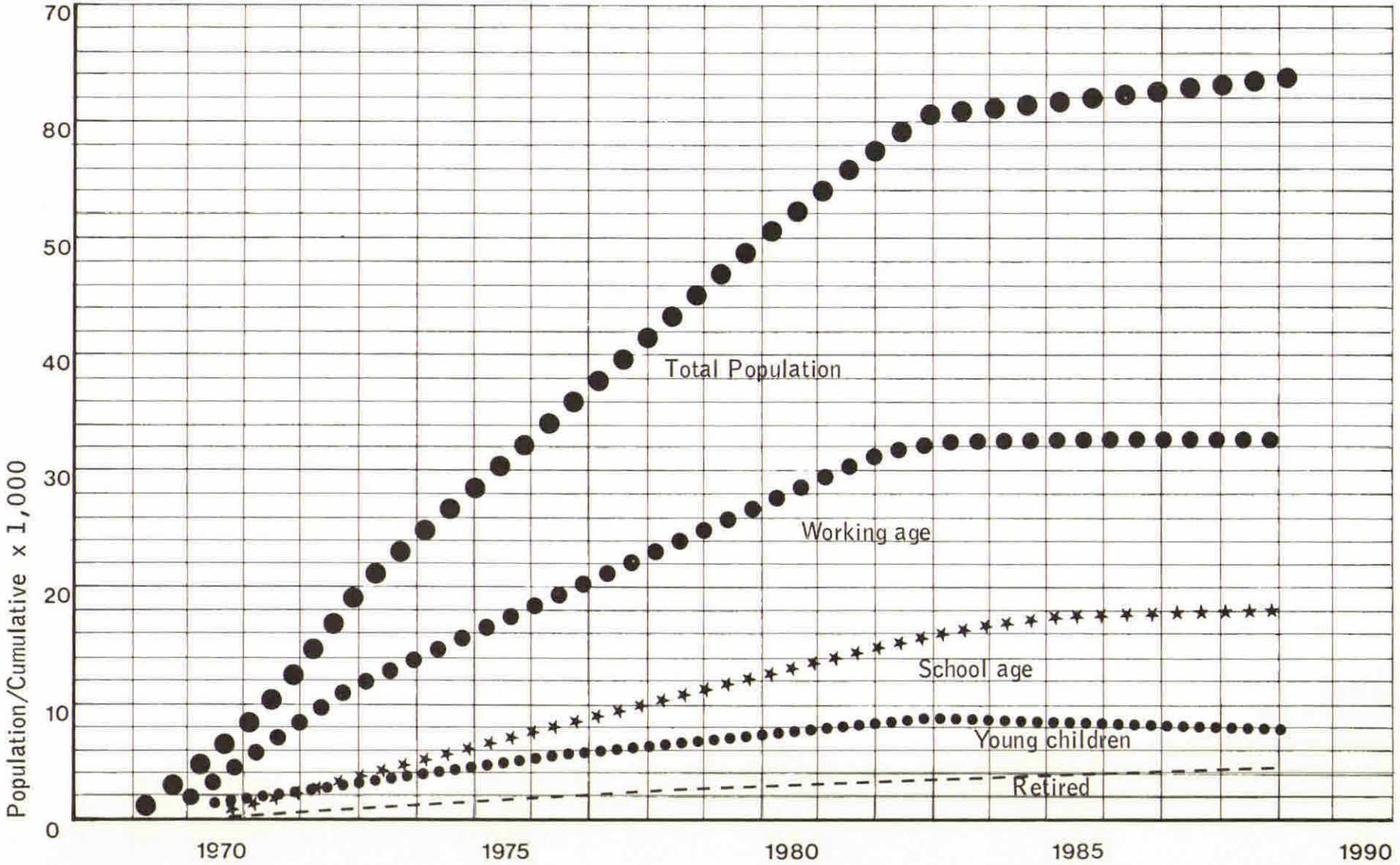
	Males		Females		Total	
	%	Number	%	Number	%	Number
Operatives	55.5	10,750	22.1	2.300	43.8	13,050
Office workers - Administrative and Professional	7.4	1,450	4.3	450	6.3	1,900
Office workers - Clerical	7.4	1,450	33.6	3,550	16.6	4,950
Transport workers	14.4	2,800	3.3	350	10.5	3,150
Sales workers	4.6	900	14.4	1,500	8.0	2,400
Services workers	10.3	2,000	22.1	2,300	14.4	4.300
	99.6	19,350	99.8	10,400	99.6	29.750

N.B. All figures rounded to nearest 50.

ESTIMATED DISTRIBUTION OF EMPLOYMENT
TABLE

Central London		Intermediate*		On Site		Total	
%	Number	%	Number	%	Number	%	Number
26	8,000	19	6,000	55	16,000	99.6	29,750

*All of that area outside Central London, which is within a reasonable daily travelling distance of Thamesmead.

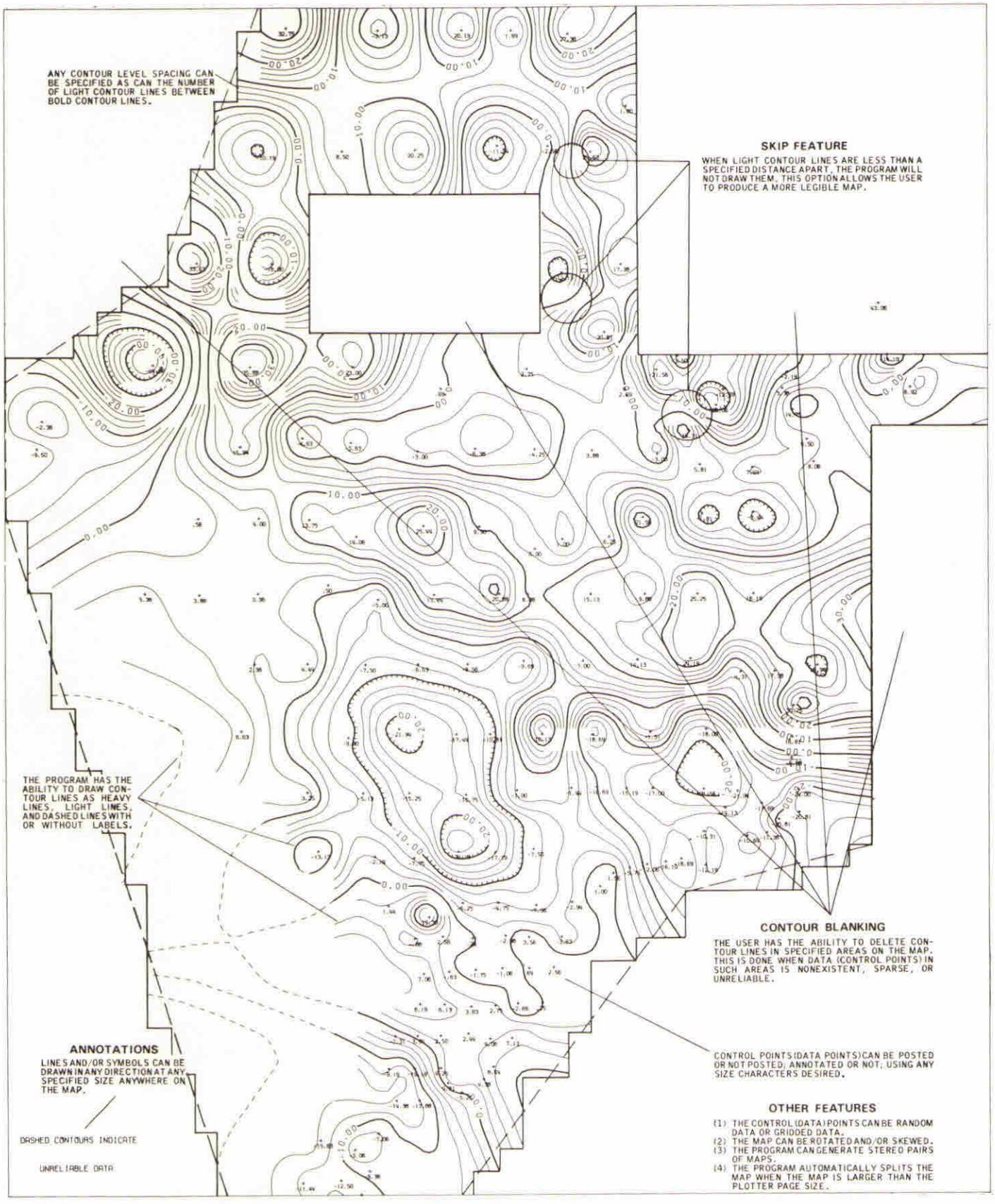


NOTES:

1. Young children are M. & F. 0-4
   School age covers M. & F. 5-15 up to 1971, 5-16 from 1972
   Working age covers M. 16-64 and F. 16-59 up to 1971, M.17-64 and F.17-59 from 1972
   Retired covers M. 65 and over, F.60 and over

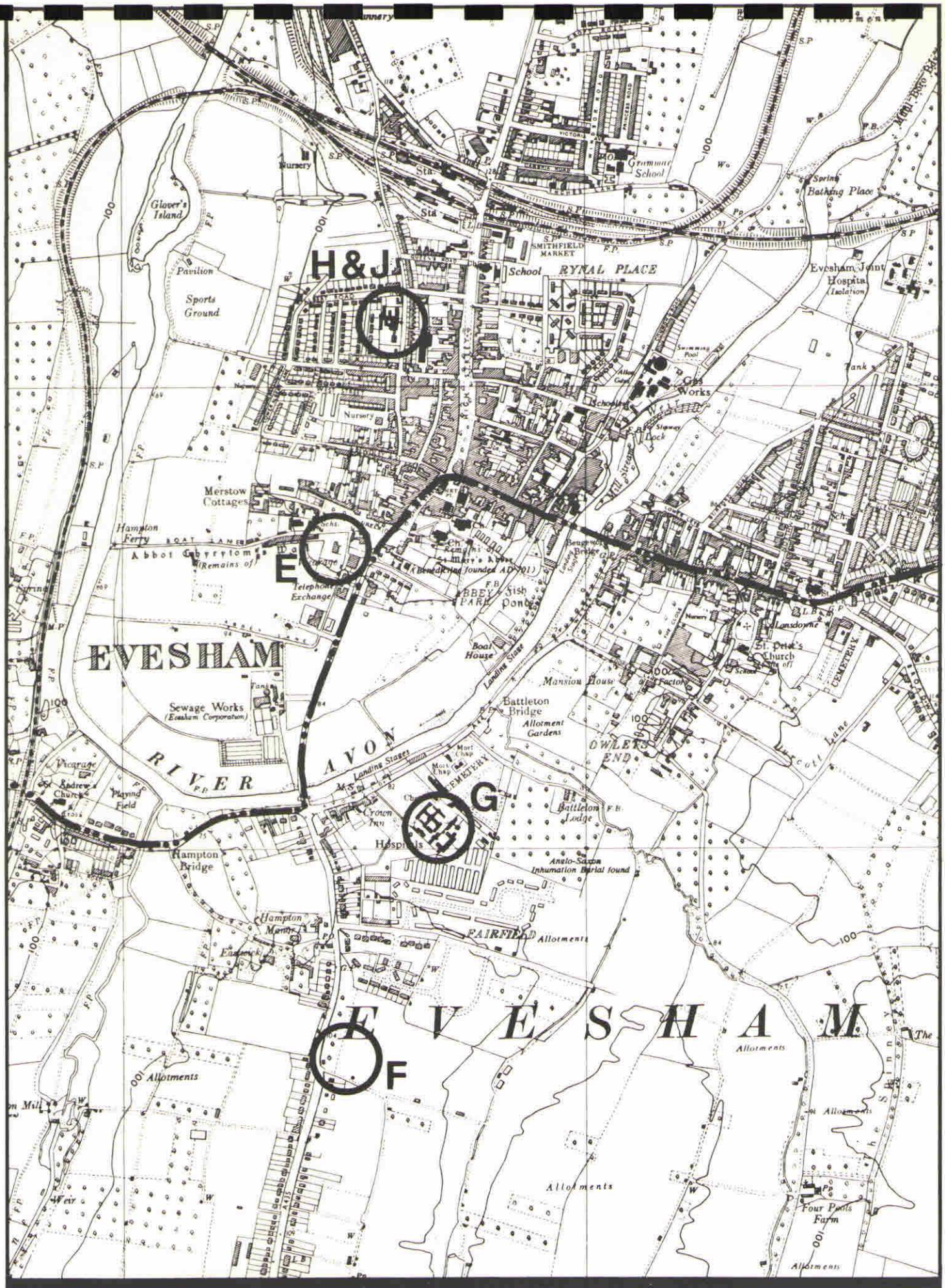
2. Single ages are taken as one-fifth of the relevant group

POPULATION INCREASE GRAPH: THAMESMEAD



SAMPLE CONTOUR MAP produced by Calcomps General Purpose Contouring Program

EXAMPLE 14



6" : 1M	EVESHAM: DISTRICT MAP	MIDLAND RED BUS SERVICE RAIL SERVICE	221·2	1·1

DEREK STOW & PARTNERS Architects & Planning Consultants

EXAMPLE 15

DEREK STOW & PARTNERS Architects & Planning Consultants

EVESHAM:

SITE ANALYSIS MATRIX

221·2 1·2

	E Merstow Green	F Four Pools	G Avonside Hospital	H Evesham General 1	J Evesham General 2
1.01 Availability	conditional	conditional	pending demolition	now	now
1.02 Ownership	County Authority	County Authority	RHB	RHB	RHB
2.01 Transport Connections	bus	none now	bus	bus and train	bus and train
2.02 Local Facilities	town centre 100yds	centre 1 mile	centre ½ mile	town centre 200yds	town centre 200yds
2.03 Access	from lane on east side	from road	via hospital entrance	from road	via hospital entrance
3.01 General Character	open ground	open ground	hospital precincts	hospital precincts	hospital precincts
3.02 Aspect	all	all	all	N & E only	N & S only
3.03 Views from Site	overland to West	overland to East	other hosp. buildings	housing	other hosp. buildings
3.04 Overlooking	from new CA blgs.	from new C of F. Ed.	from hospital blgs	from wards	from Nurses' Home
4.01 Area (approx)	51,000ft^2 (part)	almost unlimited	almost unlimited	3,900ft^2	7,500ft^2
4.02 Restrictive Covenants	none known	none known	none known	none known	none known
4.03 Rights of Lights, etc.	no problem	no problem	problems unlikely	adjacent wards	adj. Nurses' Home
4.04 Soil Conditions	not known	not known	not known	not known	not known
4.05 Levels	flat	gently sloping	flat	flat	flat
4.06 Existing Buildings	none	none	due for demolition	none	huts, etc.
4.07 Natural Hazards	none known	none known	none known	none known	none known
4.08 Other Constraints	CA plans unclear	fast traffic on new rd.	future site use	too close to wards	ex. car park in access
5.01 Statutory Services	all new	all new	new or linked to ex.	new or linked to ex.	new or linked to ex.
5.02 Catering Services	none	none	add to ex. output	add to ex. output	add to ex. output
5.03 Other Services on Site	none	none	heating possibly	heating possibly	heating possibly
5.04 Other Benefits	none	none	GP's & MWO office	GP's use hospital	GP's use hospital

EXAMPLE 16

SITES		SITE 1		SITE 2		SITE 3		SITE 4		SITE 5	
		DERRIFORD		FREEDOM FIELDS AND GREENBANK		AIRPORT SITE		CHELSON MEADOW		WHITLEIGH WOOD	
TOPOGRAPHY / FALLS	GOOD			✓ F.F.	LEVEL	✓	LEVEL	✓	LEVEL		
	AVERAGE	✓	1 : 10								
	POOR			✓ G.	1 : 10					✓	1 : 6
SOIL CONDITIONS	GOOD	✓		✓		✓					
	AVERAGE									✓	
	POOR							✓			
ACCESS TO SITE	GOOD	✓		✓		✓					
	AVERAGE										
	POOR							✓		✓	
AREA	LOW DENSITY	✓	47 Acres			✓	75 Acres	✓	130 Acres		
	HIGH DENSITY			✓	14 Acres						
	TOO SMALL									✓	36 Acres
PHYSICAL CHARACTER ENVIRONMENT AND SHAPE		Parkland in rural setting. Good shape and environment.		Existing Hospital in residential area - pre-1914 Terrace Housing. Fragmented.		On high ground. Exposed. Good shape.		Low lying next to tidal estuary. Parkland. Ground uncertain. Good shape.		Wooded. Steep slope. Facing North. Wrong shape.	
PLANNING CONCEPT		3 miles North of City Centre. Teacher Training College and Nursing Home to North.		1 mile North of City Centre. Established hospital use.		Playing fields and Green Belt after closure in 3 - 5 years' time.		Unknown. Cement works to South-West.		Local Authority residential neighbourhood unit to South. Private residential to North.	
SITE COVER EXISTING BUILDINGS	%	NONE		75%		2%		NONE		NONE	
DEVELOPMENT POTENTIAL	GOOD	✓		✓		✓					
	AVERAGE							✓			
	POOR										

TABLE 4

✓ EXAMPLE 17

SUMMARY OF TOTAL BENEFITS

TABLE 11

	ITEM	REF.	ALTERNATIVES																GRADING OF SCHEMES														
			E1 (1)	F (2)	D (3)	E3(R) (4)	E3 (5)	E2(R) (6)	C2(R) (7)	C1(R) (8)	E2 (9)	A2(R) (10)	C2 (11)	C1 (12)	B(R) (13)	A2 (14)	B (15)	A1 (16)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
CAPITAL COSTS	Building & Engineering	TABLE 8	7,023,000	7,321,000	7,392,000	7,513,000	7,722,000	7,777,000	7,887,000	7,919,000	7,987,000	8,314,000	8,392,000	8,413,000	8,558,000	8,835,000	8,873,000	10,044,000	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Abortive Fees	Paragraph 1.4	166,000	166,000	166,000	166,000	166,000	166,000	-	-	166,000	-	-	-	-	-	-	-	7.8.10.11 12.13.14. 15.16	1.2.3.4 5.6.9.	-	-	-	-	-	-	-	-	-	-	-	-	-
	Normal Fees (including equipment)	(calc.)	1,755,000	1,830,000	1,848,000	1,878,000	1,931,000	1,944,000	1,972,000	1,980,000	1,997,000	2,078,000	2,098,000	2,103,000	2,139,000	2,209,000	2,218,000	2,511,000	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Management Fees	(calc.)	36,000	37,000	37,100	37,200	38,000	39,000	39,100	39,200	39,300	41,000	42,000	42,100	43,000	44,000	44,100	50,000	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Freedom Fields - useful building stock	Paragraph 3.3 DWG 5	-	-	-	Deduct 400,000	Deduct 400,000	Deduct 400,000	-	-	Deduct 400,000	Deduct 400,000	-	-	-	Deduct 400,000	-	Deduct 400,000	4.5.6.9. 10.14.16	1.2.3.7.8 11.12.13. 15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTALS		8,980,000	9,354,000	9,443,000	9,194,000	9,457,000	9,526,000	9,898,000	10,104,000	9,789,000	10,033,000	10,532,000	10.558,000	10,740,000	10,688,000	11,135,000	12,205,000	1	4	2	3	5	6	9	7	10	8	11	12	14	13	15	16

	REF.	E1 (1)	F (2)	D (3)	E3(R) (4)	E3 (5)	E2(R) (6)	C2(R) (7)	C1(R) (8)	E2 (9)	A2(R) (10)	C2 (11)	C1 (12)	B(R) (13)	A2 (14)	B (15)	A1 (16)																
		- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +																
REVENUE COSTS - Total running costs (building, engineering & staff)	Paragraphs 9.5 and 10.6	* *	* *	* *	* *	*	* *	*	*	* *	* *	*	*	* * *	* *	* * *	*	1.3.	2	7.8.11.12	4.5.6.9. 10.14.16	13.15.	-	-	-	-	-	-	-	-	-	-	-

	ITEM	REF.	E1 (1)	F (2)	D (3)	E3(R) (4)	E3 (5)	E2(R) (6)	C2(R) (7)	C1(R) (8)	E2 (9)	A2(R) (10)	C2 (11)	C1 (12)	B(R) (13)	A2 (14)	B (15)	A1 (16)																
			- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +																
CONVENIENCE AND AMENITY	Convenience - User (phasing & number of hospitals)	Paragraph 14.4	* *	*	* *	*	*	*	*	*	*	*	*	*	* *	*	* *	*	1.3.	2	7.8.11.12	4.5.6.9. 10.14.16	13.15.	-	-	-	-	-	-	-	-	-	-	-
	Convenience - Development potential	Sub-paragraph 14.4.2	* *	* *	* *	* *	* *	* *	*	*	* *	*	*	*	* * *	*	* * *	*	1.2.3.4.5 6.9.	7.8.11. 12.	10.14.16	13.15.	-	-	-	-	-	-	-	-	-	-	-
	Amenity - Site (physical & environmental factors)	Paragraph 14.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.2.3.7.8 10.11.12. 13.15.	4.5.6.9 14.16.	-	-	-	-	-	-	-	-	-	-	-	-	-

	REF.	E1 (1)	F (2)	D (3)	E3(R) (4)	E3 (5)	E2(R) (6)	C2(R) (7)	C1(R) (8)	E2 (9)	A2(R) (10)	C2 (11)	C1 (12)	B(R) (13)	A2 (14)	B (15)	A1 (16)																
LAND CONSUMED - ACRES	Paragraph 14.6	40	47	47	44 (30 + 14)	44	61 (47 + 14)	47	47	61	61	47	47	77 (47 + 30)	61	77	61	1	4.5	2.3.7.8. 11.12.	6.9.10. 14.16.	13.15.	-	-	-	-	-	-	-	-	-	-	-

	SUMMARY	E1 (1)	F (2)	D (3)	E3(R) (4)	E3 (5)	E2(R) (6)	C2(R) (7)	C1(R) (8)	E2 (9)	A2(R) (10)	C2 (11)	C1 (12)	B(R) (13)	A2 (14)	B (15)	A1 (16)																
1	CAPITAL COSTS	8,980,000	9,354,000	9,443,000	9,194,000	9,457,000	9,526,000	9,898,000	10,104,000	9,789,000	10,033,000	10,532,000	10,558,000	10,740,000	10,688,000	11,135,000	12,205,000	1	4	2	3	5	6	9	7	10	8	11	12	14	13	15	16
		- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +																
2	REVENUE COSTS	- - 2	- 1 1	- - 2	2 - -	2 - -	2 - -	- 1 -	- 1 -	2 - -	2 - -	- 1 -	- 1 -	3 - -	2 - -	3 - -	2 - -	1.3.	2	7.8.11.12	4.5.6.9. 10.14.16	13.15.	-	-	-		-	-	-	-	-	-	-
		- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +	- 0 +																
3	CONVENIENCE AND AMENITY	- 1 4	- 1 3	- 1 4	2 - 2	2 - 2	2 - 2	- 3 -	- 3 -	2 - 2	2 1 -	- 3 -	- 3 -	2 1 3	3 - -	2 1 3	3 - -	1.3.	2	13.15.	7.8.11.12	4.5.6.9	10	14.16.	-	-	-	-	-	-	-	-	-	-
4	LAND CONSUMED	40	47	47	44	44	61	47	47	61	61	47	47	77	61	77	61	1	4.5.	2.3.7.8. 11.12.	6.9.10. 14.16.	13.15.	-	-	-	-	-	-	-	-	-	-	-

EXAMPLE 18

appendix 6

WORK SECTION 4.00
PRODUCTION OF THE PRELIMINARY DEVELOPMENT CONTROL PLAN

OVERALL OBJECTIVE OF TASKS 4.02 to 4.19 is for the Design Team to prepare a Preliminary Development Control Plan together with an indication of cost for consideration by the Project Team.

TASK 4.02: QUANTITY SURVEYOR TO GIVE COST ADVICE AS REQUIRED

This activity is continuous and spans the whole process up to the preparation of the cost data that accompanies the Preliminary Development Control Plan. It has the objective of informing the Design Team of the cost implications of the decision they take on the built form of the plan in relation to the site configuration. The task will have to be repeated if the design proposals change as work proceeds.

TASK 4.03: STRUCTURAL ENGINEER TO FORMULATE ADVICE ON SITE POSSIBILITIES

This activity is also continuous during the time that the Design Team draw up their proposals. Again, the objective is to inform the Architects of the consequences of the decision they take with regard to the built form of the project and its relationship to the physical constraints imposed by the site configuration and nature of the sub-strata.

TASK 4.04: ARCHITECT TO DEFINE PREFERRED ROUTES TRAFFIC FLOW OF VEHICLES

The objective of this task is to ensure that external traffic routes of vehicles and pedestrians can be defined in relation to any existing development and the new project. It is, therefore, necessary that this task is completed at an early stage of the work.

TASK 4.05: ARCHITECT TO BREAK DOWN ACCOMMODATION SCHEDULES INTO FAMILY CLUSTERS

In order to reduce the possible number of inter-relationships between the various departments of the project into managable items, both from the point of view of traditional design methods and in order to make possible the use of computer generated techniques, it is necessary at the outset to define those clusters of departments which are mutually compatible and interdependent. Typical groups might be in-patients departments or bedded areas, diagnostic and therapeutic departments, service supply and storage departments.

TASK 4.06: MECHANICAL & ELECTRICAL ENGINEER TO PROPOSE PERFORMANCE STANDARDS

It is necessary for the Mechanical and Electrical Engineer to propose the performance standards that the environmental engineering services are to attain in order to assess the total load on boiler house, ventilation plant, etc. as well as the scope of main distribution services.

TASK 4.07: ARCHITECT AND PROJECT TEAM TO PREPARE OR SELECT STANDARD OPERATIONAL NETWORKS

The networks referred to here will be of two sorts. Firstly, they will show the relationship of the whole project to the existing development on the site defining the movement of vehicles, pedestrians, goods and supplies about the site, and secondly, they will show networks of the whole project within the external envelope defining the inter-relationship of departments and the movement between them. Such networks may be unique to the project, or in other circumstances, may be standard networks developed as a result of standard operational policies.

TASK 4.08: ARCHITECT AND PROJECT TEAM TO ASSESS REQUIREMENTS VOLUMETRICALLY

This task is necessary before the accommodation can be disposed in three dimensions. The heights within special rooms will determine the basic floor to floor height of the building and thereby the length of ramps, etc. It may be that certain departments will have unique requirements, for instance, gymnasiums, laundries, ietc., whilst the vast majority will conform to standards already laid down. The Project Team's agreement to these decisions is desirable at an early stage.

TASK 4.09: MECHANICAL AND ELECTRICAL ENGINEERS AND PROJECT TEAM TO AGREE PERFORMANCE STANDARDS

This task will only apply to unique departments where standards are not already laid down by published materials such as the Building Notes etc.

TASK 4.10: ARCHITECT AND PROJECT TEAM TO PREPARE OR SELECT STANDARD ABSTRACT NETWORK WITHIN DEPARTMENT

Where a project is using standard department profiles, this task will not be necessary. However, in the majority of cases it is desirable to prepare an abstract network defining the inter-relationship of the basic activities within a department and the communication routes between them and, in turn, the points at which these routes link both with the internal organisation of the project and, where this is a requirement, with the external road network.

TASK 4.11: STRUCTURAL ENGINEER TO CARRY OUT APPRAISAL OF STRUCTURAL POSSIBILITIES

This is a continuous activity which takes the work commenced under Task 4.03 to a stage where the structural problems associated with the particular built form of the project, as opposed to its siting, are investigated.

TASK 4.12: ARCHITECT TO LAY DOWN COMMUNICATION ROUTES AND DISPOSE FAMILY CLUSTERS ON SITE

Once the whole project is located on the site and the operational requirements have been determined as a result of Tasks 4.04, 4.05,4.07,4.08 and 4.10, it should be possible to dispose the family clusters of compatible departments on the site in relation to the external communication network and to identify communication routes within the project.

TASK 4.13: ARCHITECT & MECHANICAL AND ELECTRICAL ENGINEER TO FIRM UP COMMUNICATION

Since it is usual for the communication routes for pedestrians and goods to take up a similar configuration to the distribution network of main services, the two must be considered together. The layout cannot be finalised until agreement is reached.

TASK 4.14: ARCHITECT TO RELATE MOVEMENT IN BUILDING AND TRAFFIC FLOW ON SITE

Since the main cast of the plan has been agreed as a result of the preceding decisions, it is now possible to relate the traffic flow within the building to that on the site, thus the road layout, hard standing areas, entrances and exits for pedestrians, loading and unloading bays for goods, parking arrangements, etc. can be finalised.

TASK 4.15: ARCHITECT TO FINALISE IN THREE DIMENSIONS THE PRELIMINARY BUILT FORM OF THE PROJECT

All information is now to hand to enable drawings to be prepared showing the project in three dimensions and its relationship to the site.

TASK 4.16: STRUCTURAL ENGINEER TO CONSIDER AND SELECT, OR PROPOSE, A STRUCTURAL SYSTEM

It is necessary for the Structural Engineer after consideration of the requirements peculiar to the project to either select a standard, or propose a special structural system in order that the preliminary Development Control Plan can reflect the disciplines and constraints it confers. If this task is not completed the plan adopted by the Project Team may have to be drastically revised at a later stage.

TASK 4.17: MECHANICAL & ELECTRICAL ENGINEER TO PROPOSE SERVICES DISTRIBUTION

The distribution routes for main services can only be drawn up after the main communication routes have been agreed with the Architect as in Task 4.13. However, these routes must be known before Task 4.18 can be completed.

TASK 4.18: MECHANICAL & ELECTRICAL ENGINEER TO DISPOSE MAJOR ELEMENTS OF PLANT ACCOMMODATION

Space will be made within the Development Control Plan for major plant elements, boilers, ventilation plant, cooling towers, tankage, etc. These elements cannot be located until the Architect is well advanced with Task 4.15.

TASK 4.19: QUANTITY SURVEYOR TO PREPARE COST DATA

Although there has been, during the whole of this Work Section, continuous inter-action between the Quantity Surveyor and the other members of the Design Team under Task 4.02, it is not until Task 4.15 is virtually complete that all the information is available for him to build up an indication of the cost consequential on the design of the project and its location on the site. Some sort of preliminary estimate of cost, together with an indication of comparable costs for like projects, will be required by the Project Team in considering the viability of the Preliminary Cost Plan.

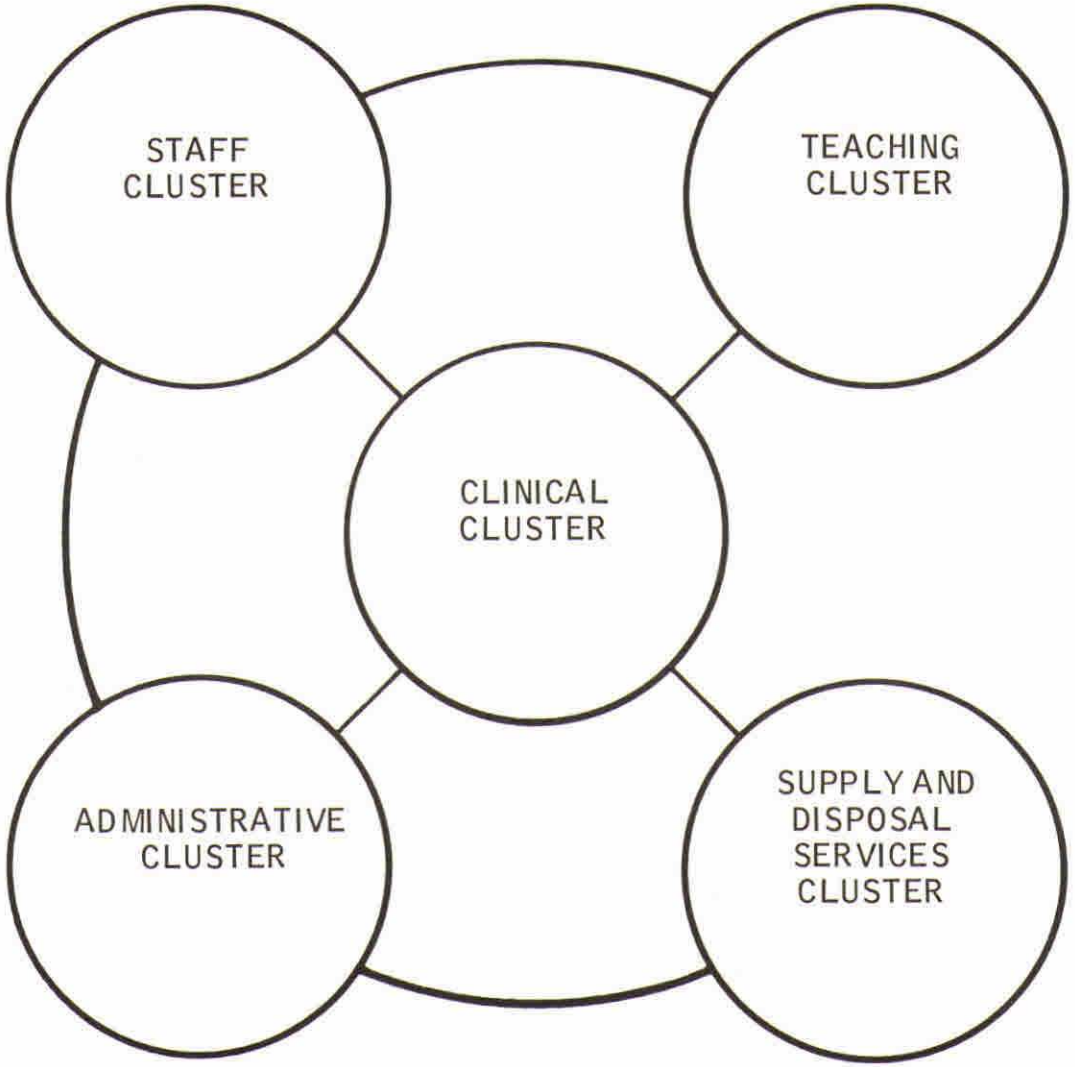
NOTES ON EXAMPLES

EXAMPLE NO. 19 is a typical cluster network derived for a specific project. It shows the activities within the project broken down and grouped together to form clusters of compatible interdependent activities. The five basic clusters are then disposed in a network which describes their operational linkage. This would be carried out at an early stage of a project under task 4.05.

EXAMPLE NO. 20 shows an operational network for the whole project. It is derived from the cluster network amplified by the results of analysing the inter-relationships within each cluster. In the case illustrated, the clusters contain groups of inter-dependent rooms but in a larger project these units could well be whole departments. This is an illustration of the sort of network that would result from task 4.07.

EXAMPLE NO. 21 shows a network prepared to analyse the inter-relationships of activities within a department and to relate these to external functions and the project's main communication routes. As such it is the outcome of task 4.10.

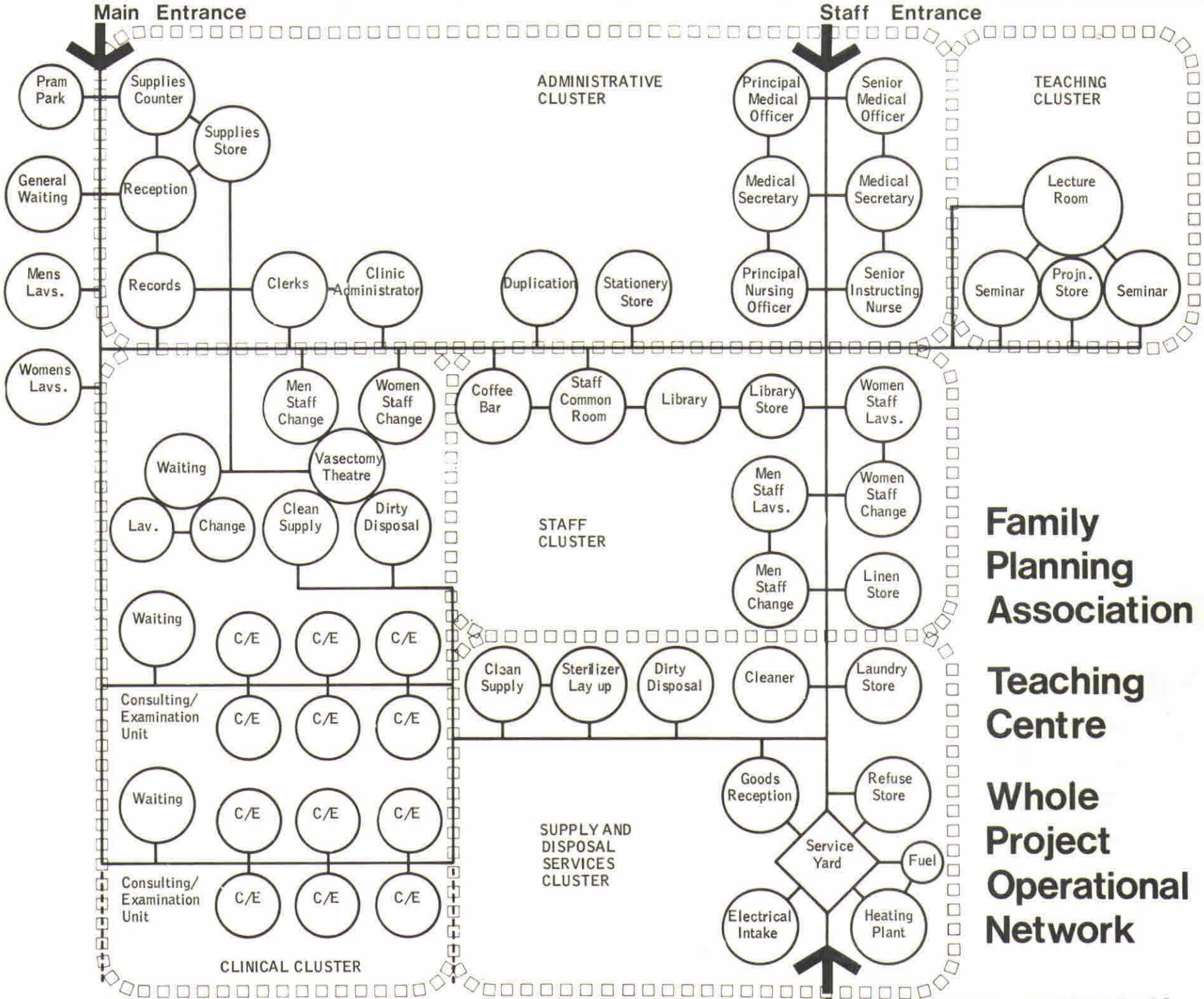
EXAMPLE NO. 22 is a preliminary development control plan outlining the Design Team's first proposals as submitted to the Project Team under task 4.20. It shows the disposition of the basic units of accommodation on the site and their relationship to the communication and road network. It also indicates which areas of the site are to be reserved for future phases and together with supporting data is intended to enable the Project Team to decide whether the scheme requires revision or can proceed to work section 5.00



Family Planning Association

Teaching Centre

Cluster Network



Family Planning Association

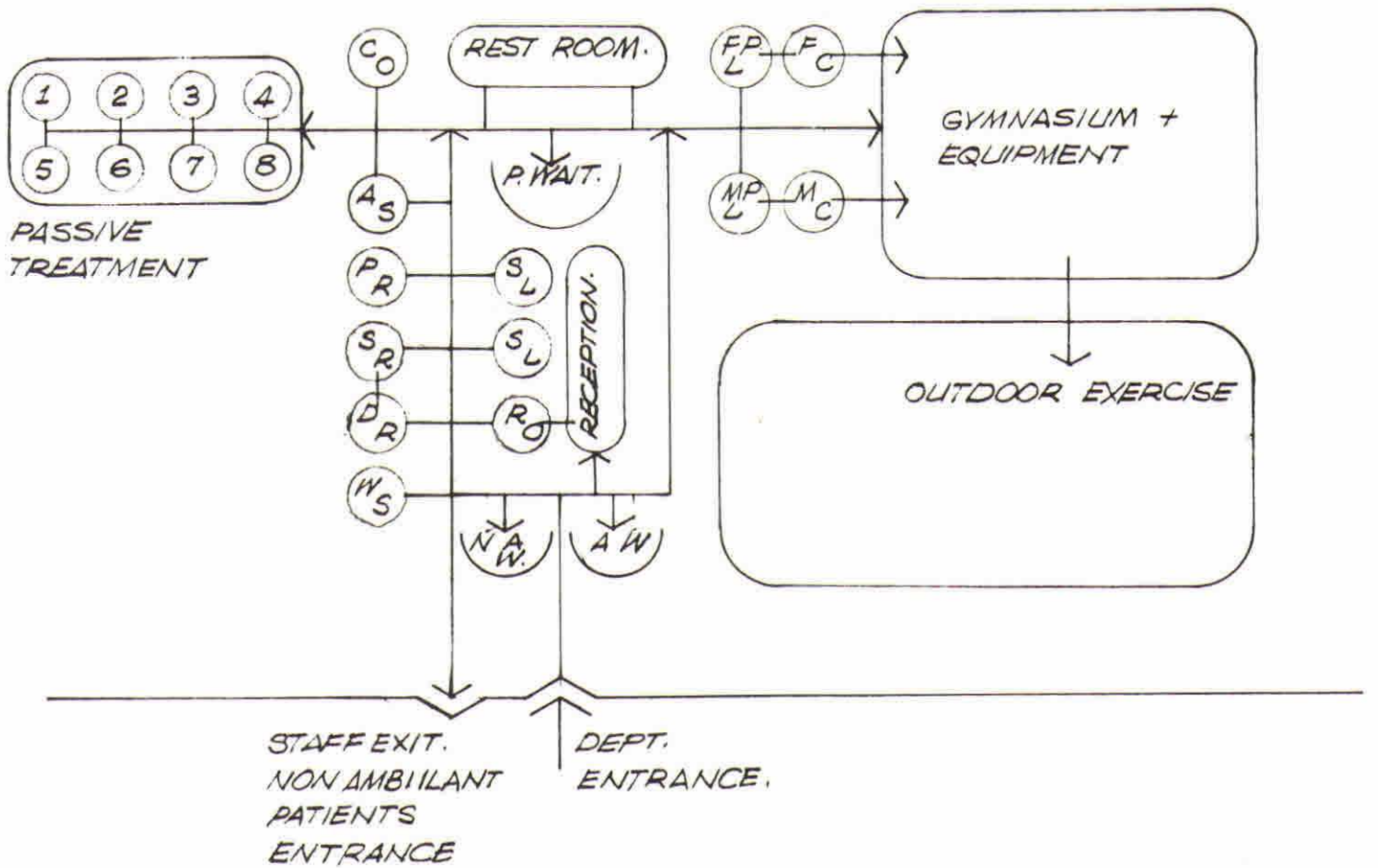
Teaching Centre

Whole Project Operational Network

EXAMPLE 20

C O = CONSULTING ROOM
A S = APPARATUS STORE
P R = PHYSIOTHERAPISTS' ROOM
S R = SUPPLY ROOM INC. LINEN.
D R = DISPOSAL ROOM
S L = STAFF LAVATORIES
R O = RECORDS OFFICE

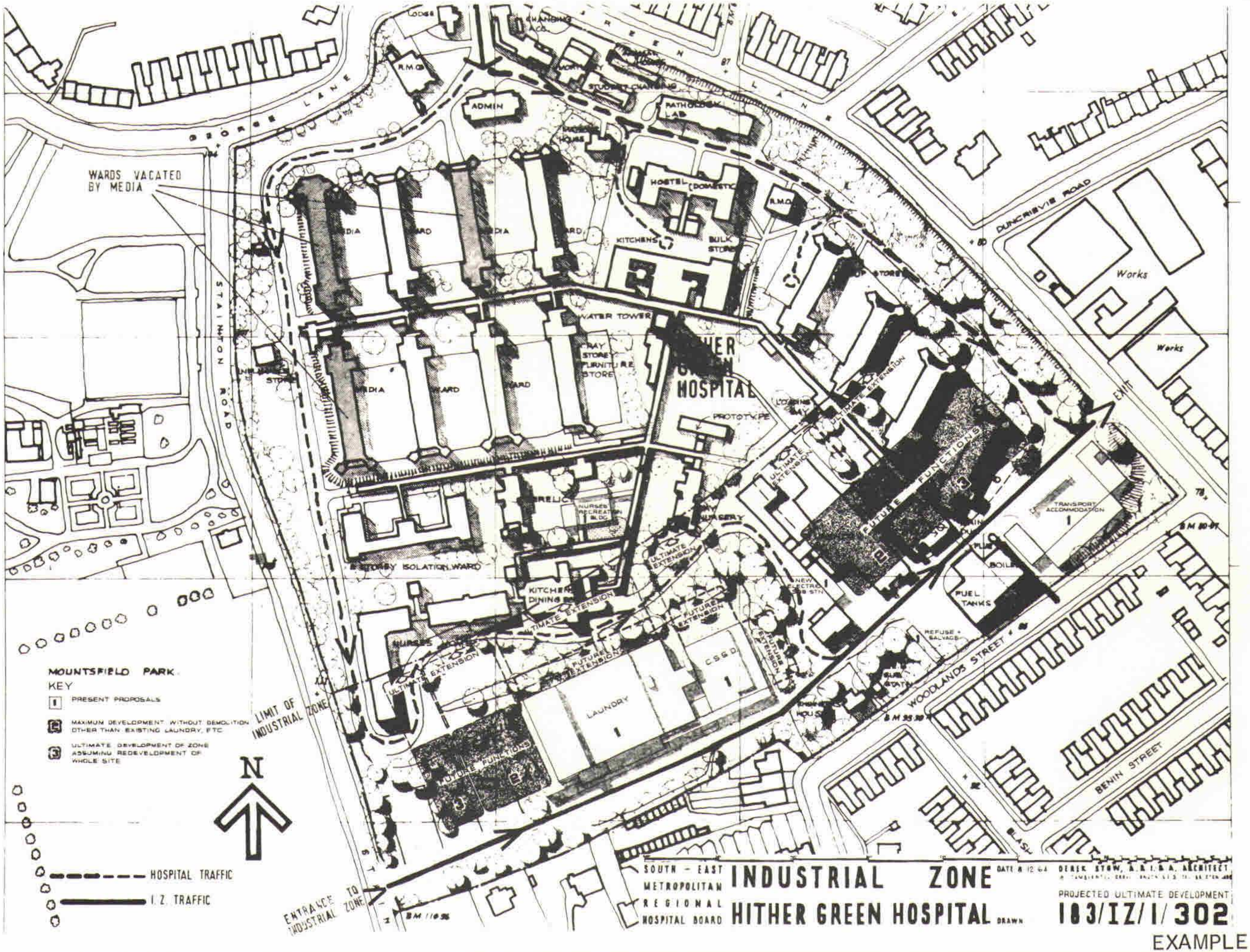
W S = WHEELCHAIRSTORE
N.A.W. = NON AMBULANT PATIENTS WAITING
A.W = AMBULANT " "
F or M P L = PATIENTS LAVATORY.
M or F.C = PATIENTS CHANGING ACCOMMODATION.



EXAMPLE 21

DEREK STOW & PARTNERS Architects & Planning Consultants

22.7.68
DMS.
THAMESMEAD MAIN HEALTH CENTRE
NETWORK DIAGRAM - PHYSICAL MEDICINE
190.FS.G.110


WARDS VACATED BY MEDIA
GEORGE LANE
STAINTON ROAD
ADMIN
R.M.O.
HOSTEL (DOMESTIC)
KITCHENS
BULK STORE
PATHOLOGY LAB
WATER TOWER
HITHER GREEN HOSPITAL
PROTOTYPE
ISOLATION WARD
KITCHEN DINING
NURSES RECREATION BLDG
ULTIMATE EXTENSION
FUTURE EXTENSION
FUTURE FUNCTIONS
LAUNDRY
C.S.S.D.
TRANSPORT ACCOMMODATION
FUEL TANKS
REFUSE + SALVAGE
WOODLANDS STREET
BENIN STREET
DUNCRIEVIE ROAD
Works
EXIT
LIMIT OF INDUSTRIAL ZONE
ENTRANCE TO INDUSTRIAL ZONE
MOUNTSFIELD PARK
KEY
PRESENT PROPOSALS
MAXIMUM DEVELOPMENT WITHOUT DEMOLITION OTHER THAN EXISTING LAUNDRY, ETC
ULTIMATE DEVELOPMENT OF ZONE ASSUMING REDEVELOPMENT OF WHOLE SITE
N
HOSPITAL TRAFFIC
I.Z. TRAFFIC
SOUTH - EAST METROPOLITAN REGIONAL HOSPITAL BOARD
INDUSTRIAL ZONE
HITHER GREEN HOSPITAL
DEREK STOW, A.R.I.B.A. ARCHITECT
PROJECTED ULTIMATE DEVELOPMENT
183/IZ/1/302

EXAMPLE 22

appendix 7

WORK SECTION 5.00
FINALISATION AND ADOPTION OF THE DEVELOPMENT CONTROL PLAN

This work section comprises the collation of the relevant material produced in the previous work sections to form the output of the development control plan. The content of the output has already been described and will vary in detail depending on the size and nature of the project. The examples included here are intended purely as illustrations.

NOTES ON EXAMPLES

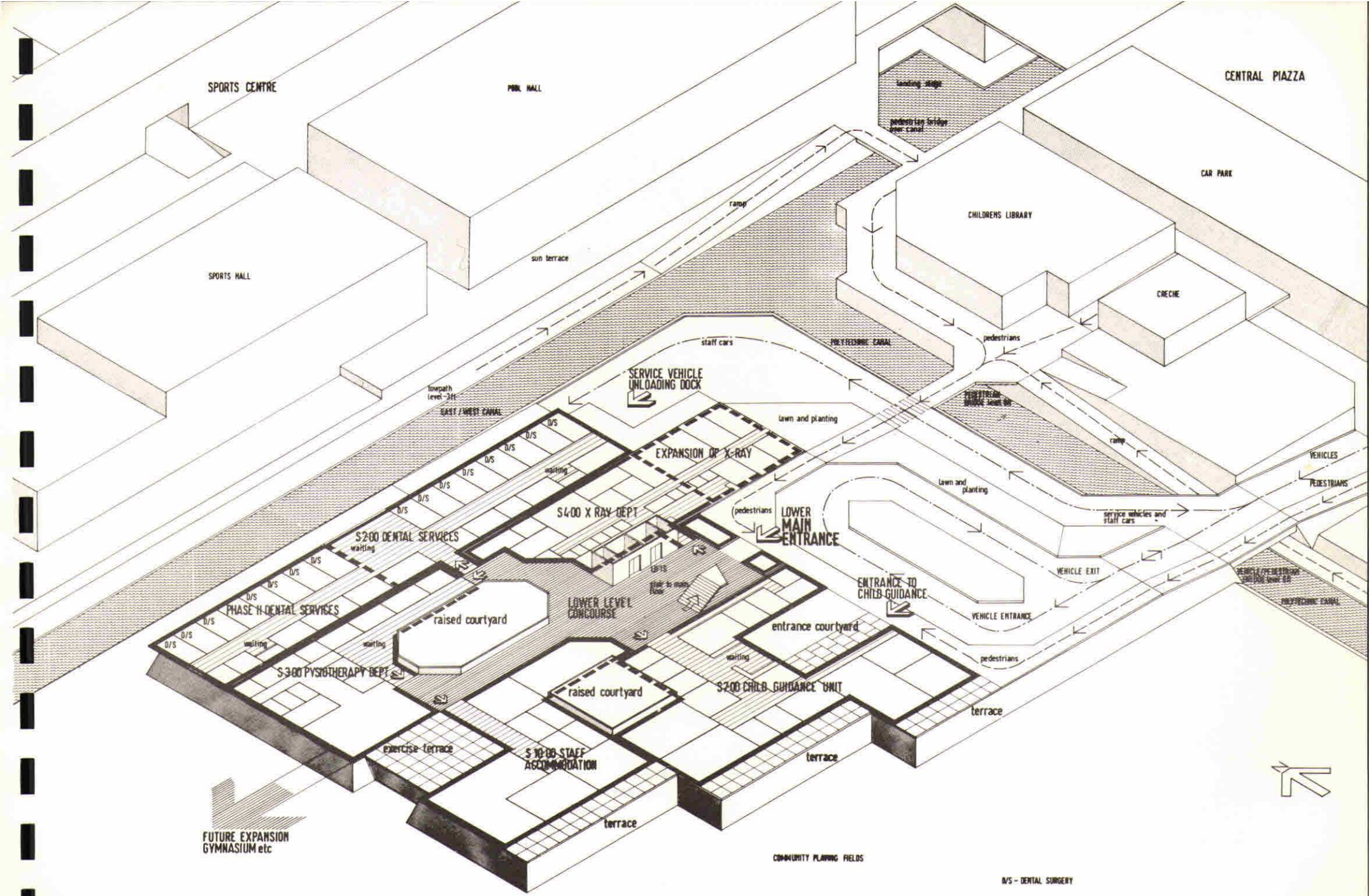
EXAMPLES NOS. 23 & 24 show the development plan for the Thamesmead main health centre at two floor levels which are represented as isometric projections so that the complex relationship of the multi-level access roads and decks can be illustrated. These examples are included to show an alternative approach to the traditional 2-dimensional plan and they enable the Project Team to grasp the 3-dimensional implications whilst at the same time permiting the layout to be represented to scale.

EXAMPLE NO. 25 takes the previous two examples a stage further by including the building fabric in order to show the whole complex.

EXAMPLES NOS. 26, 27 & 28 are the development control plans of the new Wythenshawe hospital taken through at the main floor levels. Besides the main hospital street communication network, the corridor systems within each department are included so that the operational implications of the plan can be seen. The fact that shadows have been included on the drawing enables the Project Team to gauge the heights of various parts of the building. Contours, boundaries, trees, roads and all significant external works are included on the drawing.

EXAMPLE 29 is an airial perspective of the project which gives a 3-dimensional representation of the whole building form.

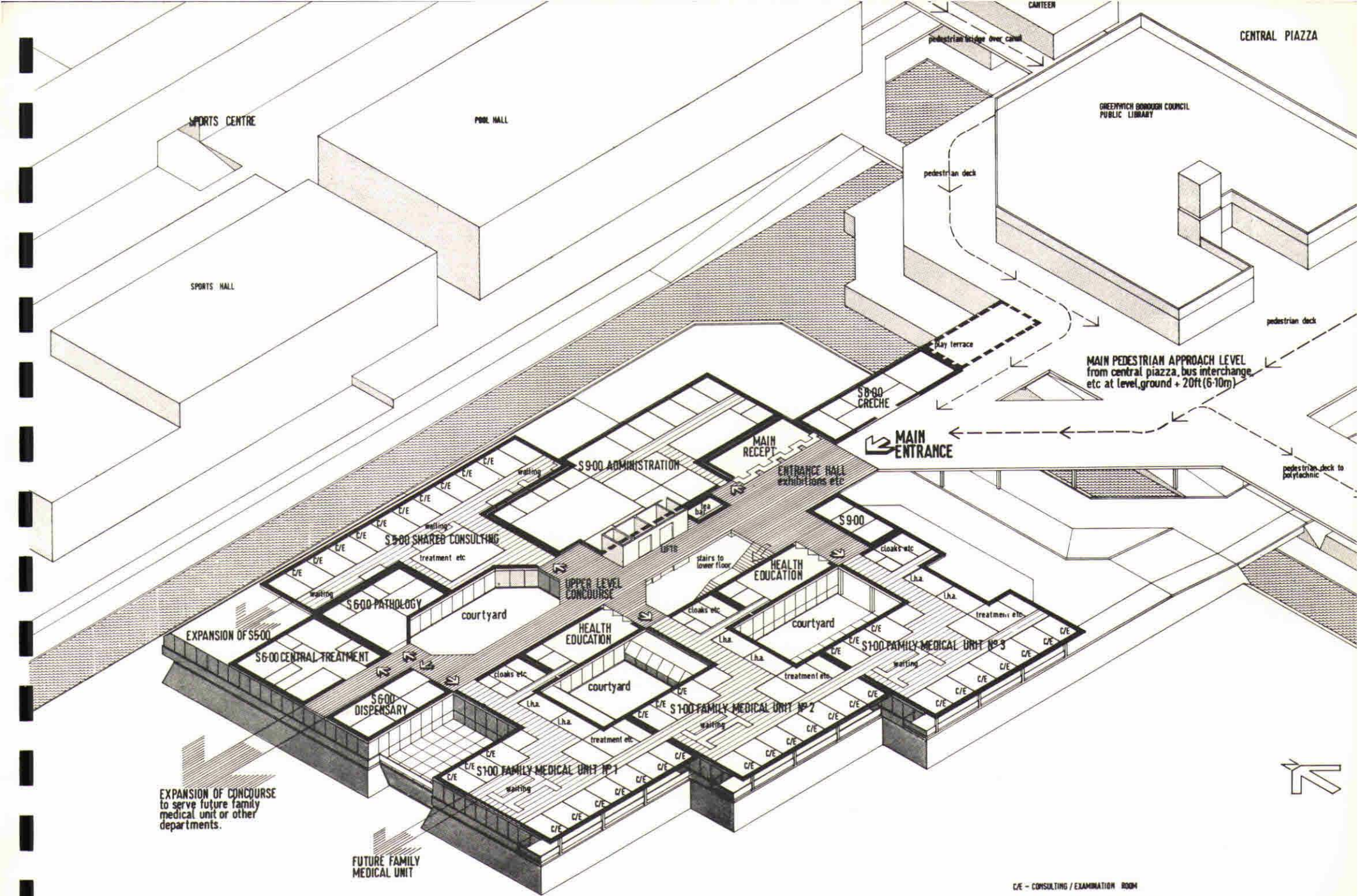
EXAMPLE 30 is a plan showing the services network to the Wythenshawe project. It indicates the positions and sizes of all major plant spaces, subways, ducts, etc.



D/S - DENTAL SURGERY

LAYOUT OF GROUND FLOOR AT LEVEL GROUND + 9 ft (2·74m)

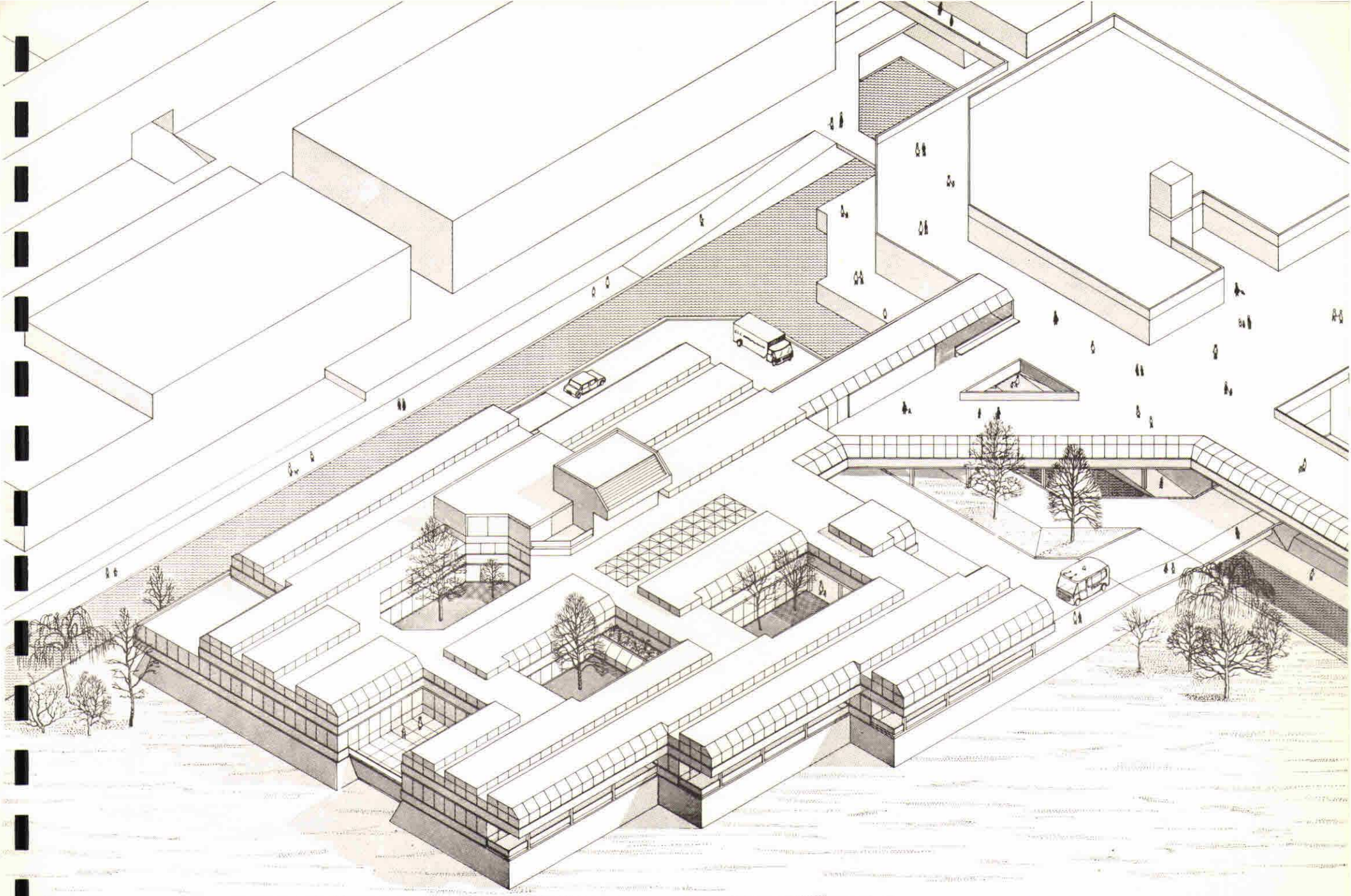
EXAMPLE 23



C/E – CONSULTING / EXAMINATION ROOM

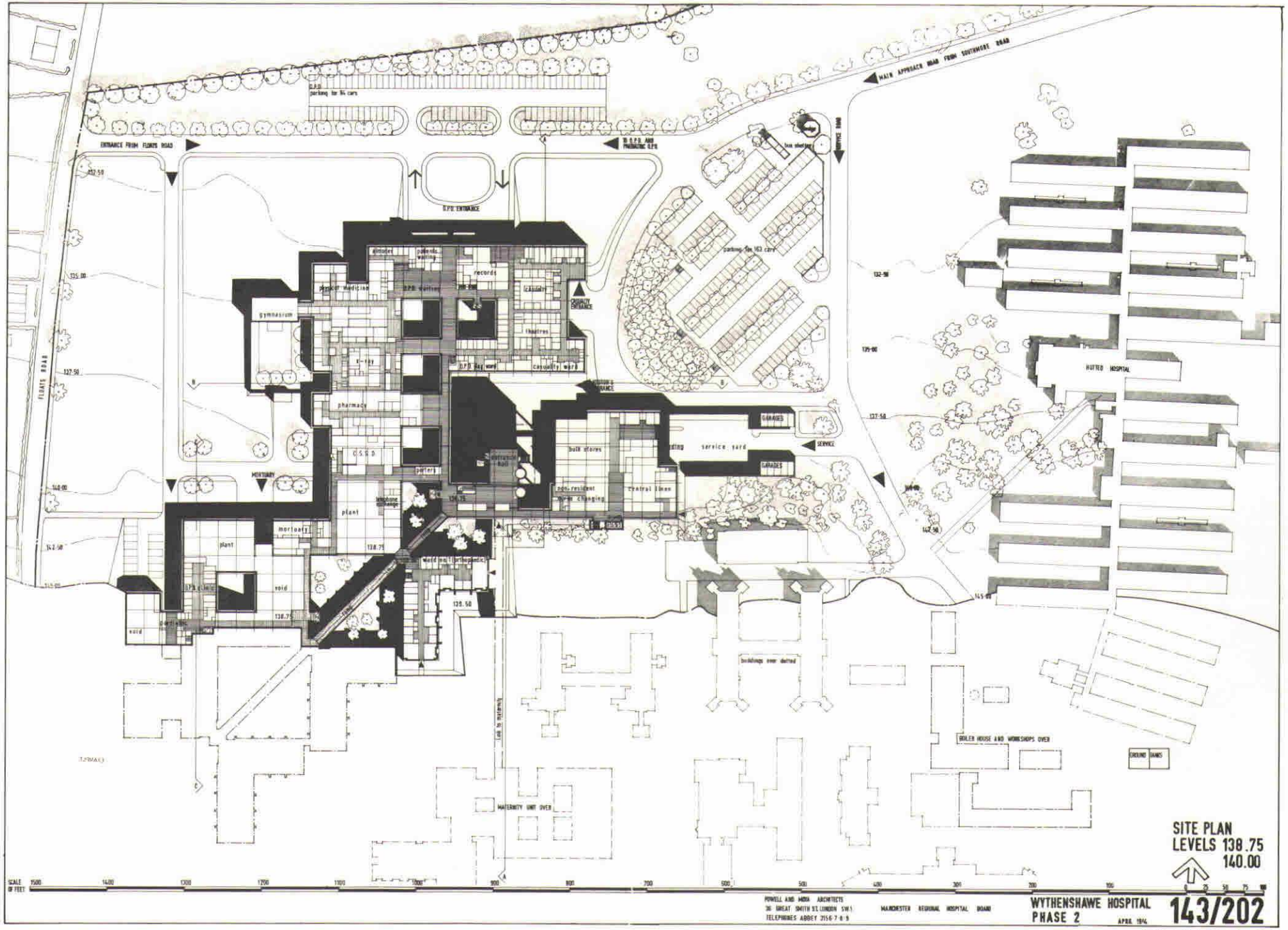
LAYOUT OF MAIN FLOOR AT LEVEL GROUND + 20ft (6·10m)

EXAMPLE 24

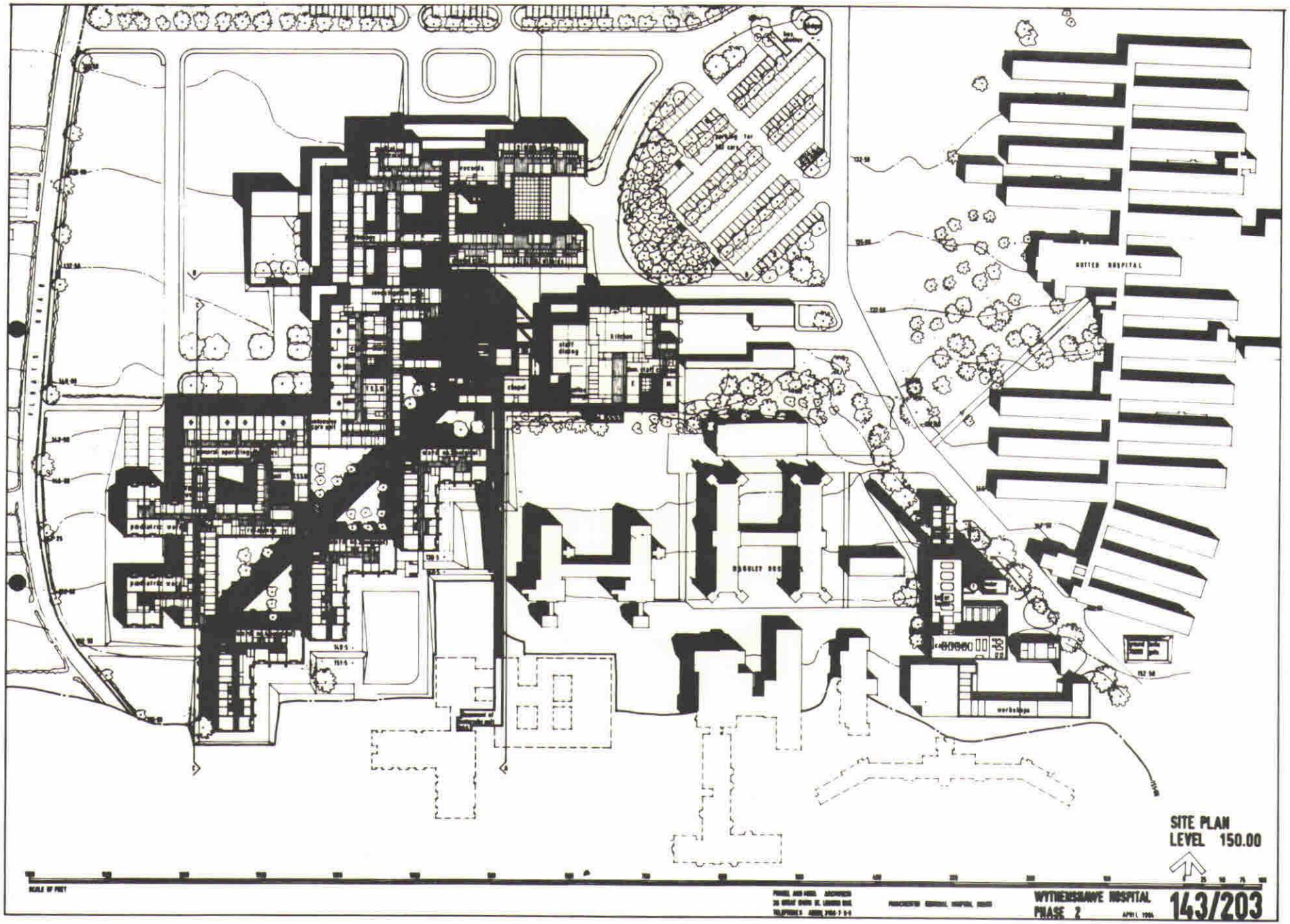


COMPLETE BUILDING COMPLEX & ADJOINING DEVELOPMENT

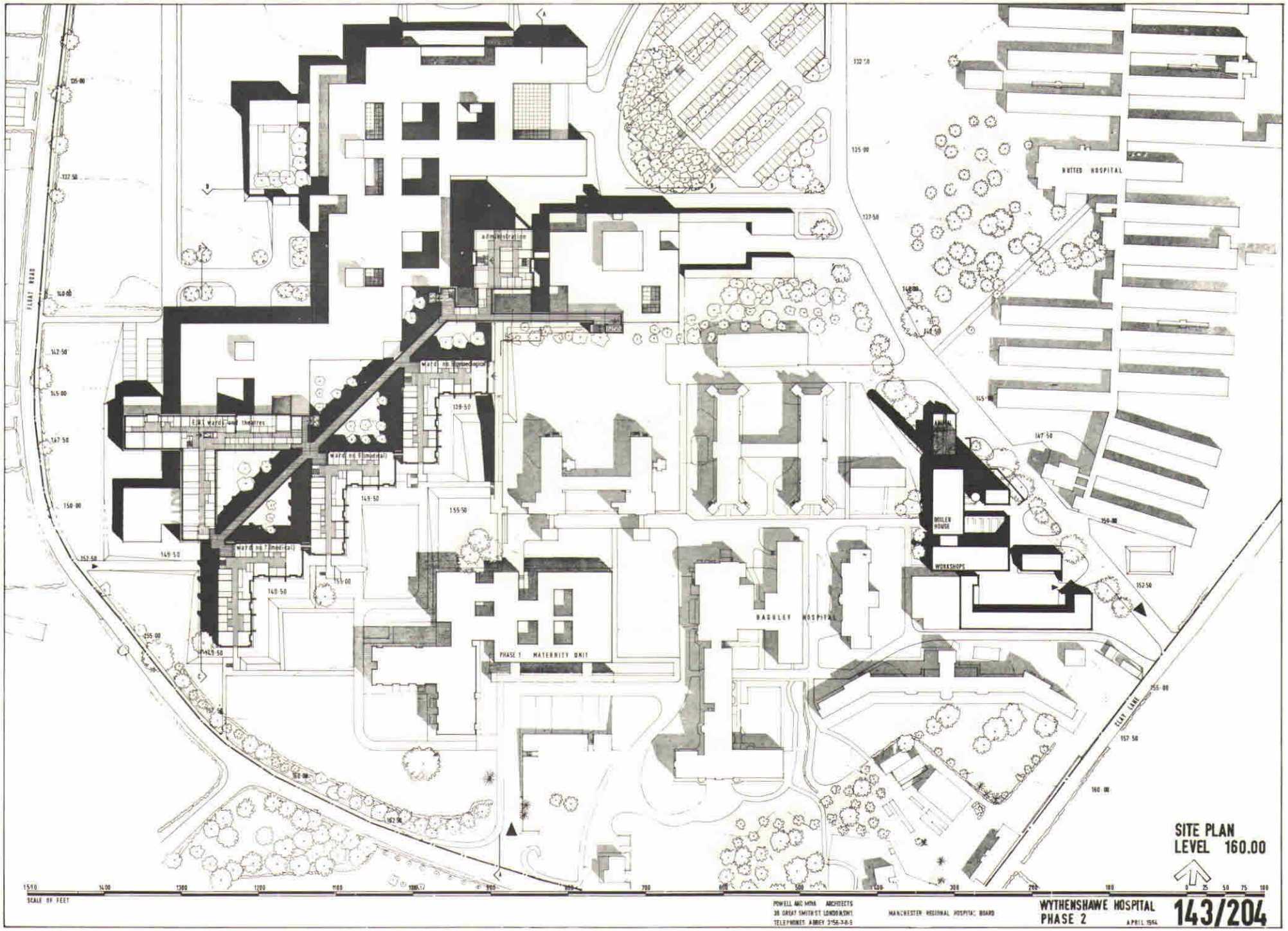
EXAMPLE 25


MAIN APPROACH ROAD FROM SOUTHMOOR ROAD
O.P.D. parking for 94 cars
ENTRANCE FROM FLOATS ROAD
O.P.D. ENTRANCE
B.O.P.D. AND PAEDIATRIC O.P.D.
parking for 163 cars
SERVICE ROAD
FLOATS ROAD
gymnasium
physical medicine
O.P.D. waiting
records
casualty
QUALITY ENTRANCE
theatres
X-ray
O.P.D. day ward
casualty ward
pharmacy
C.S.S.D.
porters
MORTUARY
plant
mortuary
void
O.P.D. clinics
bulk stores
non-resident nurses changing
central linen
service yard
GARAGES
SERVICE
HUTTED HOSPITAL
BOILER HOUSE AND WORKSHOPS OVER
GROUND
BANKS
MATERNITY UNIT OVER
buildings over dotted
SCALE OF FEET
POWELL AND MOYA ARCHITECTS
36 GREAT SMITH ST. LONDON SW.1
TELEPHONES ABBEY 7156-7-8-9
MANCHESTER REGIONAL HOSPITAL BOARD
WYTHENSHAWE HOSPITAL
PHASE 2
APRIL 1964
SITE PLAN
LEVELS 138.75
140.00
143/202

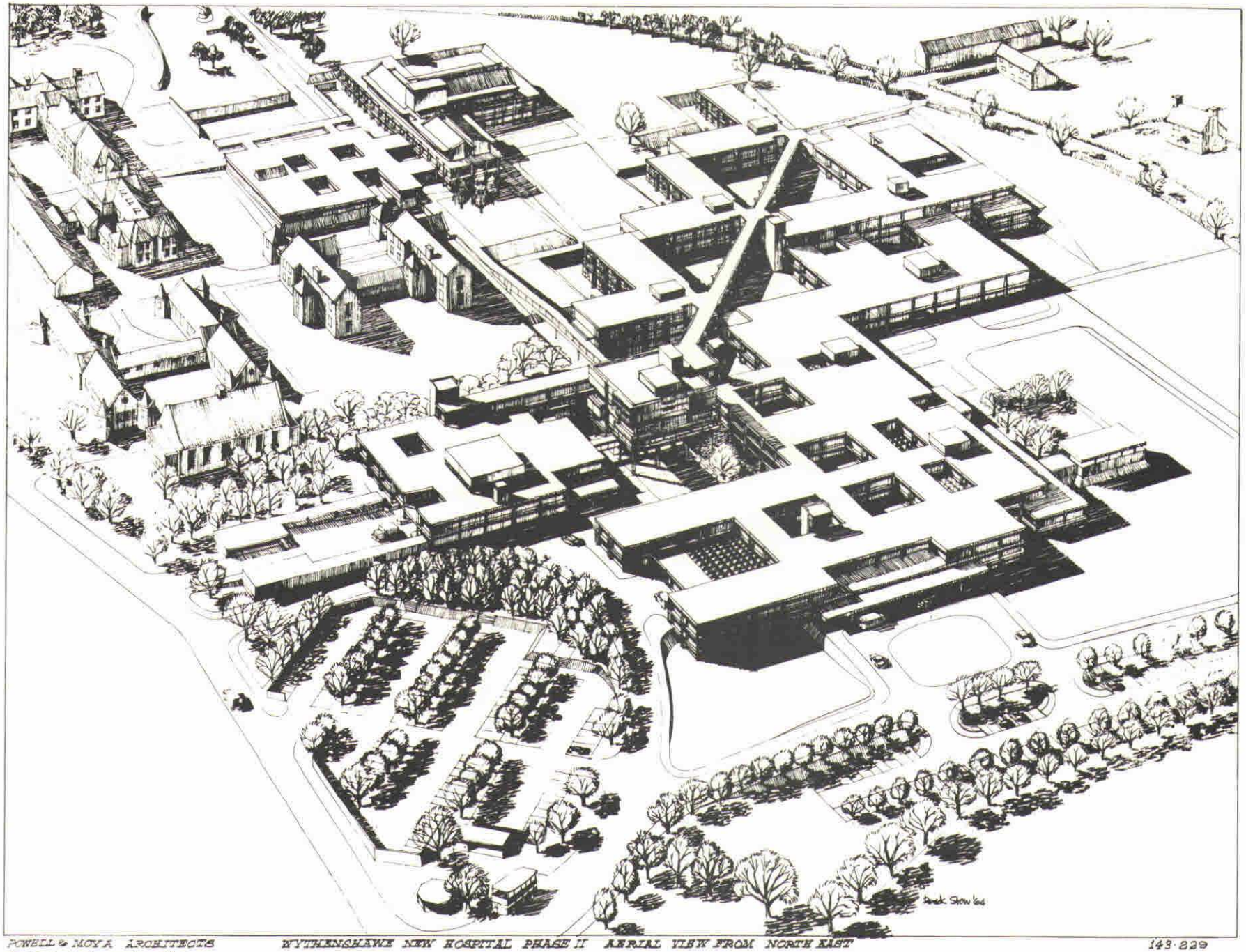
EXAMPLE 26



EXAMPLE 27


SITE PLAN
LEVEL 160.00
PHASE 1 MATERNITY UNIT
BAGULEY HOSPITAL
WORKSHOPS
BOILER HOUSE
ADMINISTRATION
SCALE OF FEET
POWELL AND MOYA ARCHITECTS
MANCHESTER REGIONAL HOSPITAL BOARD
WYTHENSHAWE HOSPITAL
PHASE 2
APRIL 1964
143/204

EXAMPLE 28



POWELL & MOYA ARCHITECTS
36 GT Smith St London S.W.1
Abbey 3156.

WYTHENSHAWE NEW HOSPITAL PHASE II AERIAL VIEW FROM NORTH EAST

MANCHESTER REGIONAL HOSPITAL BOARD

143·829

APRIL 1964

EXAMPLE 29

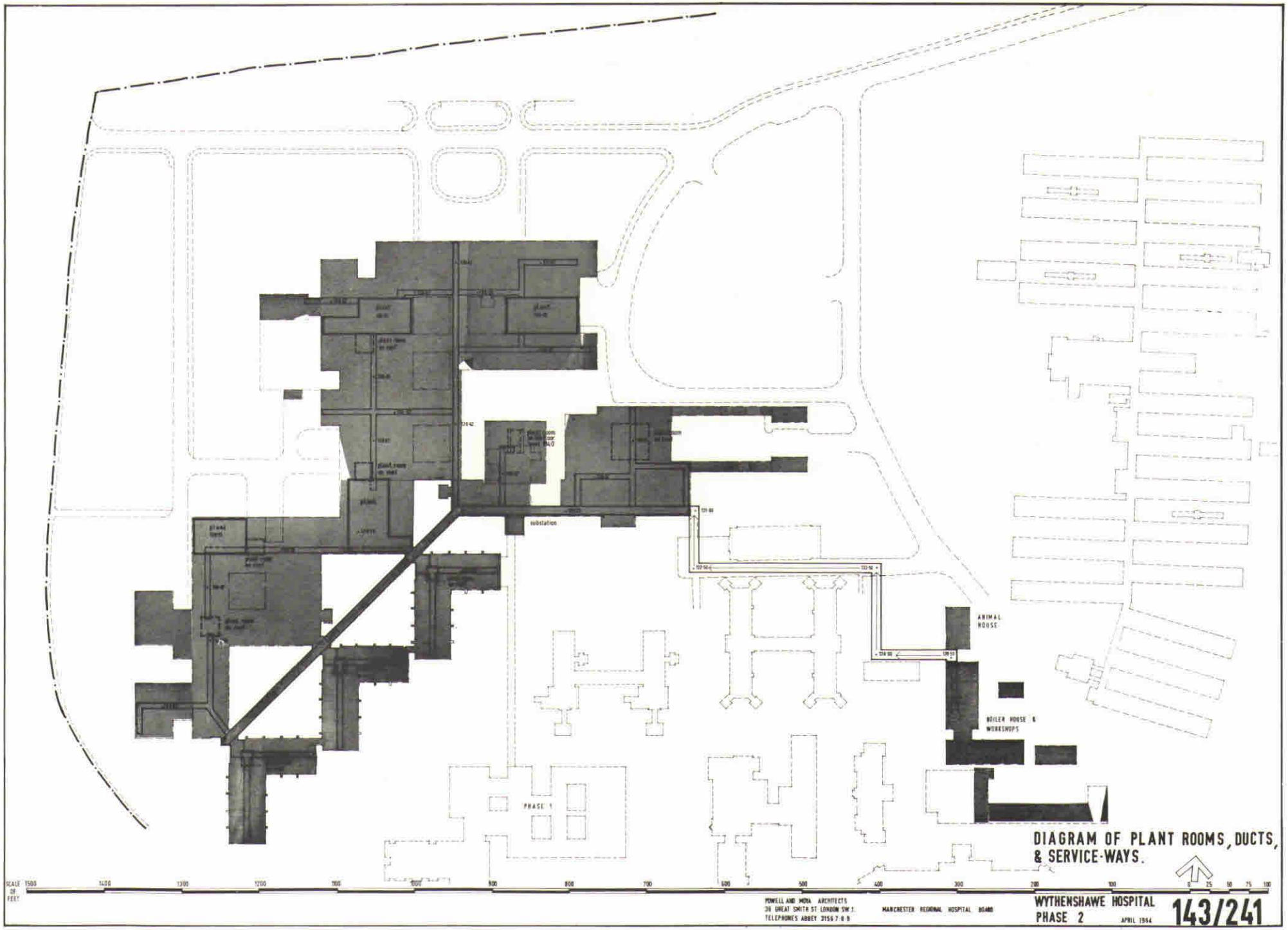


DIAGRAM OF PLANT ROOMS, DUCTS, & SERVICE-WAYS.

POWELL AND MOYA ARCHITECTS
36 GREAT SMITH ST LONDON SW 1.
TELEPHONES ABBEY 3156 7 8 9

MANCHESTER REGIONAL HOSPITAL BOARD

WYTHENSHAWE HOSPITAL
PHASE 2

APRIL 1964

143/241

EXAMPLE 30

glossary

glossary

PERSONNEL:

Client: Authority who authorises/passes schemes/ allocates funds.

Design Team: Body with responsibility for the design of the project.

Project Team: Body representing the Client, briefing the Design Team and expending the funds allocated.

BROAD STAGES OF WORK:

Brief Stage: The period in which the Client assesses his requirements, prepares an outline specification of his needs, appoints his professional team and considers the form of building contract.

Detailed Design: The advancement of the development control plan into a detailed design, obtaining final decisions on every matter related to design, specification, construction and cost.

Development - Control Design and Planning The advancement of the brief into an outline plan; a costed development control plan with supporting reports.

Project: The complete development envisaged for health building on one site or group of related sites, and possibly extending beyond the current 10 year programme.

PROCEDURES AND METHODS:

Activity:	A task, operation, or process consuming time and possibly other resources.
	The extent of an activity may be equal to or less than an operation, but will not exceed an operation.
Appraisal:	Assigning a value on a subjective scale.
Analysis:	The resolution into simple elements.
Design:	The formulation of a physical solution to meet the Client's stated requirements.
Display:	A presentation of information in visual form.
Family Clusters:	A term used specifically in this report to mean a group of separate self-contained activities or departments which are inter-related and inter-dependent one with another.
Input:	Any form of causative material used during an activity or task.
Operation:	Any form of related activities or tasks that can be directed towards an objective.
Output:	Any form of usable material resulting from a task or activity.
Plan of Work:	A representation usually in diagram form, of the operations which must be carried out to obtain a specific objective. The plan will show how the operations are related, the resources required and estimated times of completion.
Planning:	The study and organisation of related operations to achieve a preferred or optimum solution.
Policies:	The application of general principles to specific situations, ranging from regional decisions on location of hospitals to various aspects of planning.
Procedure:	One or more actions applied to a set of data. In these information is received, processed and put out.
Administrative Procedure:	A method of carrying out a task or the steps which have to be taken to allow the project to advance from stage to stage.
Process:	A series of connected activities.
Programme:	An expression of a plan of work related to time.
Programming:	The process of setting the plan down on paper using a recognised programming technique.
Synthesis:	Building up a solution from component parts.
Select:	To scan data and choose particular items.
Task:	A number of activities, an activity or part of an activity given to a man, or group of men, as a single job.

TERMS ASSOCIATED WITH THE BUILDING:

Cost: The measurable amount of money, time or effort expended or wasted. (It can be in terms of time and/or convenience as well as money)

On Costs: The costs arising from the site and site use.

Revenue Costs: The continuing costs of operating a completed project.

Element: Part of a building which always performs the same function irrespective of building type; in combination with other elements forms a space or whole building.

External Works: All work outside the external face of the external wall of the building.

Price: The quoted value or amount paid.

TERMS ASSOCIATED WITH COMMUNICATION OF INFORMATION:

Base Plan: Graphic information in a part finished form onto which additional data is added.

Development Control Plan: An overall appreciation of the project showing disposition of the required accommodation, the shapes of building, their interrelationship and phasing, constructional method, outline specification. It must be sufficient to obtain all approvals and form a basis for the measurement of on-costs for use in the production of the budget cost for the scheme.

TERMS ASSOCIATED WITH DATA AND ITS HANDLING:

Data: Factual information.

Project Data: The data that develops with a project and is specific to it, starting with a statement of the Client's requirements and concluding with the appraisal of the way in which these requirements have been met. (See Project Information)

Data Bank: A collection of static data available to the project.

File: A collection of records with a common interest. They may be traditional files or recorded on microfilm or recorded on magnetic tapes.

Project File: A cumulative store of information about any particular project.

Information: Knowledge concerning some particular fact, subject or event in any communicable form. Information includes data.

Project-information/data/documentation: Information, data, documentation which develops with a project and is specific to it as distinct from general information from which it may be derived. It starts with a statement of the Client's requirements and concludes with the appraisal of the way in which these requirements have been met.

It may be devided into:

(a) unique project items, e.g. site

(b) derived data - items selected from general information held by the system.

System: A proposal or actual complex of inter-related tasks or activities.

Management Information System: Relevant information specifically organised to aid decision making.

Software Systems: Computer programs of general application providing the user with well developed and verified solutions.

TERMS ASSOCIATED WITH COMPUTERS:

Digitizer:	Converts a drawing into a series of (x,y) points which it then transmits to a processor.
Model:	A representation of the relationship in any system which may consist of related ideas, functions, artifacts, natural phenomena, etc. A model has similarities and dis-similarities to the real system.
Formal mathematical modelling:	Using mathematical expressions to represent the relationships, e.g. linear programming, cluster or factor analysis.
Heuristic modelling:	Seeking the BEST solution from an effectively infinite range of possible solutions applying rules (euristics) to limit the area of search, e.g. route finding in a maze.
Simulation modelling:	The modelling of design solutions, obtaining as output a SCORD or performance index from the hypothesised design and solution input.
Program:	A set of instructions and any other necessary data for controlling a computer run.
Visual Display:	Any equipment which displays information from a computer or keyboard console onto a screen (VDU)

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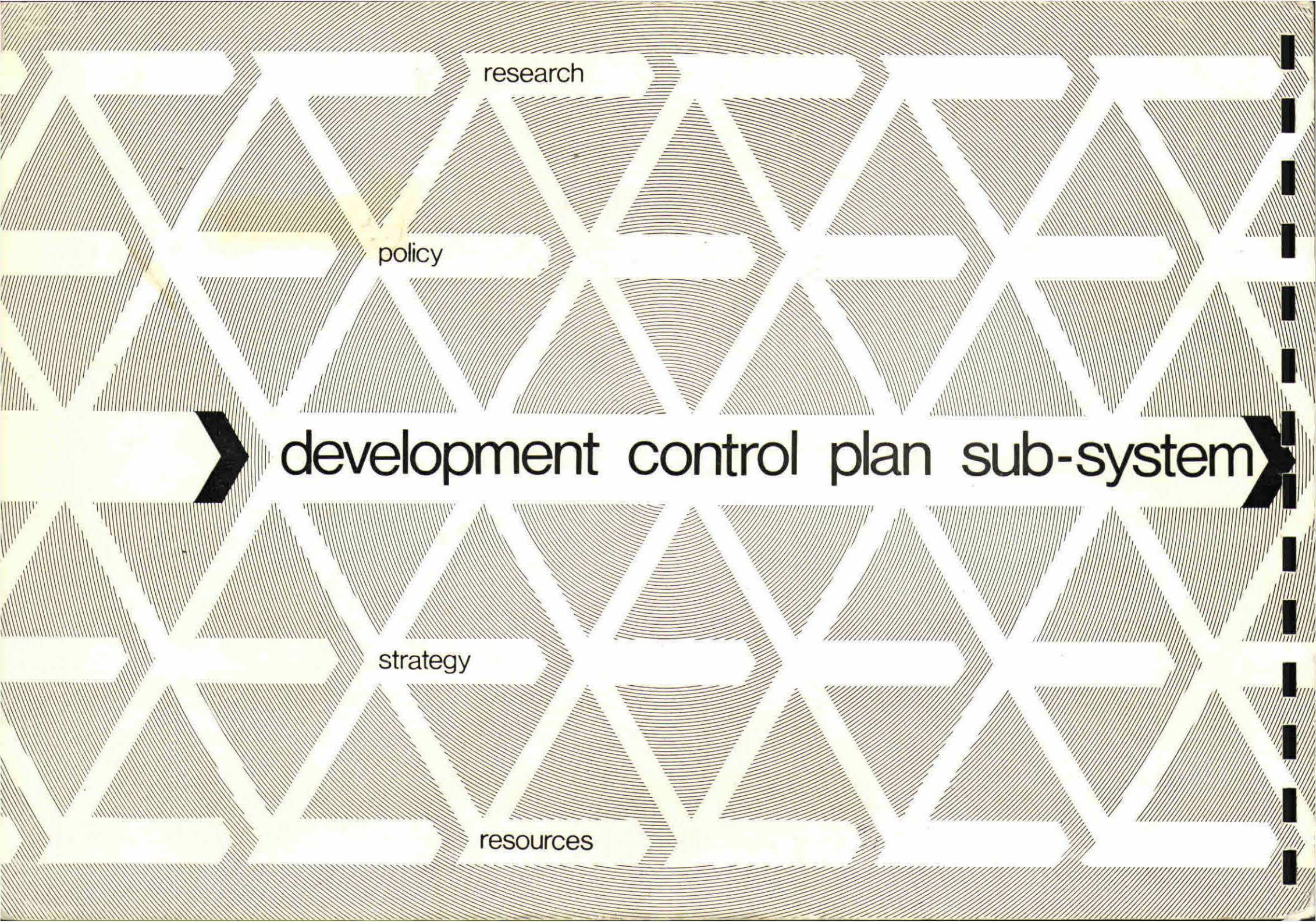
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