AN INDUSTRIAL ARCHAEOLOGICAL SURVEY
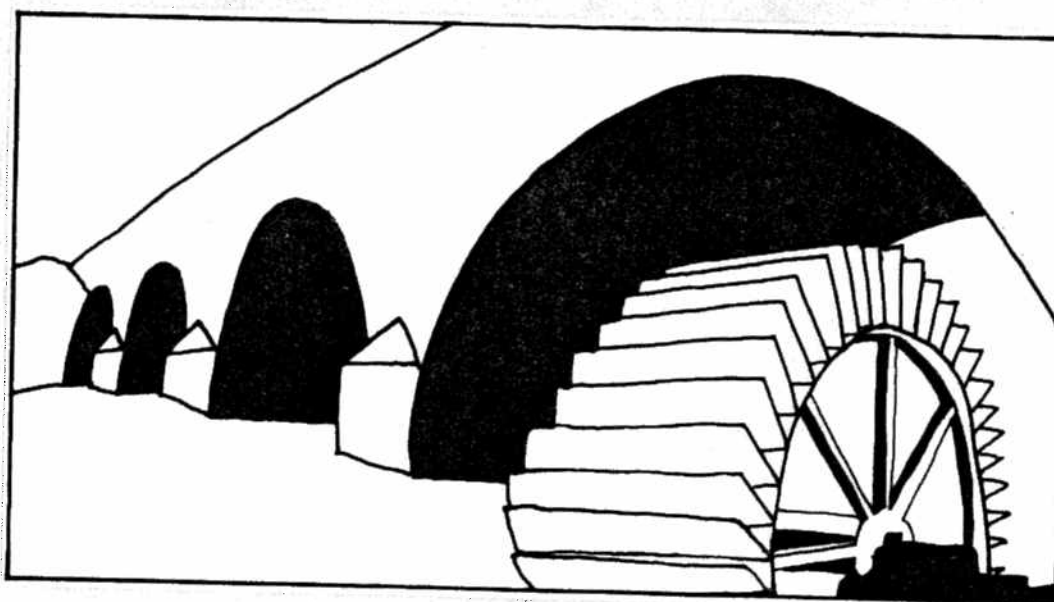
OF

COUNTY KILKENNY

Fred Hamond

for

Kilkenny County Council
Planning and Environment Section

January 1990

Part 3   An Assessment of Co. Kilkenny's Industrial Heritage

Separately bound:

Site Record Indexes

Summary descriptions of notable sites

Photograph Slide/ B-W Negative File

Site Record Files (8 volumes)

Maps

CONTENTS

AN INDUSTRIAL ARCHAEOLOGICAL SURVEY OF CO.KILKENNY: SUMMARY

Fred Hamond

1. At the request of the Planning & Environment Section of Kilkenny County Council and under the auspices of An Foras Forbartha, the author carried out a survey of the county's industrial heritage between 1987 and 1989.

2. The survey's objectives were to identify sites of past industrial activity, describe and photograph the field remains, assess their significance and make recommendations regarding their protection, conservation and development.

3. Prior to fieldwork a comprehensive database of sites was accumulated using 6" Ordnance Survey maps (1839-1950) and documentary sources. Each site was then visited in the field, observed and photographed. In all some 650 sites came to light.

4. The accumulated body of data is known as the Co. Kilkenny Industrial Archaeological Record, and is held, along with maps and photographs in the County Planning Office. Indexes to these sites have been compiled on the basis of their location, function, survival and archaeological significance, and are presented as a separate volume.

5. Many different types of site were uncovered, notably those related to coal mining, limestone and marble quarrying, grain milling and wool spinning, creameries, water supplies, besides numerous road and rail bridges, canal remains and riverside quays. These are reviewed in detail in the main report.

6. All sites were graded on the basis of their architecture, condition, technology and landscape value. In all 7 levels of grading were employed. Grade 1 sites are of national significance and outstanding merit - Co. Kilkenny has 12 such sites, mostly bridges and flour mills. Grade 2 sites are of provincial importance and of very high merit - 17 sites. Grade 3 sites are again of provincial merit but of lesser merit - 48 sites. These are briefly described, with photographs, in a separate volume.

7. As regards the long-term management of the more significant sites, the 1963 Local Government (Planning and Development) Act is of limited power in encouraging good conservation and prohibiting unsympathetic redevelopment. Its shortcomings are, however, a matter for Government.

8. A few sites are of such importance as to warrant their unaltered conservation, possibly with assistance from the Council. However, given that most sites are long defunct and will eventually fall into ruin, alternative uses are necessary if they are to survive. Reuse has been successful in a number of cases, but tremendous scope remains.

9. A number of sites are of great tourist potential, whether in original use, reuse, or a combination of the two. Tourism might also benefit from the inception of thematic trails around town and county, and the development of amenities in proximity to sites of scenic value.

20-5-1990

PREFACE

In November 1986 the Planning and Environment Section of Kilkenny County Council requested the Conservation and Amenity Advisory Service (CAAS) of An Foras Forbartha to carry out an archaeological survey of industrial buildings in County Kilkenny. The Council's 1986 County Development Plan included lists of items of scientific, architectural and archaeological interest which it wished to augment with a survey of the county's industrial heritage.

CAAS commissioned the author, a free-lance industrial archaeologist, to carry out this survey. Following discussions with CAAS and Kilkenny Council regarding the survey's parameters, the author embarked, in 1987, on a 'paper survey' of a wide range of industrial sites using published information. Fieldwork was carried out over the summer of 1988, and the resultant body of accumulated data analysed in 1989. The result is the Co. Kilkenny Industrial Archaeological Survey (KIAS), the methodology, results and recommendations of which are here presented.

I should like to acknowledge the assistance and unfailing co-operation of Ken Mawhinney and Dave Stewart at CAAS; J. Gibbons and Denis Malone of Kilkenny County Council; Michael Gibbons and his staff at the Sites and Monuments Office of the Archaeological Survey (Hatch St, Dublin); John Livingstone of the Queen's University map library, Belfast; Mary Sleeman of the Cork Archaeological Survey; and John Doyle (Brownstown, Kilkenny).

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1 INTRODUCTION

The County of Kilkenny lies towards the south-east corner of Ireland, bounded on
the east and south by the Barrow and Suir Rivers, and on the west and north by
Tipperary and Laois (fig.1). The Nore and its major tributaries, the King's and
Dinin Rivers, cut through the centre of its 800sq.ml. area, most of which lies
below 500ft. Its gentle relief, comparatively rich soils and mild climate com-
bine to make it one of the most agriculturally productive counties of Ireland,
the main crops being wheat, barley and sugar beet. [1]

Kilkenny, at the very centre of the county, is the administative centre and
principal town. From here major roads radiate to Carlow, Waterford, Clonmel and
Port Laoise. Minor towns and villages include Ballyragget, Callan, Castlecomer,
Gowran, Goresbridge, Graiguenamanagh, Inistioge, Thomastown, and Urlingford.
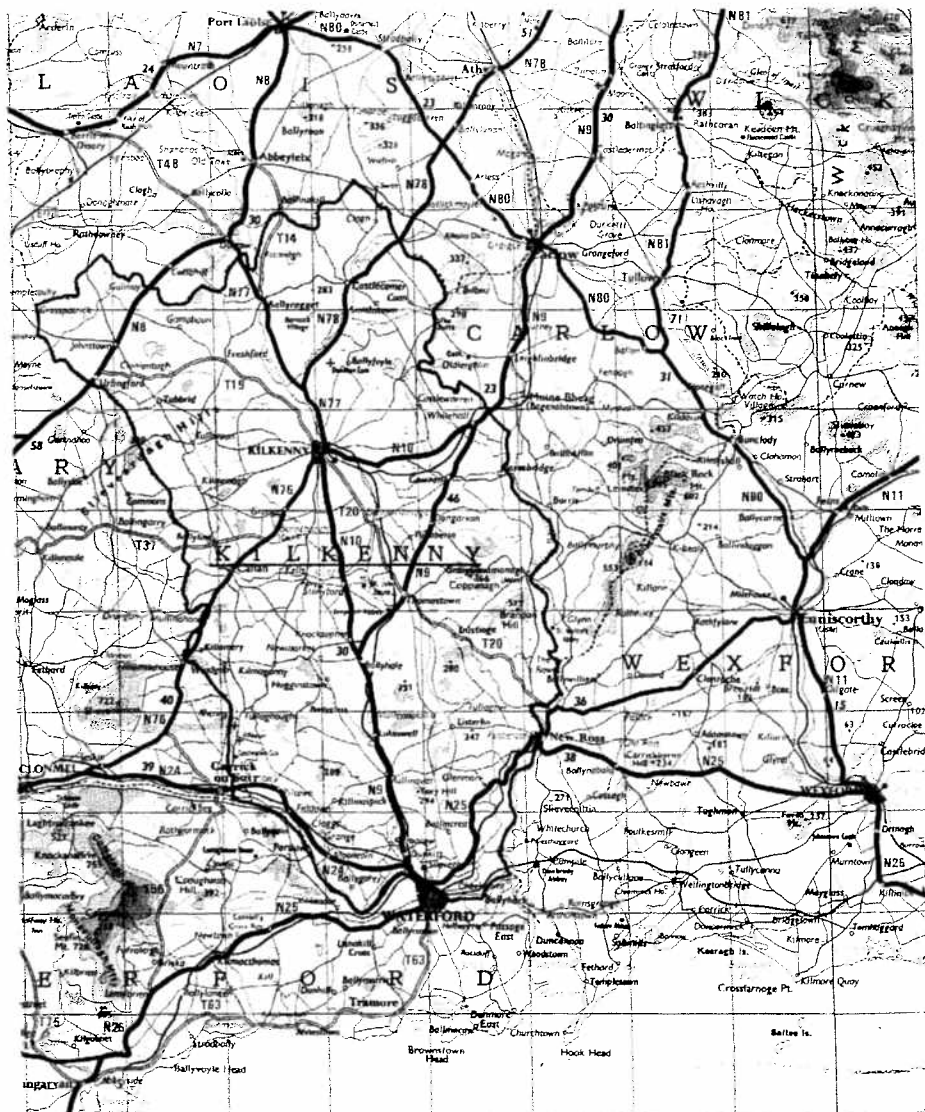
Fig.1 County Kilkenny (1:750,000)

1.1 Survey Objectives

The objectives of the Kilkenny Industrial Archaeological Survey (hereafter KIAS) were five-fold:

1. To identify the locations and functions of sites of past industrial activity.

2. To make field inspections of these sites, and describe and photograph any surviving structures, their machinery content and power sources (where applicable), and overall condition.

3. To assess the relative merits of surviving sites with regard to their architectural, technical, historical and landscape value.

4. To make this information accessible in a variety of forms (eg. geographical location and industrial activity).

5. To make recommendations regarding the future protection, conservation and development of the county's industrial heritage.

1.2 Previous Industrial Surveys

Until now there has been no systematic and comprehensive survey of the county's industrial heritage. During the 1970s, An Foras Forbartha was actively engaged in preliminary industrial surveys throughout Ireland; in the case of Co. Kilkenny however, only its architectural heritage was examined. [2]

To the author's knowledge, only one 'official' survey has been carried out in the county - a preliminary survey of watermills by the Office of Public Works in 1971. [3]

A number of amateur historians have been active in a variety of aspects of the county's industrial heritage. Their findings are periodically reported by the Kilkenny Archaeological Society in their Old Kilkenny Review. [4]

1.3 Report Outline

This report outlines the methodology behind, and results of, the first systematic survey of a wide range of industrial archaeological sites in Co. Kilkenny.

Part 1 describes the creation of a data-base of relevant industrial sites through a 'paper survey' of published information and fieldwork. Access to the resultant catalogue of information is also discussed.

For ease of assimilation, industrial activities have been categorised under four main headings: primary (extractive), secondary (manufacturing), and tertiary (service) industry, and communications. The various activities which fall into these categories are reviewed in Part 2 of this report.

Part 3 highlights the more important industrial sites in the county and examines how this heritage might best be protected, conserved, and developed in the future.

Separately bound are catalogues to the Site Record Files (indexed under a variety of headings), and summary descriptions of the more notable industrial sites in Co. Kilkenny.

Also accompanying this report are Site Record Files for each industrial site within the county, a set of 6" maps showing the locations of these sites, and files containing photographic black/white negatives and colour slides.

Notes

1. J.P. Haughton (ed.) 1979. Atlas of Ireland: 63-4 (Dublin: Royal Irish Academy).

2. M. Craig and W. Garner, 1971. Survey of Areas and Sites of Historical and Artistic Interest in County Kilkenny (Dublin: An Foras Forbartha); Ibid. 1974. First Supplement.

3. C.E. O'Meadhra, 1971. Interim Report on the Water Mills of Co.Kilkenny. (Dublin: Office of Public Works).

4. For example, J. Doyle, 1985. The Watermills of Kilkenny. Old Kilkenny Review, 3: 147-60.

2 SURVEY METHODOLOGY

Time, manpower and financial constraints necessitated the development of a survey strategy that was not only systematic and reasonably all-embracing, but also rapid and easy to carry out. Fortunately the author was able to draw on his experience of industrial survey work in Northern Ireland, and adapt this to Co. Kilkenny. [1] Essentially this involved the systematic creation of a comprehensive database of sites which could be inspected in the field.

2.1 Creation of Site Database

Three sources of information were utilized in the compilation of the site data base: Ordnance Survey maps, documentary references, and field observation.

2.1.1 Ordnance Survey Maps

An obvious starting point was a detailed search of the large-scale County Series Ordnance Survey maps pertaining to the area. The first county-wide survey was carried out in 1839 and is published at a scale of 1:10560 (6" to a mile). Each of the 47 sheets (fig.2) covers an area measuring 32,000ft by 21,000ft (24.1 sq.ml). A second survey followed in 1899-1902, with selective updates thereafter for more populated areas (table 1). [2]

Having pinpointed relevant sites, their positions were noted on KIAS Maps [3], and their townland location and citation (name and/or function) noted on 'Map Record Sheets' (section 3.1).

Survey date	Sheet numbers
1839	1 - 47
1899-1902	1 - 47
1945-50	10, 14, 19, 26 - 28, 46

Table 1 Co. Kilkenny map survey dates

Despite the value of the 6" maps, one should be aware of their limitations. Such maps obviously record only those sites having upstanding features, for example a building, group of buildings, or structure such as a quay, railway line, or bridge. Other activities, eg. wool spinning and hand-loom weaving carried out in the home, would obviously not be discerned.

Whilst the recognition of built-upon sites is precisely the aim of KIAS, a full understanding of past activity necessitates an awareness of the site's many other facets - machinery, raw materials, workforce, organisation, and finished products.

Nor should one forget the temporal restrictrions imposed by the O.S. maps. Given the 45-60 year interval between map surveys, some industrial sites will undoubtedly have come and gone and thus not be recorded on any map edition. [4].

PART 1

SURVEY METHODOLOGY

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Each 6" sheet is divided into 16 25" plans

1	2	3
4	5	6

Each 25" plan is divided into 6 traces
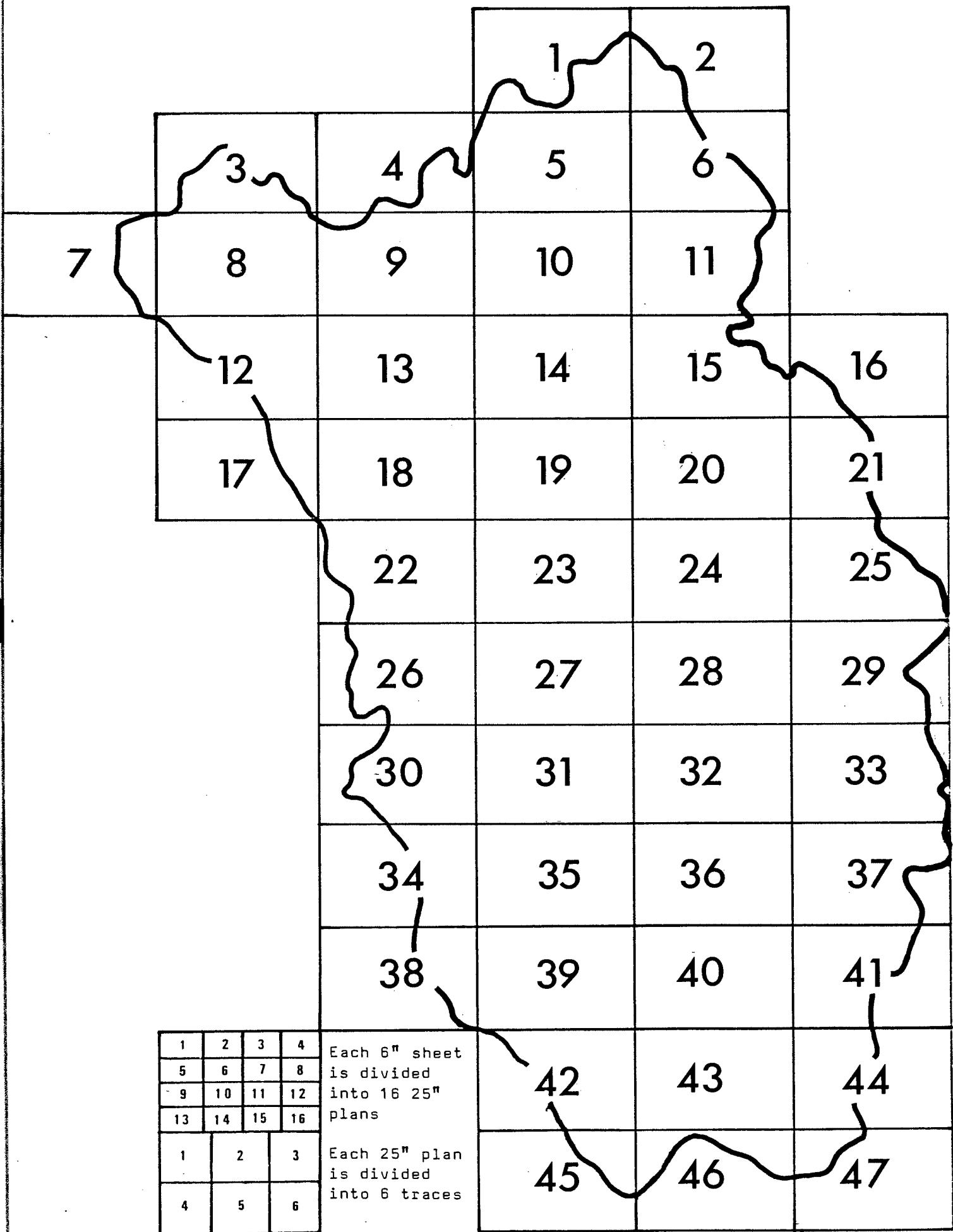
Fig.2 O.S. 6" map coverage of Co. Kilkenny

Moreover, although most 19th century sites were sufficiently dispersed to permit their map designation by name and/or function (eg. 'Kilkenny Woollen Mills'), a few operational sites were undoubtedly depicted, but not captioned. They might not, therefore, be picked up in a perusal of the 6" maps. Only by examining several map editions and scanning other published information might the presence of such 'missing' sites become evident.

One should also rember that the last systematic survey of the whole county took place c.1900, which effectively marks the survey's cut-off date; very few areas were surveyed at a later date. Some of these later sites are nevertheless included within KIAS, as are others noted during fieldwork.

Despite these shortcomings, the 6" maps provide the most convenient starting point for the creation of a data base, in terms of ease of access, spatial extent, and temporal depth.

2.1.2 Documentary References

Selected books and journals, notably the **Old Kilkenny Review**, were scanned with a two-fold purpose. Firstly, to gain more information on sites already included in KIAS; secondly, to highlight other sites not, as yet, recognized in the course of map and field surveys.

Time and manpower constraints precluded an exhaustive documentary search. Street and trade directories, photographic archives (eg. the Lawrence Collection), newspapers, and unpublished manuscripts (eg. the Mill Valuation Books in the Public Records Office, Dublin) would undoubtedly yield additional data.

2.1.3 Field Observation

In the context of KIAS, fieldwork served two purposes. Firstly, to ascertain whether a site still survived. Where it did, an opportunity was thus afforded to briefly describe and photograph it (section 3.3). Secondly, extensive fieldwork permitted observation of other industrial features not previously recognized on the maps (cf. section 2.1.1).

Figure 3 summarizes the flexible interaction between each of the three methods of data gathering.

2.2 Site Selection and Identification Procedures

The term 'Industrial Archaeology' encompasses a vast span of past industrial activity at a variety of scales. At the most basic level, one has primary (extractive, eg. quarrying), secondary (manufacturing, eg. woollen mills) and tertiary (service, eg. banking) industries; and communications (eg. railways) whereby the various industries can interact with one another and their customers. Many activities will be on a small-scale (eg. glass making), others on a large scale (eg. canals). Some will be predominantly rural in character (eg. corn milling), others essentially urban (eg. brewing). What then to select for inclusion in KIAS?

2.2.1 Site Selection

Practical considerations obviously limited what was included within KIAS. As regards extractive industries, the overabundance of quarries, sand and gravel pits precluded their analysis except in special cases (eg. Kilkenny Marble Works), or where there was ancillary published data. Most manufacturing

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        │  │  Mark up on   │  │ Complete Map  │
        │  │ last edition  │  │ Record Sheet  │
        │  │  OS. 6" map   │  │               │
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        │          │                   │
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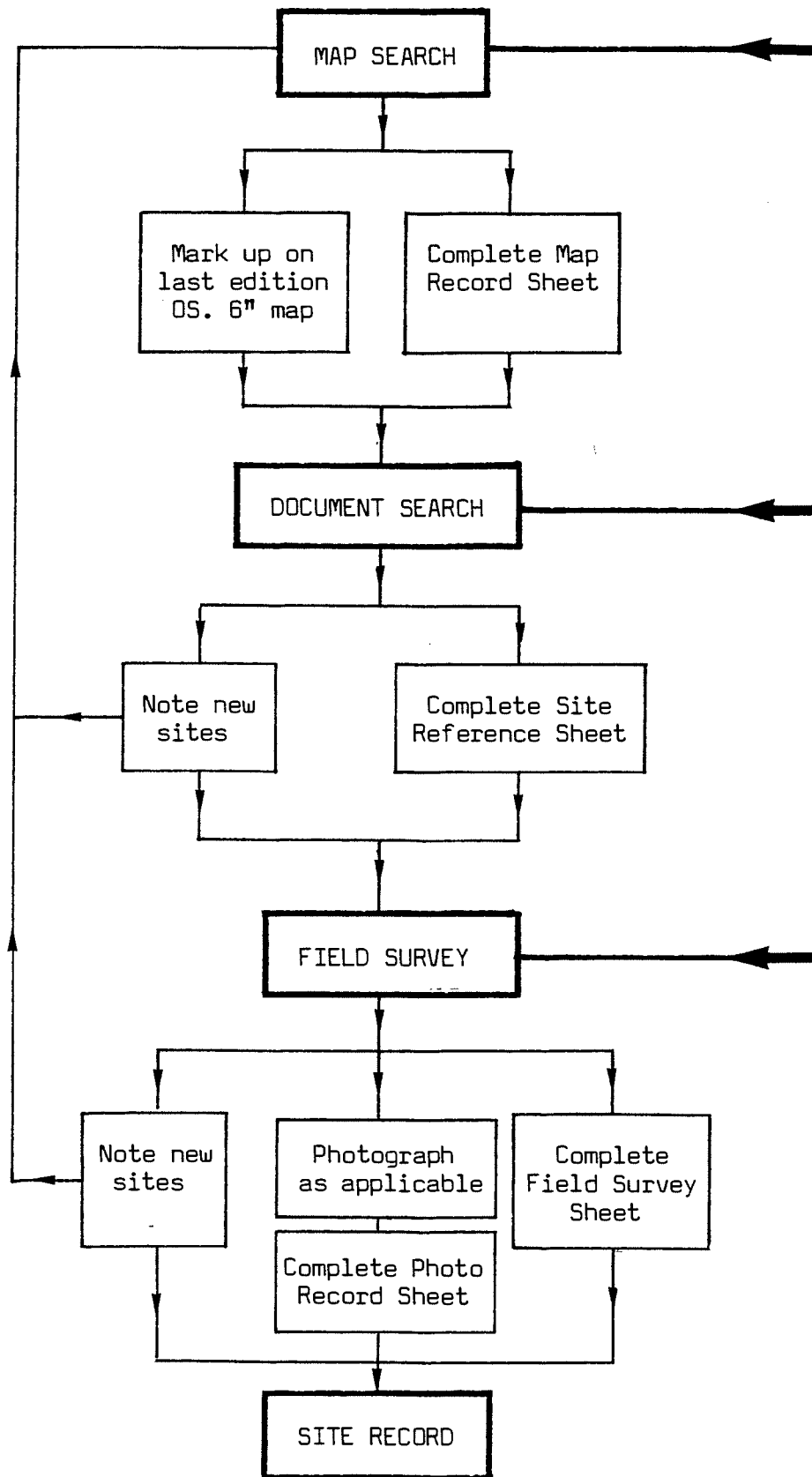
Fig.3 KIAS research strategy

7

industries were comprehensively covered, as were aspects of communications - road bridges, railways, river navigations and canals. Many service industries were not explicitly cited on maps, and in any case their number precluded full survey. Thus, whilst a number of reservoirs were surveyed, only a few smithies and newspaper offices were included, but no banks, hotels or hospitals. In short, some industries will thus go unrecorded or only partly recorded, whilst others will have been recorded reasonably comprehensively. The range of activities encompassed in KIAS may be found in the catalogue indexes associated with this report. [5]

2.2.2 IAR Numbers

Every site included in KIAS has been given a unique Industrial Archaeological Record (IAR) number. The allocation of this number requires a brief dicussion, if only for the purposes of adding new sites to the IAR.

In the context of KIAS, a site may be regarded as embracing:

1. An individual built feature, whether building (eg. corn mill) or other structure (eg. railway bridge).

2. Groups of features, thought to be related by spatial proximity and/or function interdependence. These may be localised (eg. corn mill and kiln; railway station, engine shed and signal box), or dispersed over a wider area (eg. coal workings).

The numbering of a site containing an single feature is relatively straightforward, being given a unique IAR number (eg. no.100; fig 4.1).

Obviously it would be impractical to regard each feature as a unique site, with its own IAR number. Functionally related features in close spatial proximity may therefore also be considered as a single site, again with an unique IAR number.

Should one wish to differentiate features within a site, suffix numbers can be added (eg. 100:1 for a corn mill, 100:2 for its associated kiln; fig 4.2). Obviously where such an association is in doubt, each site should be regarded as separate entity, with its own IAR numbers (eg. 100, 101; fig 4.3).

With functionally related sites dispersed over a larger area, suffixed numbers may also be employed. For example, a railway running throughout the county might be designated site 80. Along it one might wish to differentiate its component sites, eg. a bridge (80:1) and station (80:2). Moreover, one might wish to further differentiate various features within particular component sites, eg. the station's waiting room (80:2:1), goods shed (80:2:2) and signal box (80:2:3).

The situation becomes slightly more complicated where the site changes size and/or function through time. Remembering, however, that it is the built feature which is actually noted on the maps, site numbering is greatly simplified.

In the simplest case, a site may continue in use, albeit expanding or contracting, and possibly with a change of use; here the one site number prevails (fig 4.4). Should features be rebuilt, the earlier and later ones can also be differentiated by suffix numbers (eg. 200:1, 200:2; fig 4.5). However, should the earlier and later features be quite unrelated, the later one can be allocated a different number (fig 4.6).

In the case of sites with many features, the same principles apply. Thus a feature might continue in use (eg. 300:1), whilst another related feature appears (eg. 300:2; fig 4.7), or disappears (eg. 300:3; fig 4.8), possibly with another feature taking its place (eg. 300:4; fig 4.9).
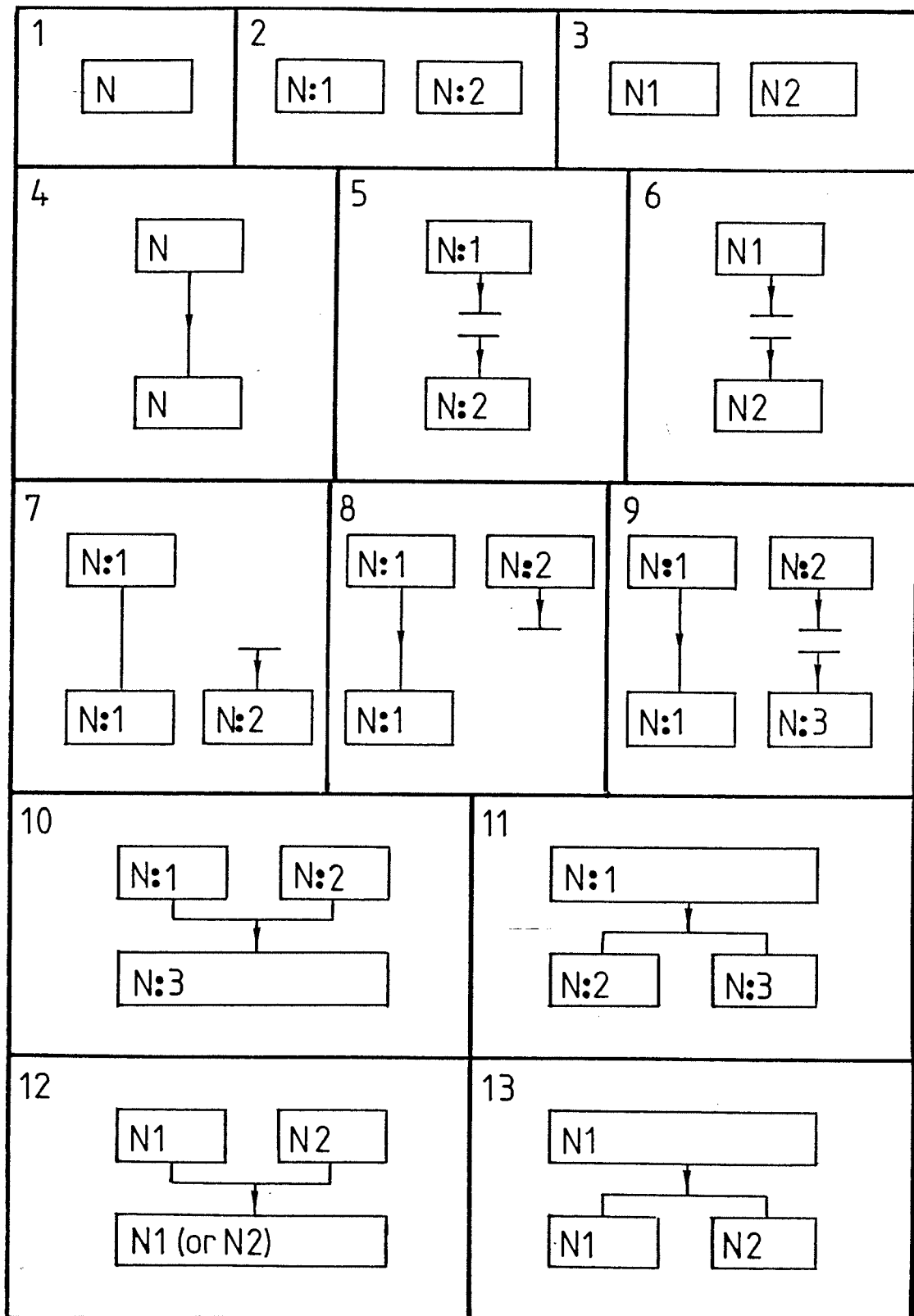
Fig.4 KIAS site numbering system

In some instances, two related but unattached sites may amalgamate into a much larger site (fig 4.10), or one site sub-divide into several associated, but spatially separate, sites (fig 4.11). Then again, a site might expand to subsume a once quite separate site, which will thereupon take on the former's number (fig 4.12). Alternatively, a site might split up into several quite unassociated sites (fig 4.13).

Where possible, this numbering system has been adhered to in KIAS, although in a few instances exceptions have been made, for a variety of reasons.

One should not get too bogged down in numbering systems however. In the final analyis the IAR number merely serves as a convenient access tool to the Site Record Files and Maps; so long as a particular site is uniquely identified, it should not be confused with any other site.

Notes

1. F. Hamond and C. Scally, 1988. **Greater Belfast Industrial Archaeology Survey** (Belfast: Archaeological Survey).

2. The 6" maps published c.1900 are derived from 1:2500 (25" to a mile) maps; in the rural areas and many towns and villages the 6" maps have the same site information content as the larger scale maps. Where possible, the 6" maps were backed up by larger-scale town and village plans.

3. Photocopy reductions of the 6" maps, generally the second edition (1902), were supplied by Kilkenny County Council.

4. This was the case, for example, with a number of flax scutching mills.

5. It is worth reiterating that the absence of an industry does not necessarily imply that it did not exist, merely that it has not been recorded, for whatever reason.

3 THE KIAS SITE RECORD

Each site included in KIAS is fully documented in the KIAS Site Record which accompanies this report. The Site Record is ordered by IAR number, each site's specific record comprising the following information:

1. Map Record sheet.

2. References sheet.

3. Field Survey sheet.

4. Photograph sheet.

These information sheets have been designed with ease of access and use, uniformity of recording, and interpretation maximisation in mind.

3.1 Map Record Sheets

The Map Record sheets serve as introductions to each site, noting details of its location, period of use, and industrial activities (fig.5):

1. Name/ Function   - denotes name by which site commonly known, and industrial activities carried out; known changes in function are also noted, whether this information is derived from the O.S. or other sources.

2a. Geographical Location - generally townland only is recorded, though streets are also sometimes noted in the case of towns. [1] The site's 8-figure National Grid is also noted. [2]

2b. Map Location - each O.S. County Series 6" sheet is sub-divided into 16 Plans (4x4). Each plan is at 1:2500 (25.3 ins to a mile) scale, and covers an area 8000ft by 5250ft (1½ sq.mls). Each plan is sub-divided into 6 Traces (3x2), covering an area 2667ft by 2626ft (1/4 sq.ml). To locate a site on a map, details are therefor given of its 6" sheet number (1:10560 CS), and 25" Plan (1:2500 CS), with map trace in brackets.

3. Map Designations - under this heading are noted the map's survey/ revision date (rather than publication date); scale of map (representative fraction); whether the feature is marked (tick = present; ? = uncertain; - = not depicted), and details of any associated caption (- = no caption).

A glance at the Map Record sheet will indicate, in broad terms, when a site came in and out of use, of use, some (but not necessarily all) of the industrial activities which took place, and how its function changed over time.

3.2 Reference Sheets

Published data on specific sites is sometimes available. These have been photo-copied, and affixed to the Reference Sheet with full source details (fig.6).

KILKENNY INDUSTRIAL ARCHAEOLOGY SURVEY	SITE NO:	22

Name/ Function: *LAUNDRY*

Location

Street:		Grid:	
Townland:	*Smithstown*		
Elect. Div:		1:10560 CS:	*5*
Parish:		1: 2500 CS:	
P.L.U:		1: 5000 IG:	
Barony:		1: 2500 IG:	

Map designations

Survey/ Revision	Scale 1:	Complex depicted?	Caption
1839	10560	✓	Laundry
1899	"	✓	Laundry

Comments

Related to Castlecomer Estate

Fig.5 Site record sheet

Source: J.   Doyle   The water Mills of Kilkenny
              Old Kilkenny Review   3 (1985) · 153

Fennessy's Mill

Below the new Ossory Bridge, on the west bank of the Nore, the ruins of Fennessy's mill stand. In the middle of the last century this mill was owned by Richard Sullivan. A correspondent in the *Kilkenny Moderator* of 1891 described this mill as a disused premises about to be converted to a bone-crushing plant. This notice styles the mill as Archersgrove mills. There is here much evidence of mills in pre-Cromwellian times; the Archers owned all the lands around this area, and their coat of arms is on the wall of the mill, one of the many mills they owned at different periods. Other references to Archer family connection with milling in Kilkenny are "A grant by the Earl of Ormond to W. Archer of the Stone Mills of Kilkenny, May 4th 1426"; also indenture between the Earl of Ormond and William Archer and Robert Waryn, by which the Earl let to them two stone mills in Kilkenny April 14th 1416.

FENNESSY'S MILL - Watercolour by George Pennefeather.
Courtesy Butler Art Gallery.

(Photo G. Deegan)

Fig.6 Site reference sheet

3.3 Field Survey Sheets

With minor exceptions, all sites noted on the Map Record sheets were visited in the field to ascertain their survival condition. To ensure uniformity of recording, pre-printed field survey sheets were utilized (fig.7); because of the prevailance of mills and bridges, special sheets were used for these site types (figs 8,9).

Common to all Site Survey sheets are the following details:

1. Surveyor.

2. Survey Date.

3. Site Function, as noted on Map Record Sheet.

4. Present Condition of building/ structure, and power/ plant (as applicable). One of four condition codes are noted (also applicable to plant):

    1. Substantial Remains: a considerable amount of the structure still exists (irrespective of whether a large proportion has also been destroyed).

    2. Some Remains: whilst a large portion of the structure may not now exist, it is still more substantial than a few boundary walls or foundations.

    3. Traces Only: only a few ephemeral portions of the feature (eg. foundation walls) now survive.

    4. Site: nothing of the feature now survives.

5. Present Function. Often the site will be disused, or used for a purpose quite different to that noted on the Map Sheet.

6. Photo number - this refers to the running number of the photographs taken in the field; once the film is developed, the site's IAR number can be ascertained from the running number; thereafter this number has no further use.

The basic Field Survey sheet (fig.7) also has space for a general site description, which might include site configuration sketches, construction details, building contents, power sources etc.

Mills merit a special sheet (fig.8) on which is noted specific data on:

1. Buildings - construction material, condition of walls, roofs and floors, number of floors.

2. Power - source and condition.

3. Plant - type/ condition of machinery, and transmission thereto.

Bridges also have a special survey sheet (fig.9). Their function is determined by that part making the span. For example, a bridge carrying a road over a railway would be classed as 'road over railway' (ro/ra) bridge. Additional data are also noted as follows:

1. General details - basic type of bridge, and what is carried over what.

2a. If an arch bridge, the construction of its various components are noted, and also arch size and whether they are of constant size (if more than one arch present).

	KILKENNY INDUSTRIAL ARCHAEOLOGY SURVEY SITE NO: 76 : 5
	FIELD SURVEY
	Surveyor: F.W.Hamond Survey date: 7 - 7 - 1988

Function: *Coal Pits*

Present condition: Buildings/Structure _3_ Power _4_ Plant _4_

Present function: As original (Disused) Other:

Description (construction, layout, contents, plant, sketch, etc):

Shallow infilled depression cutting into hillside.

No spoil heap now in evidence.

Comments

Photo numbers:

———

More over?

Condition code: 1= substantial remains 2 some remains 3= traces 4= site

Fig.7   General field survey sheet

	KILKENNY INDUSTRIAL ARCHAEOLOGY SURVEY		SITE NO:	81
	FIELD SURVEY			
	MILL	Surveyor: F.W.Hamond	Survey date: 6 - 7 - 1988	

Function: (Grain) Saw   Other:

Present condition: Buildings _2_   Power _2_   Plant _1_

Present function: (Disused) Outbld   Dwelling   Other:

Building

Wall material (B=brick; S1=coursed stone; S2=semi-random st; S3=random st): S3

Present condition: Walls _2_   Roofs _4_   Floors _4_

No. floors: In mill proper _2_   Range in complex _____

Comments on mill and ancillary buildings:

Ruinous condition — walls only partly survive, along with kiln

Power

Type: W'wheel _✓_ Turbine __ Steam __ Diesel __ Electric __ Other:

State model: Breast shot

Present condition: _2_
(if water-powered also Weir _3_ Headrace _2_ Pond __ Tailrace _2_)

Comments:

All - wooden construction save cast-iron hubs. Wooden axle, hubs, 1 set arms and part of one rim survive

Plant

Present condition: Manufacturing plant _1_   Transmission _1_

Comments on plant, including transmission system):

Great spurwheel arrangement to 3 sets stones. Survival: wooden upright shaft, cast-iron wallower, wooden spurwheel (metal teeth), cleap-arm wooden pitwheel (metal teeth); some nuts missing

Comments

Note wooden gearing

	Photo numbers:
	k /13-15
	9 / 25
	More over?

Condition code: 1= substantial remains 2= some remains 3= traces 4= site

Fig.8 Mill field survey sheet

KILKENNY INDUSTRIAL ARCHAEOLOGY SURVEY   SITE NO: *92*
FIELD SURVEY

BRIDGE   Surveyor: F.W.Hamond   Survey date: 2₁ - 7 - 1988

General	Type: (Arch) Girder Suspension Other: Viaduct: Yes No ?
	Function: Rail (Road) Footpath Other:
	Over: Rail Road (River) Other:
	Present condition: (Substantial remains) Some remains Traces Site
	Present function: Rail (Road) Footpath Unused Other:
Arch type	Build material (B= brick; E= earth/rock; C= concrete; M= metal; S= stone):
	Abutments _S_ Piers _S_ Arch face _S_ Arch soffit _S_ Parapet _S_
	Arch shape: Semicircle (Segmental) Eliptical Other:
	Arch sizes: Constant (Variable)
Girder type	Construction type: Simple Rect.lattice Bowstring Other:
	Materials: Abutments ___ Piers ___ Parapet ___
	Deck in relation to girders: Over Through
Additional detail	Number of spans: _3_ Orientation: 90° (Skew)
	Plan: (Straight) Curvilinear Elevation: (Straight) Angled Curvilinear
	If 2+ span river bridge, cutwater: (Angled) Curvilinear
	Decorative features? (No) Yes (eg. plaques, lamps, faced arch edges):
	Additional features? No (Yes)(eg. cantilevered sides)
	Single-span reinforced-concrete span on west side
Comments	Photo numbers: 23/33
	More over?

Fig.9 Bridge field survey sheet

17

2b. Girder bridges are subdivided according to the type of girder construction; again the construction materials of its various components are noted and whether the deck is carried over, or through, the girder itself.

3. The number of spans is also noted, and whether these are at 90° or at an angle (skew) to the road/ railway/ river being crossed. The general shape of the bridge in plan and elevation is also noted, cutwater details (in the case of multi-arched river bridges), decorative features, and whether later additions/ repairs have been made.

3.4 Photograph Sheets

Photographs were taken at sites where more than traces survived; in the case of particularly interesting sites, colour slides were also taken. Postcards were also available for a few sites.

Photographic prints and postcards were mounted on special Photograph sheets (fig.10), along with details of :

1. Photographer.

2. Photograph date.

3. Photo number. This is the IAR number followed by a slash, followed by a running number, eg. 296/1. A second photo of the same site would be numbered 296/2, a slide 296/3, a postcard 296/4 etc. This number should be used when the photo is reproduced elsewhere.

4. Type of photo is also noted - black/white or colour, print or slide.

5. Location of photo 'master' is given. In the case of black/white photos, the negative is held in the 'Negative File', and accessed by sheet and frame number (eg. '3.26' means negative sheet 3, frame 26. Slides are held in sequential order in the 'Slide File'.

3.5 Maps

Each site is marked-up in red ink on O.S. County Series 6" master-maps by IAR number (fig.11; note 3). Reference to the site's Map Record sheet indicates the sheet on which it is to be found. Larger-scale town maps, where available, have also been annotated.

No attempt is made to delineate the site's actual extent and boundaries, the definition of which would require much additional map and field work. It should also be remembered that the representation of a site on the master maps need need not necessarily correspond with what survives today; roads may have been remodelled, areas redeveloped, and sites cleared.

The inter-relationship of the various components of the KIAS Record are summarised in fig.12.

KILKENNY INDUSTRIAL ARCHAEOLOGY SURVEY
PHOTOGRAPHS

SITE NO: 80

Photographer: F.W. Hamond   Date: 7 - 7 - 1988   Photo no: 80/2

Type: (b/w) colour (print) slide   Location: (neg) slide   sheet 10 . 34

In vicinity of site 80:3

Fig.10 Photograph sheet

19

Fig.11 KIAS map (extract)

ACCESS CATALOGUES

Grade

Survival

Industry

Map Sheet/ Plan/ Trace

National Grid

Townland

IAR number

KIAS RECORD FILES

Site KK 3

Site KK 2

Site KK 1

Photograph Sheet

Field Survey Sheet

Reference Sheet

Map Record Sheet

O.S. 6" MAPS
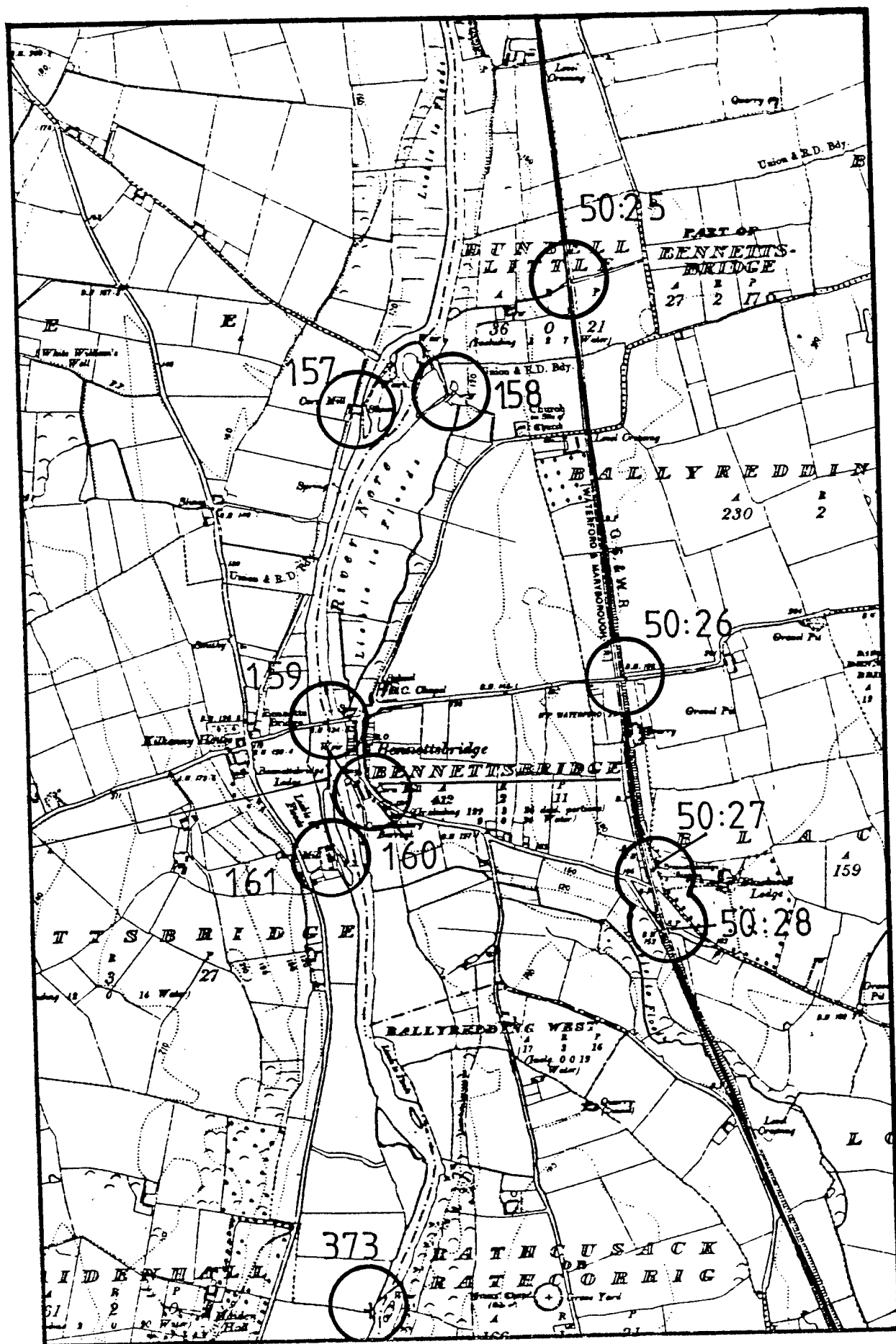
Sheet 3

Sheet 2

Sheet 1
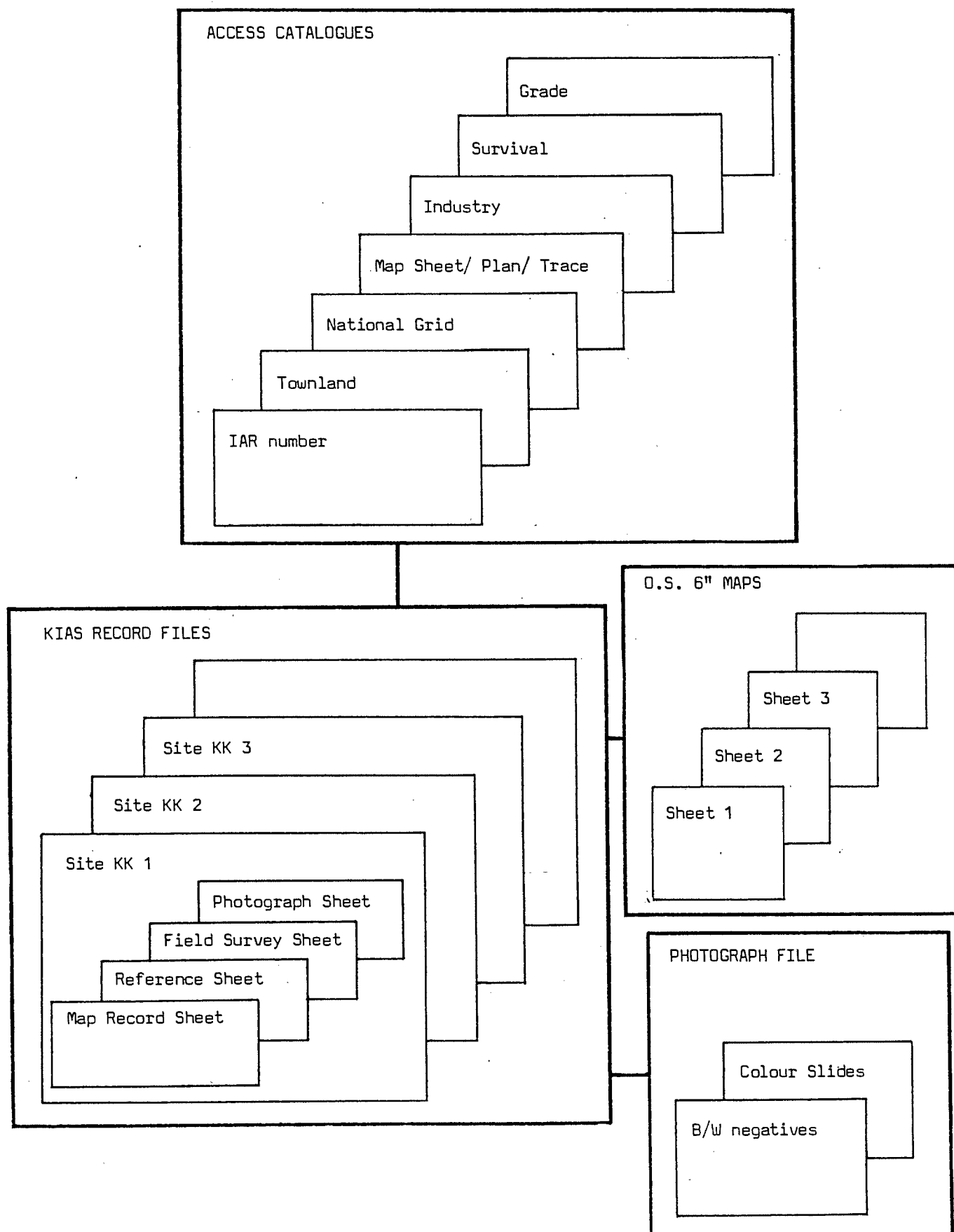
PHOTOGRAPH FILE

Colour Slides

B/W negatives

Fig.12   Inter-relationship of KIAS components

3.6 Accessing the KIAS Site Record

The KIAS Record may be accessed in 7 ways, according to the requirements of the inquirer. Further site details may then be found in the KIAS Record itself.
The Site Index Catalogue which accompanies this report is classified under a number of headings and sub-headings (table 2):

Main heading	Sub-heading
1. IAR NUMBER	Industry, Townland, Sheet/Plan/Trace, Grid, Survival, Grade
2. TOWNLAND	IAR number, Industry, Sheet/Plan/Trace, Survival, Grade
3. NATIONAL GRID	IAR number, Industry, Sheet/Plan/Trace, Survival, Grade
4. MAP SHEET/ PLAN/ TRACE	IAR number, Industry, Survival, Grade
5. INDUSTRY	IAR number, Sheet/Plan/Trace, Survival, Grade
6. SURVIVAL	IAR number, Industry, Sheet/Plan/Trace, Grade
7. GRADE	IAR number, Industry, Sheet/Plan/Trace, Survival

Table 2   Arrangement of Site Index Catalogues

3.7 Adding to the KIAS Site Record

Clearly, the compilation of the KIAS Record is but a preliminary step in the open-ended process of compiling a comprehensive Industrial Archaeological Record for Co. Kilkenny. The KIAS Site Record is designed in such a way that further information on new or previously known sites can be quickly and easily added.

The first step is to ascertain whether a potentially new site is already included within KIAS. This can be established by refering, in the first instance, to the 6" maps, followed up with a detailed examination of the Site Record Files for that particular area. Alternatively, the Site Index Catalogue can be consulted.

Should the site be previously unrecorded, it can be allocated a new number in accord with the principles outlined in section 2.2.2, and following on from those already allocated. [4]   The Map Record Sheet can then be completed (section 3.1), and the site marked on the 6" maps (section 3.5). Additional information can then be added to the Reference, Field Survey and Photograph Sheets as applicable (sections 3.2 - 3.4).

Although a particular site may already have been noted in KIAS, additional site features may eventually merit their own special sub-numbers, these following on from those already allocated to that site. For example, if 560:1 and 560:2 already exist, the new feature would be allocated 560:3. Should the site not already be sub-divided, this might be necessary. Thus a feature numbered simply as 330 might henceforth be renumbered 330:1 if joined by an additional feature (330:2).

Notes

1. In the case of bridges which are often on townland boundaries, either townland is noted.

2. National Grids, and 25" plan/ trace numbers were established using the computerised digitising programme held by the Sites and Monuments Office of the Archaeological Survey, Hatch St., Dublin.

3. In many instances the 6" maps available to the author were reduced in size; their actual scale is therefore smaller than 1:10560.

4. At the time of writing, numbers 1 to 423 have been allocated.

PART 2

INDUSTRIES OF COUNTY KILKENNY

4 EXTRACTIVE INDUSTRIES

The county's diverse geology has enabled a broad range of extractive industries to be pursued: coal mining, limestone and black 'marble' quarrying, millstone fabrication, brick and tile manufacture, salt making, and small-scale mining of precious metals.

This chapter summarises these various activities, and highlights the more interesting sites. No attempt is made however, either here or in subsequent chapters, to presnet an exhaustive review of each industry (although background information is sometimes noted). Numbers in brackets after specific site references indicates their IAR number.

4.1 Coal Extraction

The Castlecomer Plateau, north-east of Kilkenny, delineates the extensive Leinster Coalfield. [1] Some 33 coal-related sites have been noted in KIAS (fig.13).

'Kilkenny Coal' has been exploited in this area since the 1630s, initially in conjunction with the mining and smelting of iron-ore. [2] Unlike ordinary bituminous household coal, however, Kilkenny coal is actually high-grade anthracite. This burns at high temperature with minimal smoking, making it well suited to grain drying. Large quantities were conveyed to Dublin in the 17th and 18th centuries; despite the relatively high transportation charges incurred, it was nevertheless able to compete in price with imported English coal.

4.1.1 Coal Pits

Most early coal workings would have been in the form of open-cast pits and near-horizontal adits driven into the hillside. Many such workings are noted in the 1839 6" maps in the vicinity of Coolbaun, Gorteen, Clogh, Crutt Bridge, and Glenmagoo, with an outlier to the south at Baurnafea on the Co. Carlow border. Given the short life span and ephemeral remains of individual pits, their distribution would undoubtedly have been more widespread than the 6" maps suggest.

Interestingly, the place name 'Coalpitparks' occurs well outside the area, in the vicinity of Castlemorris Demesne, 3 mls south-west of Knocktopher (421). Possibly this reflects an unsuccessful venture by a local landowner at the time those pits on the Castlecomer Plateau were being developed.

Of the coal pits, little now remains, the ground having mostly reverted to rough grazing. Evidence for surface working can still be discerned, however, at Baurnafea (75:5), and Clogh village (10:1).

4.1.2 Coal Mines

As the demand for Kilkenny coal increased through the 19th century (doubtless encouraged by the opening of the Grand Canal and Barrow Navigation, so an increasing number of deep mines were opened up as surface workings became exhausted. [3]

By 1899, shafts are noted in Aghamucky (Rock colliery, 27:4:1), Ballylinnen (Skehana colliery, 355:1), Gorteen (Monteen colliery, 27:5:1), and Moneenroe (Jarrow colliery, 27:2). Again it is probable that the 6" maps do not depict their true extent; nor do they show the many miles of underground tunnels.

Undoubtedly the most extensive and successful Kilkenny colliery was that at Deerpark, 2 mls north of Castlecomer (352). Instigated by the Prior-Wandesforde family in the 1920s, it produced some of the best anthracite in Europe, achieving an output in excess of 1000 tons per week in the 1950s. [4] So successful was it that in 1920, the Kilkenny - Castlecomer railway (60) was extended to Deer Park, although little trace of the line now survives. The colliery finally closed in 1969.

With the exception of Deerpark, where spoil heaps and various concrete buildings survive, little surface remains of these former collieries survive, although some of the small cottages in the vicinity of the Monteen colliery (27:5:1) are probably mine-related.

The tradition of Kilkenny coal is, however, not quite dead, and Ireland's only operational coal mine is still to be found in the county. Messrs. Larry and Jimmy Porter have recently opened a 350m shaft into the hillside at Aghamucky (27:4:2), and hand excavate a 1m high anthracite seam using the traditional 'pillar and stall' method. This is graded, bagged and sold from the pit head to an increasing number of customers.

4.1.3 Culm Pits and Bruising Stones

Although the most marketable coal is in the form of hard compact 'kennel', a more friable coal-dust known as 'culm' (or 'duff') was also worked as small-scale surface workings. Similar to slack, this was was pulverised under massive horse-drawn edge-grinding stones ('culm stones'). The ground culm was then moulded into small blocks by mixing with clay. Having been dried, these could then be burnt in domestic fires.

Culm pits are noted in the vicinity of Foylatalure Hill, on the western border of the county, 9 mls west of Kilkenny town. Their main concentration is, however, likely to have been in the north-east, on the Castlecomer Plateau, although none have been picked up on the 6"-maps.

A number of communally operated culm stones are known from this area [5], including a much overgrown example in Uskerty (403). A clearer example is to be found just over the border in Co. Carlow, beside the bridge linking Millfall House with the Butts. [6]

4.1.4 Sites of Interest

Of the 33 coal-related sites, 29 are now sites, or have no more than than traces surviving. The four remaining sites are of some interest, summarised here (fig.14; fuller details are to be found in chapter 10).

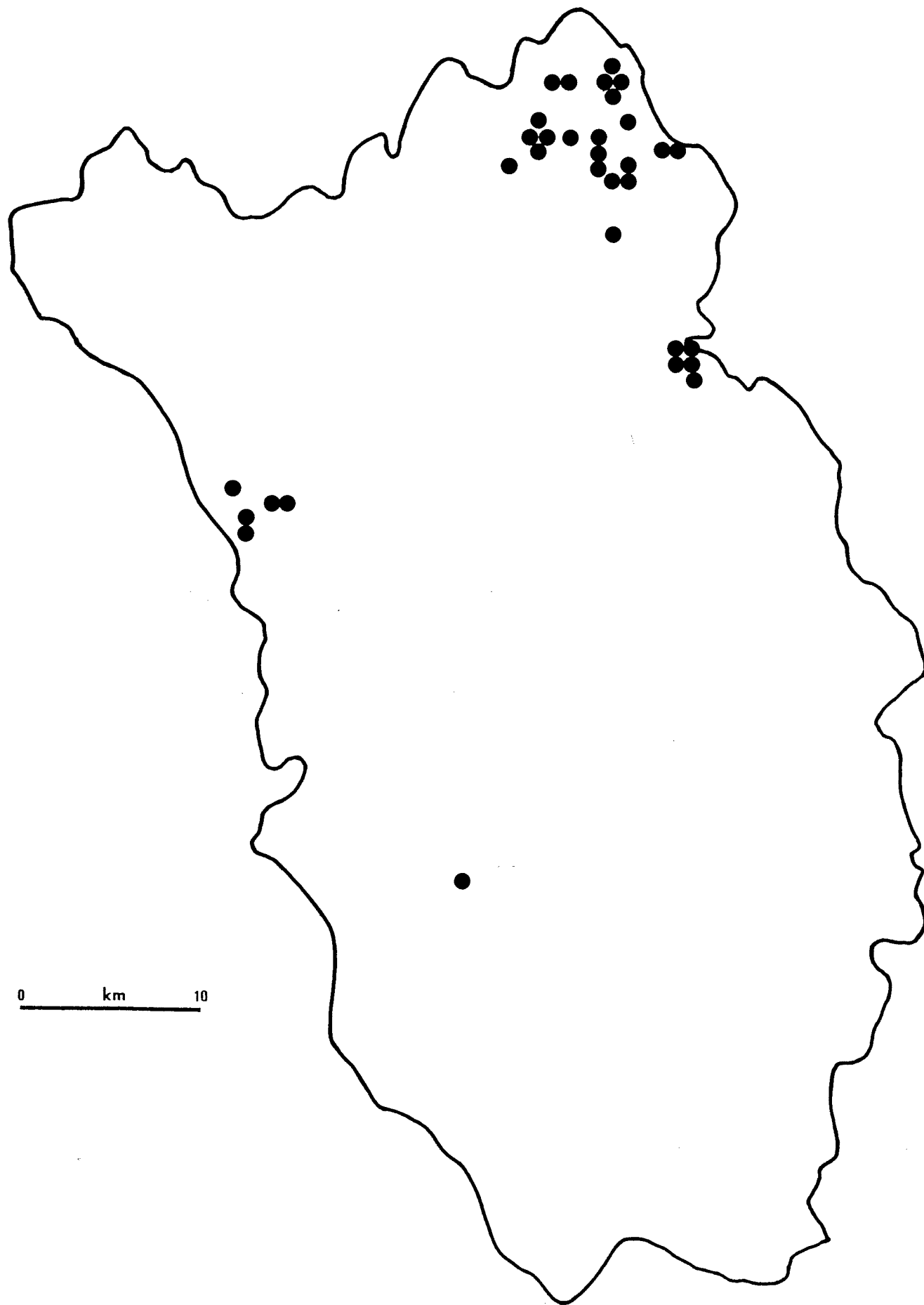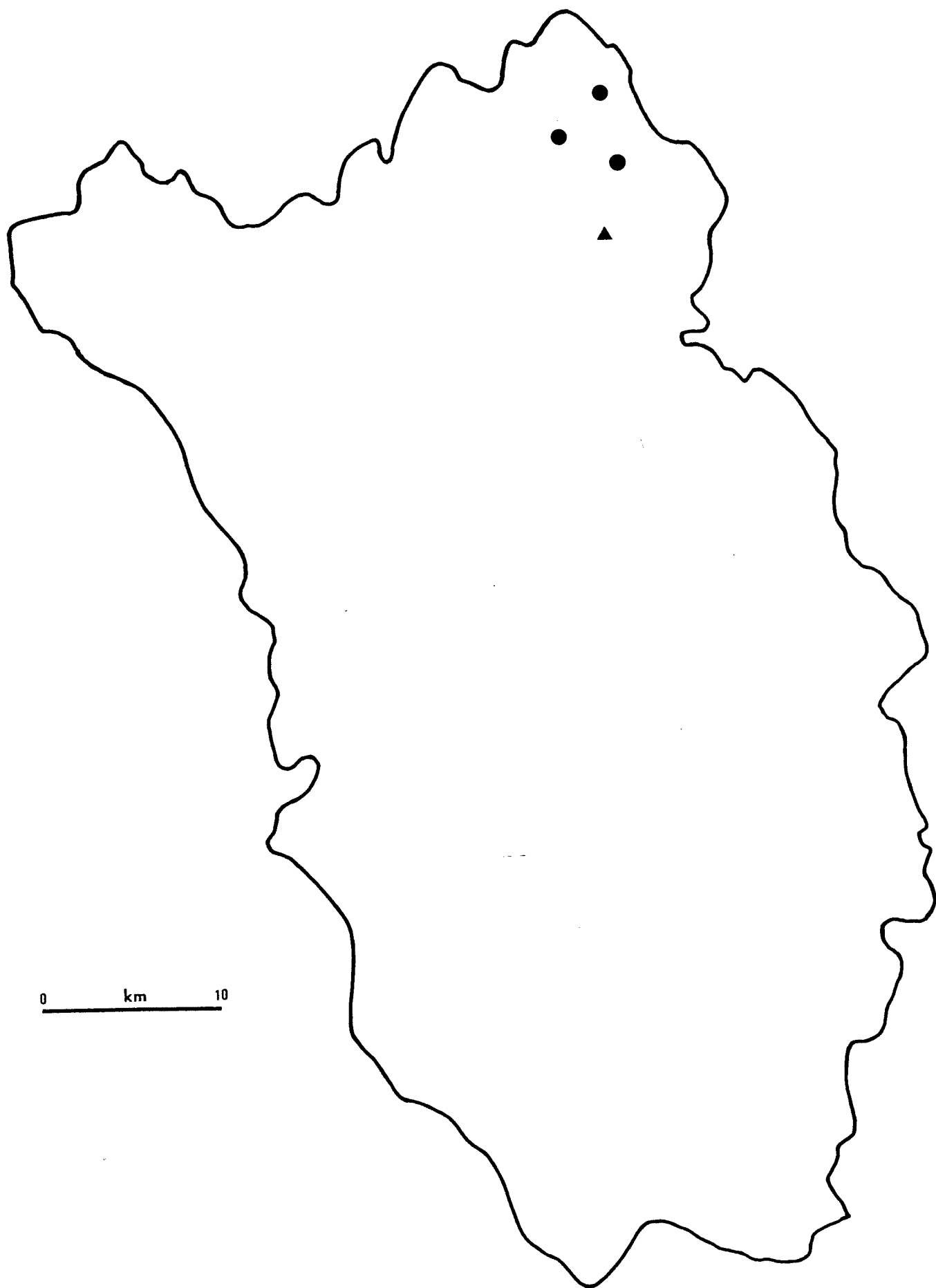| Grade	Site no.	Site type	Location (Td.)	6" map
3	352	Coal Mine	Deer Park	5
4	10:1	Coal Pits	Clogh	2
4	403	Culm Stone	Uskerty	11
*	27:4:2	Coal Mine	Aghamucky	6

Fig.13 Coal-related sites

Fig.14 Coal-related sites of interest (● = coal mine/ pit; ▲ = culm stone)

4.2   Quarries and Related Features

The widespread number of quarries, sand/ gravel pits, and lime kilns throughout the county precludes their exhaustive survey in the present context. Only those sites known to be of particular historical interest, or on which documentation was immediately available, have been included in KIAS. As a consequence, only a few, probably unrepresentative, quarries are assessed, whilst no sand or gravel workings have yet been noted (fig.15). An inventory of operating limestone quarries and sand/ gravel pits has recently been published. [7]

4.2.1 Limestone Quarries and Mineral Railways

Limestone bedrock covers much of the county, and accordingly limestone quarries predominate. Particularly impressive quarries are to be found around Dunkitt, in the vicinity of the Suir and tributaries thereto (316, 325:1, 326, 327:1). The nearest accessible limestone to Waterford City, they undoubtedly provided easily transportable building stone for it and other towns along the Suir. Narrow-gauge railways are associated with two of the quarries, and although long since lifted, their courses can still be partly followed (325:2, 327:2).

4.2.2   Black Marble Quarries and Saw Mills

The most famous limestone quarries are the Maddockstown 'Black Marble' quarries on the left bank of the River Nore, 3 mls south-east of Kilkenny town. [8] Although not a true marble, the limestone in this area is particularly dense and black, having many fossiliferous inclusions. Cut and polished, it is attractive as a decorative building stone and was utilized extensively in Kilkenny town, giving it the name 'Marble City'.

Commercial marble quarrying was instigated at Maddockstown in 1730 by William Colles (124:5). Here are also to be found a series of water-powered saw mills for cutting the stone (124:1, 124:2, 124:4:1), and Mill Mount House (124:3), the Colles family home. Operations continued until the 1920s, during which time other quarries were also developed, for example the Black Quarry (125) just north of the new Kilkenny ring road. [9] Several other quarries in the area are now infilled (123:1:1, 123:2).

4.2.3 Lime Kilns

The utilization of limestone (calcium carbonate) for building mortar necessitates its burning in a kiln. This reduces it to calcium oxide which is then slaked with water and mixed with sand prior to use. As it cures, the mortar reverts back to durable calcium carbonate.

Lime kilns are dotted throughout the county, to which the raw material was brought for firing. Often such kilns were located at, or near, quarries, and four such associated kilns were investigated in the field.

Of these only one definitely exists, now heavily overgrown, on the left bank of the Black Water at Dunkitt (no.327:3); another may also exist at Kilderry (no.77.2).

4.2.4   Slate Quarries

On the Slievenamon ridge, a short distance north of Carrick-on-Suir, is an area of Silurian schist, some of which has been metamorphosed into slate. Here are to be found the extensive Ormonde Slate Quarries, in the valley of the Lingaun River, just west of Tullaghought on the Co.Tipperary border (262).

Although now abandoned, impressive spoil heaps and water-filled workings are still to be seen. Further field investigation would doubtless yield many examples of their use in town and country house roofs.

4.2.5 Millstone Quarries

Most Irish millstones were probably individually quarried where suitable rock was locally at hand. Millstone quarries as such are rare, but one is to be found on Gibucter Hill at the south-east extremity of the county (348).

The hill comprises an outcrop of hard Devonian sandstone which also forms the Slievenamon ridge overlooking the Suir. The quarry's proximity to the Suir and Nore would have been advantageous in the transportation of the heavy millstones to more distant parts. Unfortunately, the workings were recently infilled, and little is now to be seen, save some waste fragments built into field walls.

4.2.6 Sites of Interest

Of the 23 recorded sites, 11 are of some interest (fig.16):

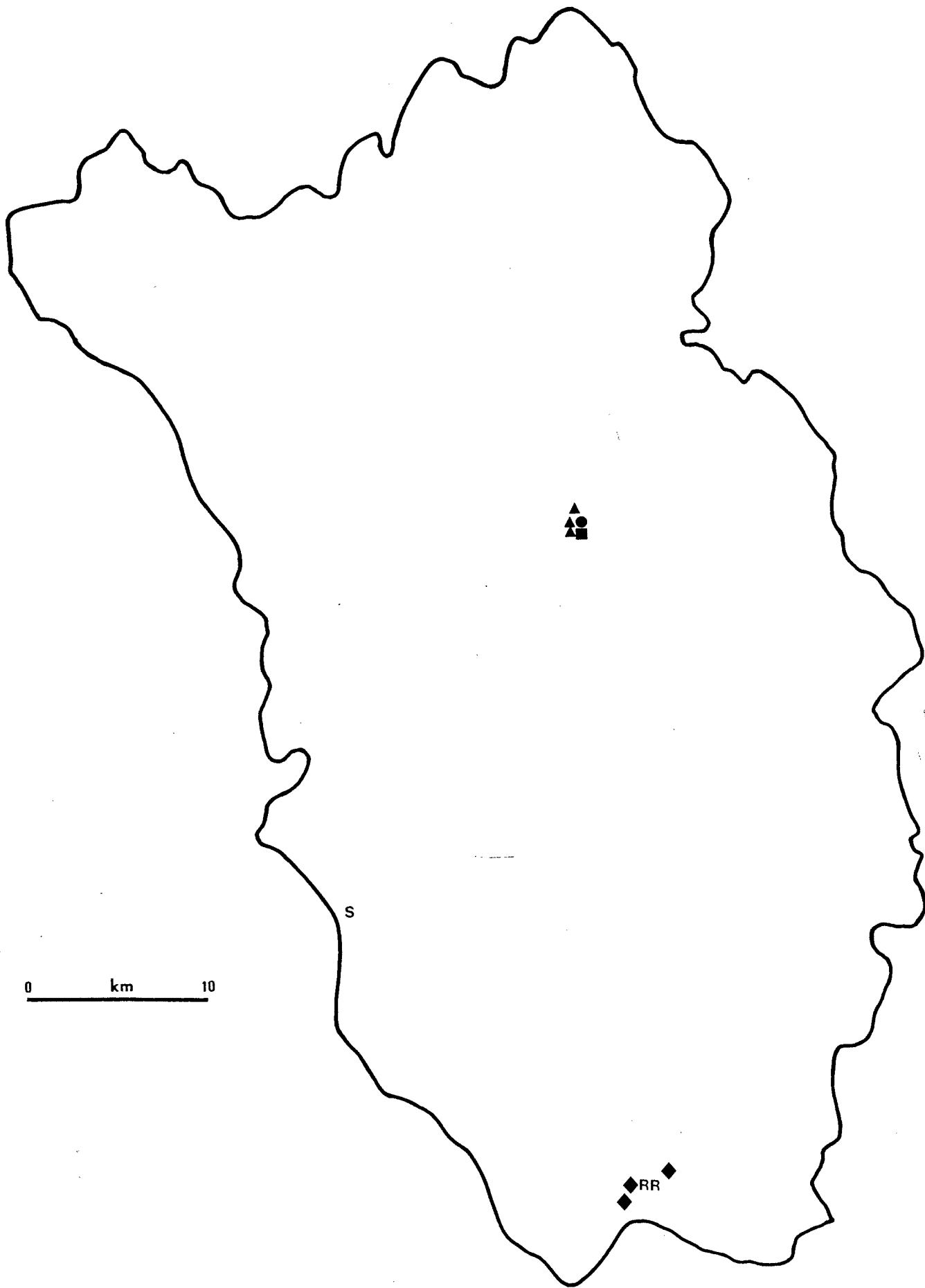| Grade	Site no.	Site type	Location (Td.)	6" map
3	124:1	Marble saw mill	Highrath	20
3	124:2	Marble saw mill	Highrath	20
3	124:3	Millmount House	Highrath	20
3	124:4:1	Marble saw mill	Maddockstown	20
3	124:5	Black Marble quarry	Maddockstown	20
3	262	Ormonde Slate quarries	Inchanalogh	34
4	316	Limestone quarry	Granny	43
4	325:1	Limestone quarry	Smartcastle West	43
4	325:2	Mineral railway	Smartcastle West	43
4	327:1	Limestone quarry	Dunkitt	43
4	327:2	Mineral railway	Dunkitt	43
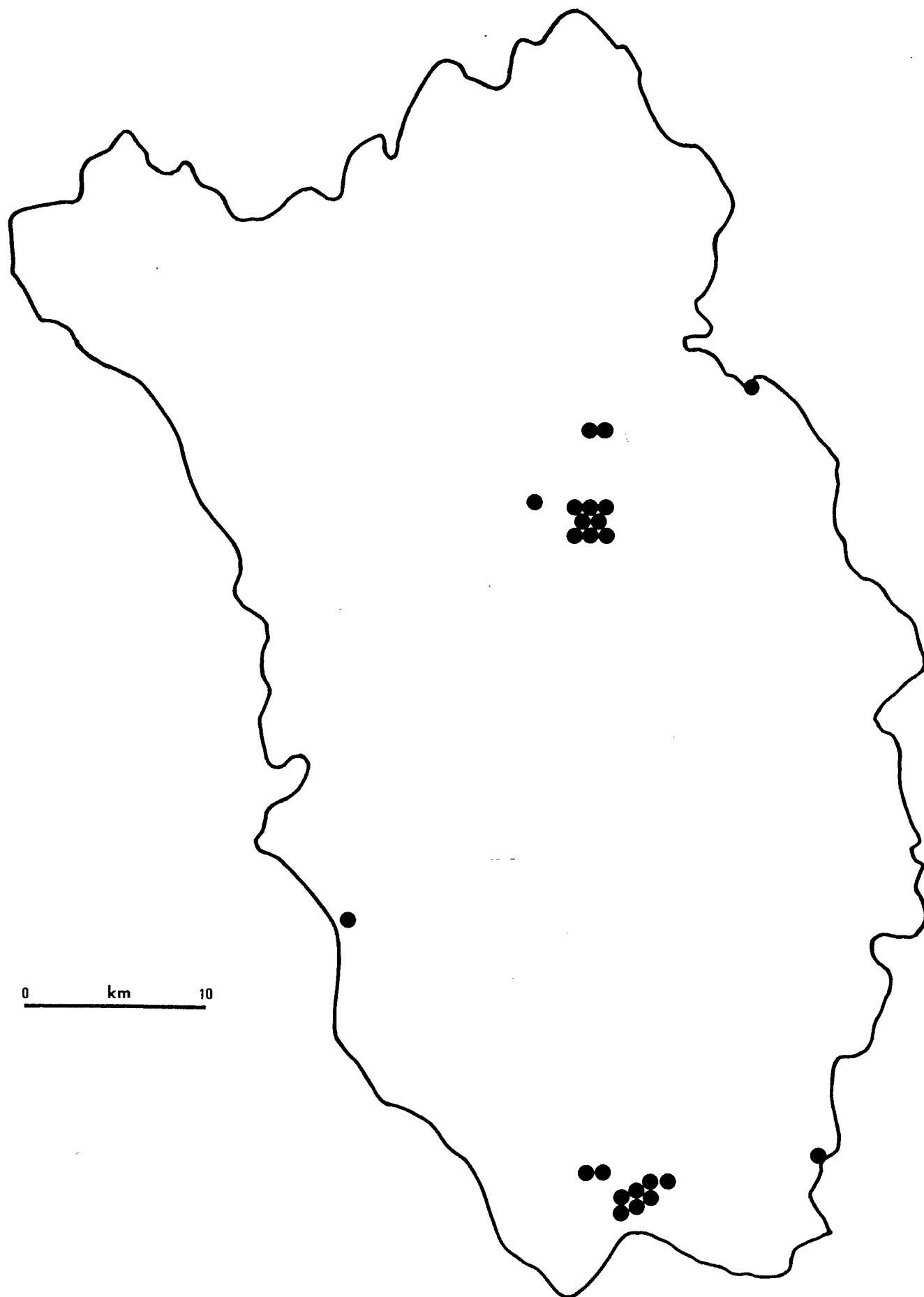
Fig.15 Quarry-related sites

30

Fig.16 Quarry-related sites of interest (◆ = limestone quarry; ■ = marble
quarry; S = slate quarry; ▲ = saw mill; R = railway; ● = miscl.)

4.3 Brick and Tile Works

Given the ready availability of good quality building stone throughout most of the county, it is not surprising that the utilization of clay for bricks and tiles was comparatively small-scale in extent. Only 5 brick-related sites have been noted, although others doubtless remain to be discovered (fig.17).

One of the most extensive works was on the low-lying ground on the right bank of the River Barrow to the east of Glenmore, 4 mls south-west of New Ross (343). Here clay deposits have been worked from the later 18th to early 20th century. [10]. River transportation permitted their cheap bulk transportation to towns such as New Ross, Waterford and Carrick-on-Suir. Little now remains, save a series of water filled hollows on either side of the New Ross - Waterford railway embankment.

In the later 1960s, Irish Clay Brickworks began operations just east of Castlecomer (318), manufacturing a range of machine-made building and decorative brick.

Only two sites are now of interest (fig.18):

Grade	Site no.	Site type	Location	6" map
4	343	Brick works	Glenmore area	41
*	318	Brick works	Castlecomer	5

4.4 Miscellaneous Extractive Industries

Mineral prospecting and salt making was carried out on a small scale within the county (fig.19).

4.4.1 Precious metals

The mineral wealth of the Castlecomer Plateau was instrumental in attracting the first planters to the area in the 1630s. [11] During the 17th and 18th centuries it was an important source of iron ore, mines at Aghamucky (6" sheet 6) supplying the Mountrath iron works in Co. Laois. [12]

Lead, silver and zinc are known from Flood Hall, 3 mls west of Thomastown (sheet 27), Ballygallion, just north of Inistioge (sheet 32), and Dunkitt (sheet 43); copper has also been recorded at Knocktopher (sheet 31). [13]

No traces of these activities were noted by the Ordnance surveyors, and consequently they are not yet included in KIAS.

4.4.2 Salt Manufacture

A salt works is recorded in Kilkenny on the 1839-40 6" map (site 116). Given that the Nore was fresh water at this point, it is unclear how it operated, and no trace now remains. Possibly it relied on the importation of rock salt, and made use of Castlecomer coal in the reducing process.

Notes

1. For an outline of the coalfield's geological context, see G.H. Kinahan, 1878. Manual of the Geology of Ireland: 112-19 (London: Kegan Paul).

2. G.H. Kinahan, 1886. Irish Metal Mining, Scientific Proceedings of the Royal Dublin Society, 5: 283-5. Eighteenth century (and later) travelogues invariably make reference to the coal mining, eg. G.T. Stokes (ed.), 1891. Pococke's Tour in Ireland in 1752: 129 (Dublin: Hodges, Figgs); P. Lucombe, 1780. A Tour in Ireland: 96 (Dublin).

3. Several deep mines had been in operation since the later 1700s. Indeed one, at Doonane, just over the border in Co. Laois, introduced the Boulton and Watt steam engine to Ireland in 1782. For further details, see G. Bowie, 1973. The First Boulton & Watt Steam Engine in Ireland, Irish Engineering Journal, (March 1973): 20-21.

4. Michael Viney, 1969. Really the end for Castlecomer Mine, Kilkenny People, 31.1.1969.

5. T.P.Lyng, 1962. Grinding Stones or Culm Bruisers, Old Kilkenny Review, 14:7.

6. This is fully described in the field notes pertaining to site 403.

7. M.J. Howes, M.A. Boland, A.M. Flegg and K. MacKenna, 1988. Quarry Directory of Active Quarries and Pits in Ireland: 24-26 (Dublin: Geological Survey of Ireland).

8. J.C.J. Murphy, 1949. The Kilkenny Marble Works, Old Kilkenny Review, 2: 14-19; E. Nevill, 1986. Kilkenny Black Marble, Old Kilkenny Review, 3: 305. As with the Castlecomer coal workings, frequent reference to the quarries are to be found in 18th and 19th century travelogues.

9. I am grateful to Mr. D. McDonald, Maddockstown, for information supplied.

10. D.Dowling, 1972. Glenmore Brickworks, Old Kilkenny Review, 24: 42-51.

11. T.P. Lyng, 1952. The Castlecomer Plateau, Old Kilkenny Review, 5: 28.

12. G.A.J. Cole, 1922. Memoir and Map of Localities of Minerals of Economic Importance and Metalliferous Mines in Ireland: 81 (Dublin: Stationery Office).

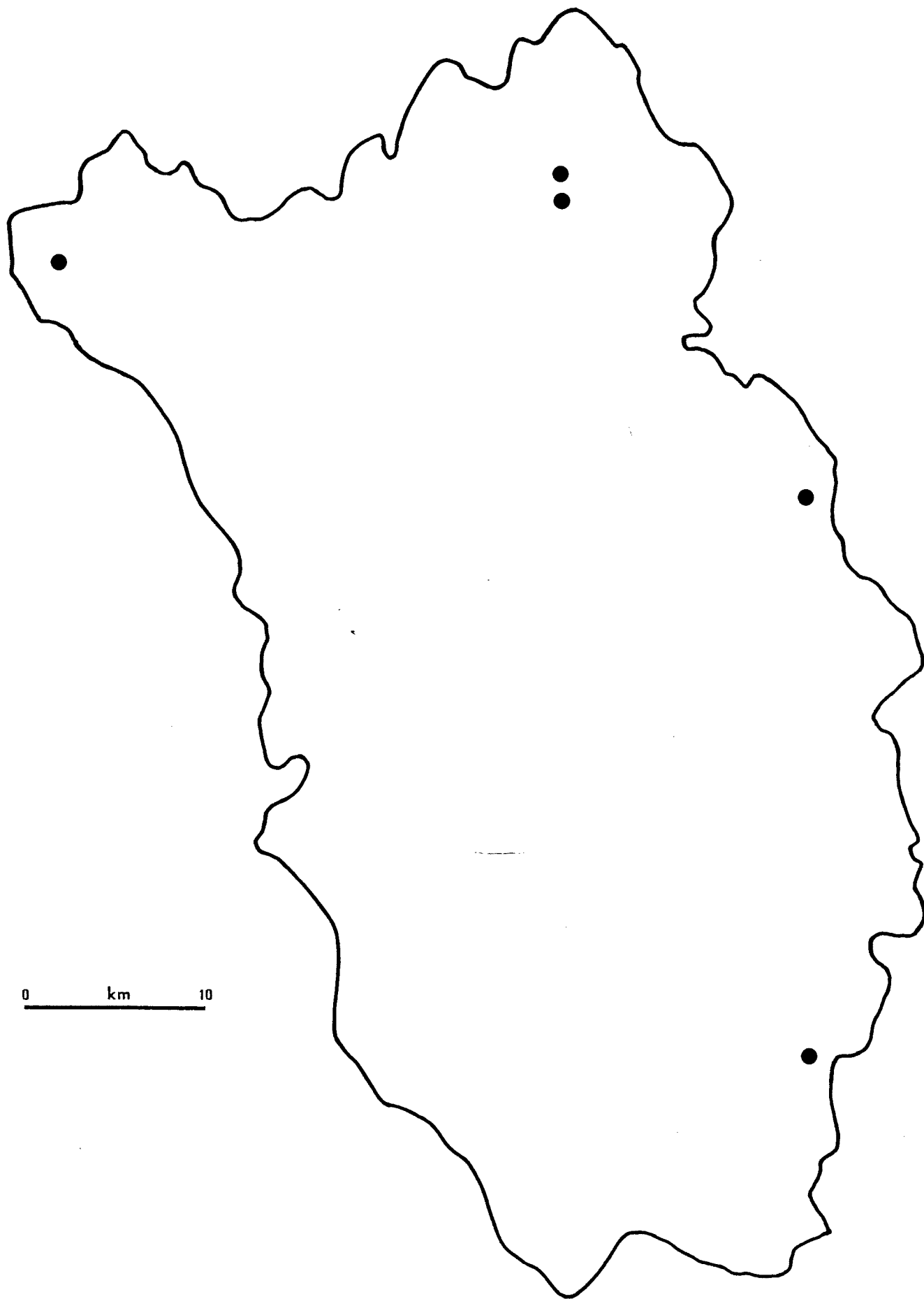13. G.A.J. Cole, 1922. Ibid: 124; G.H. Kinahan, 1886. Ibid: 208, 216, 227.
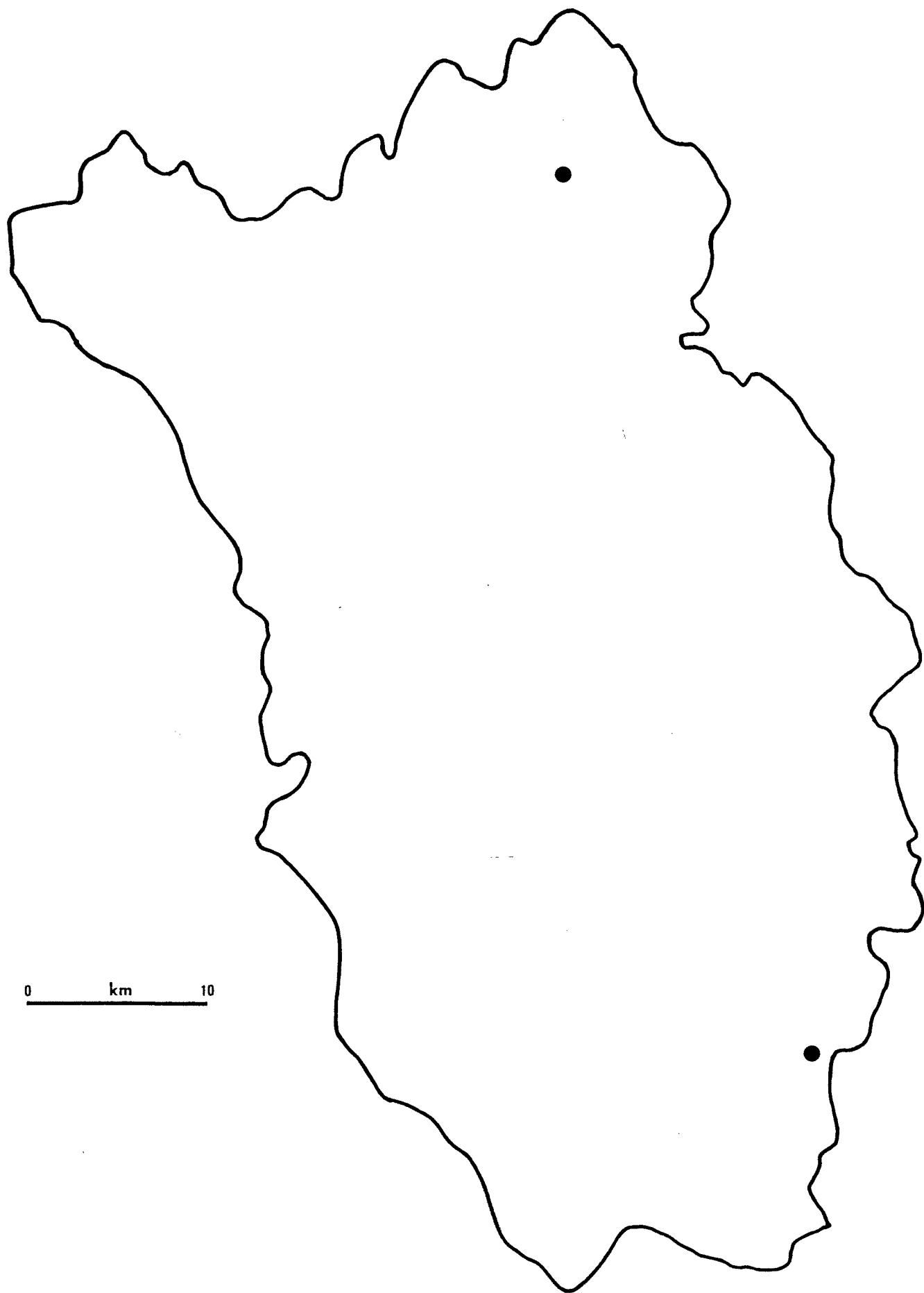
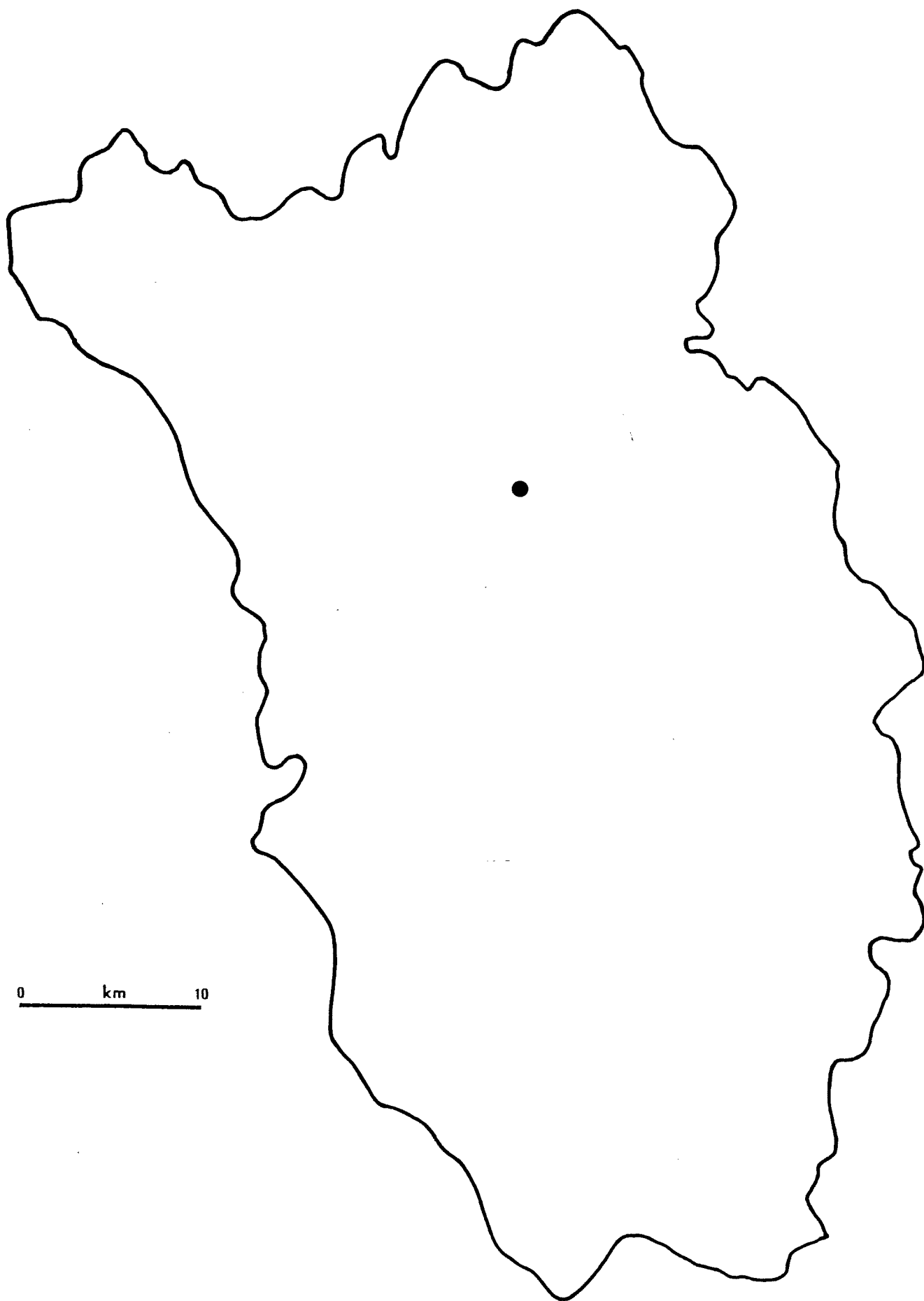Fig.17 Brick-related sites

Fig.18 Brick works of interest

Fig.19 Salt works

5 MANUFACTURING INDUSTRIES

County Kilkenny boasts an extensive variety of manufacturing activity such as grain milling, brewing and distilling, textile manufacture, dairying, saw milling, besides minor activities such as threshing, horse-shoeing and tanning.

5.1 Grain Mills

Given the high agricultural fertility of Co. Kilkenny, and abundance of rivers and streams, it is not surprising to find an abundance of water-powered grain mills, 131 of which are noted in KIAS (fig.20). [1]

Most mills are on the Nore (V-weirs at Green's Bridge, Kilkenny, Bennettsbridge and Thomastown being of particular note), the King's River, and Black Water. Many are large multi-storey flour mills, purpose-built in the later 1700s to grind wheat at a time when Ireland's grain and flour trade flourished, due to various economic incentives and the Napoleonic Wars. They are in direct contrast to the traditional small oatmeal mill, many of which are also be to seen.

Those mills on the larger rivers were mainly driven by large undershot 'paddle' waterwheels, these being well suited to high-flow/ low-fall water regimes. By contrast, many mills on the smaller tributaries were breast-shot 'bucket' wheels, utilizing lower flows on higher heads of water. Three to six pairs of millstones were driven via gearing usually arranged in the common great spur-wheel fashion. Grain-drying kilns also survive at many of the mills.

Of the 131 mills, 129 have been surveyed in detail. Of these, 86 buildings survive, 29 of which contain machinery (table 3). However, only 8 buildings are in good repair, with their full machinery compliment.

	building gone	building in bad repair	building in good repair	
no plant	43	40	17	100
incomplete plant	0	10	7	17
complete plant	0	4	8	12
	43	54	32	129

Table 3 Survival status of Kilkenny mills

5.1.1 Mill Sites

Forty-three mills have little or no surviving traces. Several were already ruinous by 1839 (eg. Rathlogan, 11), although others, such as the 7-storey Ballyconra Mills (15), were demolished only recently. Their loss can be attributed to various factors: structural instability, road widening (eg. Ballyragget, 37; Black Mill, Kilkenny, 102), and commercial redevelopment (eg. in Kilkenny at Maudlin Street Mill, 111, and Chancellor's Mill, 120).

Sites may nevertheless continue to be of use, as at Granny (310:1), where a water abstraction plant was erected on the mill pond. Only Greensbridge Mill, Kilkenny (121) is of note as a mill site, its foundations and waterworks being clearly visible from the bridge.

5.1.2 Mills without Machinery

Fifty-seven mills have some/substantial structural remains, but little or no machinery. Of these, 40 buildings are in bad repair, although some remain impressive, as at Clomantagh Lower (56), Archersgrove (99), Kellsgrange (200), Coolnamuck (251:1), Greenville (317:1, along with a cast-iron aquaduct on the head race), and Gorteens (340; here two mills are encompassed within the same building). The imposing flour mills at Highrath (124:2) and Maddockstown (124:4:1,2) were re-used as marble saw mills. The original Red Mill (Grange Lower, 138) is now incorporated in a modern provinder mill operated by William Connolly & Sons.

The remaining 17 mills within this category are in fair condition, those at Clintstown (64) and Mullenbeg (263:2) being well maintained examples of their type. Several owe their survival to reuse, for example Knocktophermanor mill (232), now part of a Co-Op warehouse; and Graiguenamanagh (389), now a woollen mill. House conversions are to be seen at Arland's Inch, Thomastown (210), and John's Street Lower, Kilkenny (109). The former watermill at Mullinavat (288) now houses electric provinder milling equipment.

5.1.3 Mills with some Machinery

Some 17 mills contain items of machinery. Of those with only waterwheels or turbines, Minch Norton's former malthouse at Duninga (139) is the most impressive. Originally a flour mill, and now a shell, it retains its massive kiln and water turbine. Mosse's mill (161), on the right bank of the Nore below Bennett's Bridge, is likewise an imposing shell, still retaining its water turbine. On the opposite bank, a turbine is also to be found in a mill (160) being restored to working order. At a more modest scale, substantial waterwheel remains survive at the derelict Kiltorcan (233) and Kilcross (250) mills. Threebridges mill (278) may also contain machinery besides its external waterwheel.

Of those mills having transmission gearing only, Deer Park (285), Ennisnag (356) and Gowran Demesne (130:1) have virtually complete all-metal great-spurwheel gearing. Interesting wooden gearing survives at Glencloghlea (276), whilst incomplete gearing is to be found at Rockbrook mill, Wildfield (44), Castletown (258, 259), and Dangan (322).

Partial survival of both waterwheel and transmission gearing is to be seen at the impressive Island mill, Grenan (212), now used as an art college. At the equally impressive Kellsborough mill (193), two wheels formerly operated, one of which partly survives along with some dismantled gearing. At Minnauns (173:1), the waterwheel is now linked to a sawmill (173:2), although the millstones and some gearing remain.

5.1.4 Intact mills

Only 12 mills are intact as regards their plant, and of these only 8 buildings are in good repair. The four derelict mills are: Cascade Mill, Freshford Lots (59), Kilmanagh mill (81, with an interesting wooden waterwheel), Jerpoint Abbey mill (209), and Greenville mill (313). All have great spurwheel gear arrangements to three or four sets of millstones.

Of the structurally sound buildings, Ballyhimmin (41) houses four sets of millstones (installed by MacAdam Brothers of Belfast) powered from a turbine.

Mullin's mill, Garrynamann Lower (191) is now a house, although retaining its full complement of machinery. Ballyduff mill (247) is likewise complete although used for other purposes. The impressive Kilrush mill (57) contains interesting lineshaft gearing from its high breastshot waterwheel to 5 millstones. Although electric provinder milling is still carried on at the Mill Island mill (172), all the plant remains intact. At the large Grenan mill, Thomastown (211), two undershot waterwheels can still be seen along with much of the milling equipment. The ground floor is given over to a cafe and craft shop.

In contrast to the large flourmills, Kilmacoliver (261) is a fine example of a traditional oatmeal mill, and remains more or less as the miller left it when operations ceased.

Undoubtedly the most interesting of all Kilkenny's mills is that at Killinny, near Kells (187). Operated commercially by William Mosse, its undershot waterwheel drives 6 sets of stones via great spurwheel and lineshaft gears.

5.1.5 Sites of Interest

Thirty-seven mills are of note (fig.21):

| Grade	Site no.	Location	6" map
1	57	Kilrush	13
1	172	Mill Island	26
1	187	Killinny	27
1	211	Grenan	28
1	261	Kilmacoliver	34
2	41	Ballyhimmin	10
2	139	Duninga	21
2	191	Garrynamann Lower	27
2	247	Ballyduff	32
3	59	Freshford Lots	13
3	81	Kilmanagh	18
3	124:2	Highrath	20
3	124:4:1	Maddockstown	20
3	124:4:2	Maddockstown	20
3	161	Bennettsbridge	24
3	173:1	Minnauns	26
3	193	Kellsborough	27
3	209	Jerpoint Abbey	28
3	212	Grenan	28
3	285	Deer Park	40
3	313	Greenville	43
3	356	Ennisnag	27
4	99	Archersgrove	19
4	121	Green's Bridge	19
4	130:1	Gowran Demesne	20
4	160	Bennettsbridge	24
4	200	Kellsgrange	27
4	210	Burrellspark	28
4	251:1	Coolnamuck	33
4	258	Castletown	24
4	276	Glencloghlea	37
4	278	Garrymore	38
4	317:1	Greenville	43
4	322	Dangan	43
4	340	Gorteens	47
*	138	Grange Lower	21
*	288	Mullinavat	40
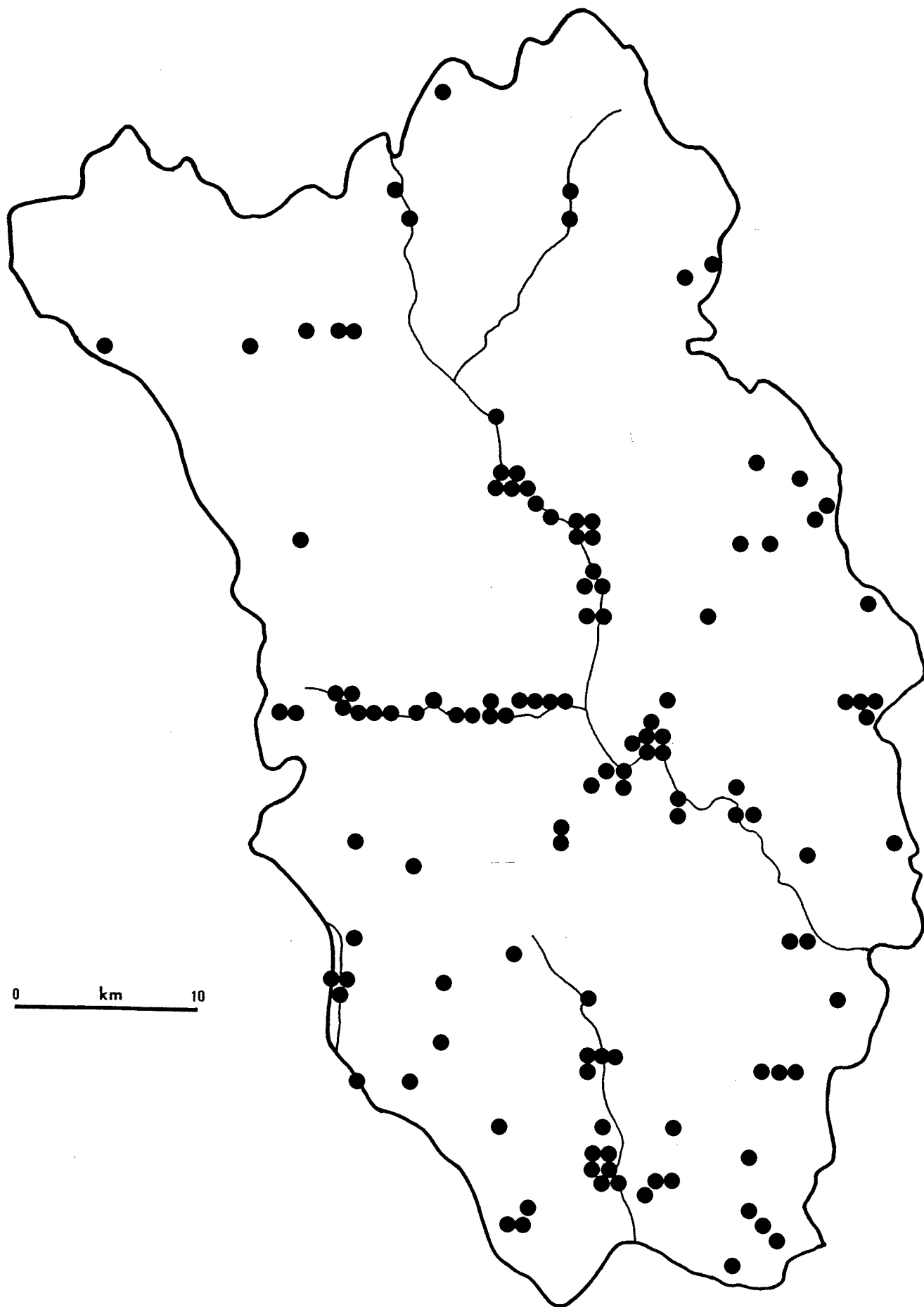
Fig.20 Grain mills
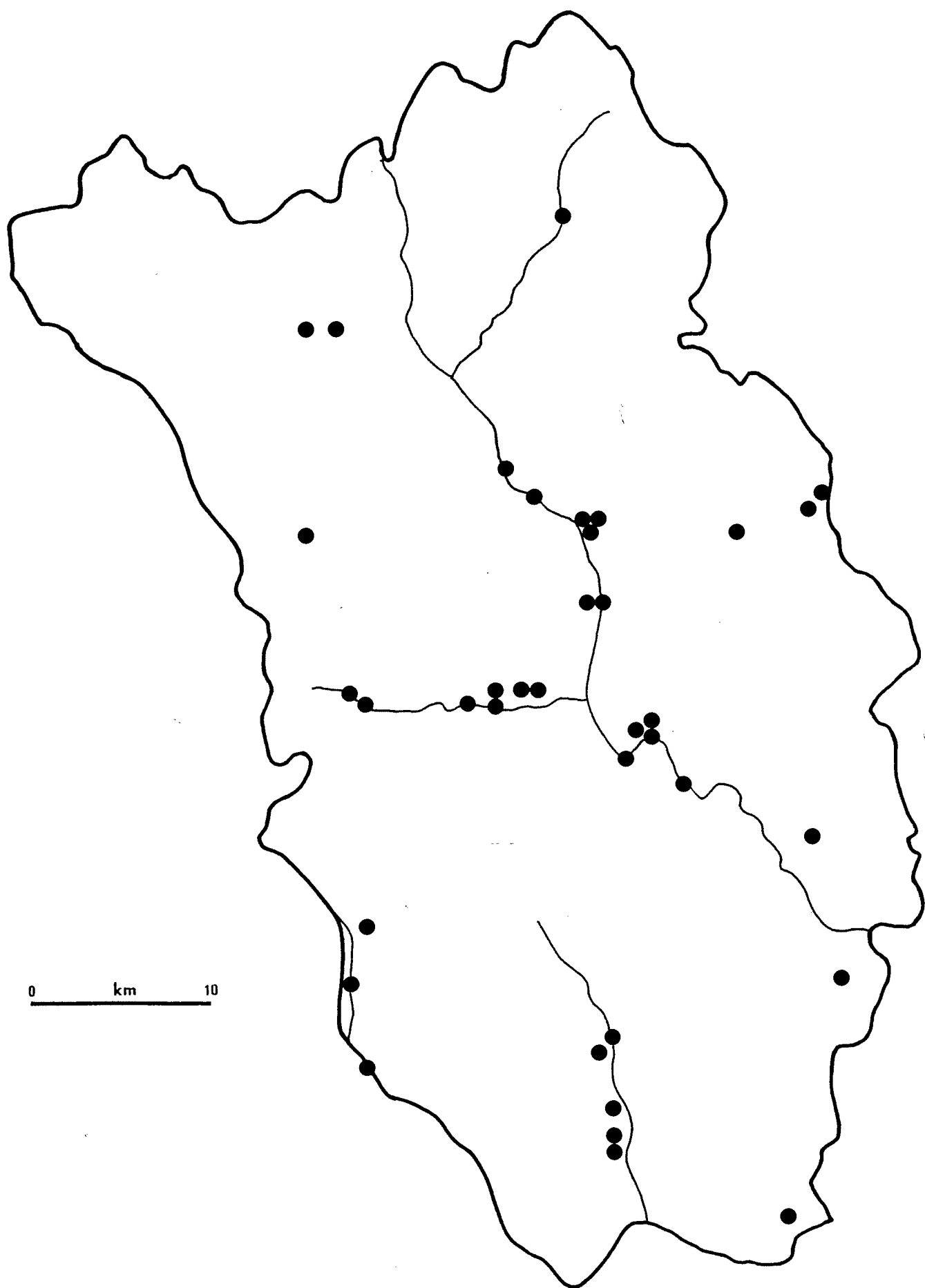
Fig.21   Grain mills of interest

5.2 Breweries, Distilleries and Maltings

The brewing of beer and distilling of whiskey are both long established indus-
tries, and figure in the county's industrial activities.

Breweries and distilleries were often fairly extensive, incorporating a malt-
house where the barley was germinated, a kiln to arrest the germination process,
a mill to process the malted grain, and the brew/still house where the drink was
prepared. Such operations required considerable amounts of water, and with few
exceptions sites are to be found along rivers, which also supplied the motive
power.

A total of 7 breweries are recorded, all but two being in the larger towns
(fig.22). Substantial remains are to be found along the Nore at Thomastown (384,
285), and at Graiguenamanagh (224). Kilkenny had at least two breweries, in
James's St. (103) and Horse Barrack Lane (115). The former was operated by
Sullivans, and latterly by Smithwicks; though now closed, it appears to be
substantially intact, along with its massive kiln. The extensive Horse Barrack
Lane premises continue to be operated by Smithwick's; most of the original
buildings were demolished in the course of recent modernization. Parts of its
former waterwheel still survive at the James's St. premises. Elsewhere, brew-
eries operated at Clogheen (30) and Rathduff-Madden (194); traces of the latter
survive.

Three distilleries are also noted in the county: Mount Eagle distillery (66), at
Naglesland on the Nore north of Kilkenny, of which nothing survives; Mount
Warrington (122), south of Kilkenny, and also on the Nore (whether parts remain
is uncertain); and St. John's Lane, Kilkenny, no trace of which survives (110).

Two isolated maltings are also to be found, notably at Duninga (139), north of
Goresbridge. Occupying a grandioise former flourmill, and with a huge kiln to
the rear, it was used by Minch Norton up to a decade ago. A much smaller malt-
house at Tobernapeastia (58) has been incorporated into a later dairy.

Three sites are of particular interest (fig.23):

Grade	Site no.	Site type	Location	6" map
2	139	Maltings	Duninga Td.	21
4	103	Sullivan's Brewery	James's St., Kilkenny	19
*	115	Smithwick's Brewery	Horse Barrack Lane, Kilkenny	19

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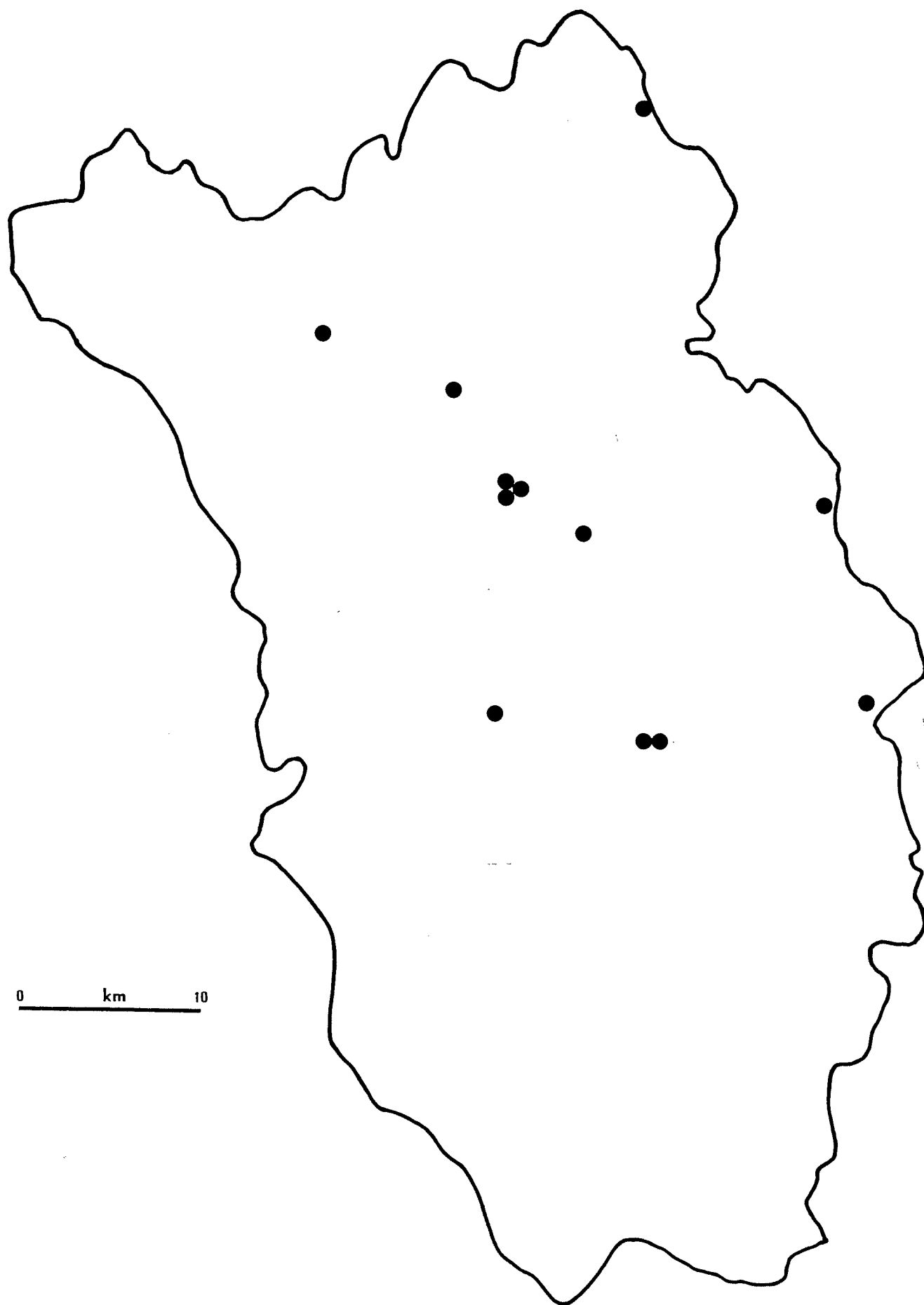| Grade	Site no.	Site type	Location	6" map
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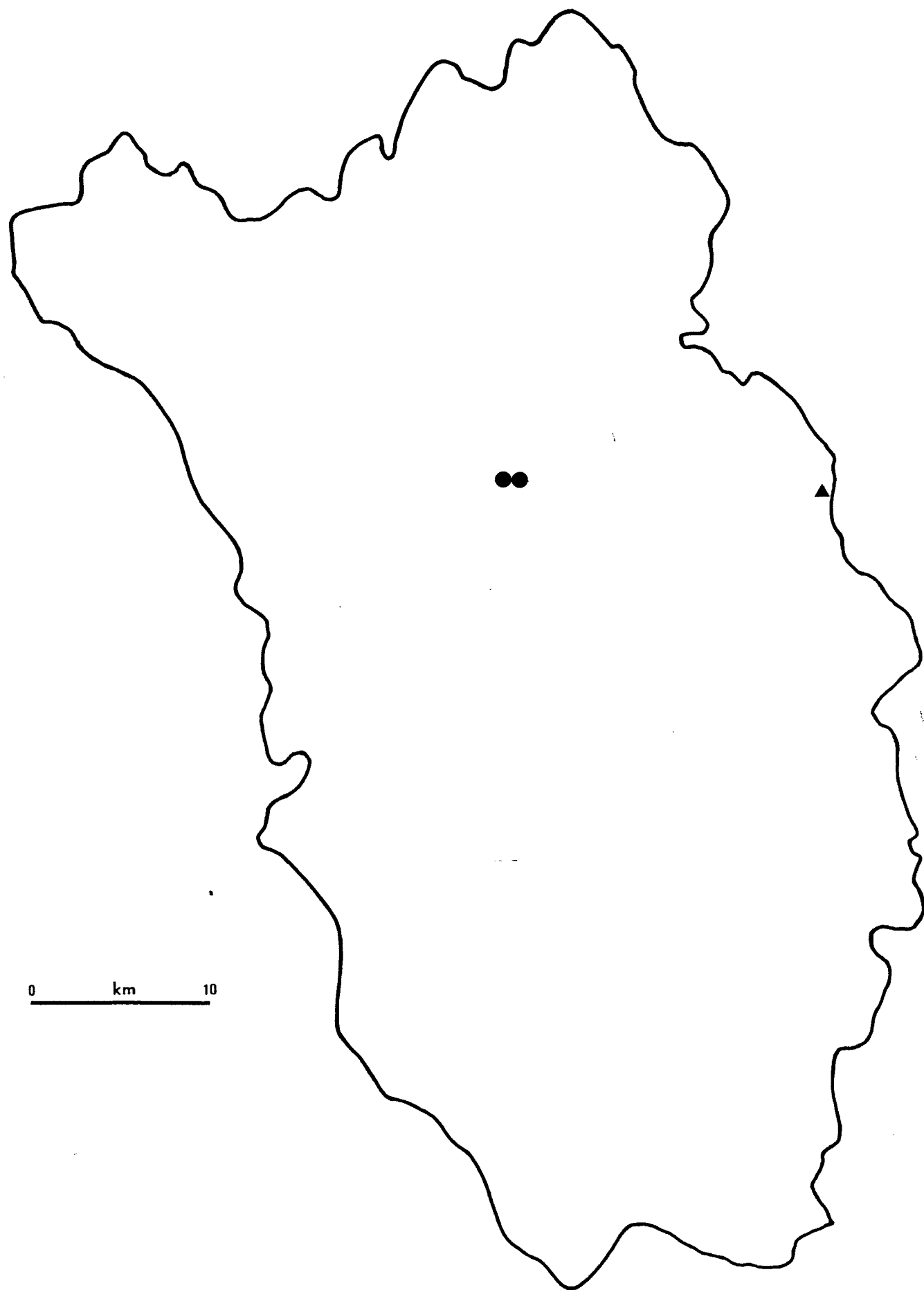Fig.22 Breweries, distilleries and maltings

Fig.23 Breweries and maltings of interest (● = brewery; ▲ = malting)

5.3 Textile-Related Sites

A total of 22 textile-related sites are known (fig.24): Bleach mills - 3, Cloth mills - 1, Flax scutching mills - 2, Hosiery factories - 1, Knitwear factories - 1, Tuck mills - 4, Woollen mills - 10. Wool-related sites predominate, tuck, woollen and knitwear mills accounting for 15 of the 22 known sites.

5.3.1 Wool Spinning and Weaving Mills

Five of the 10 recorded woollen mills are in the vicinity of Kilkenny. Most notable of these are the Ormonde Woollen Mills, on the right bank of the Nore below the Castle (104). Extant from at least the earlier 19th century, they operated until 1969 when gutted by fire. Traces of machinery and gearing survive, along with four Poncelot-type waterwheels.

Extensive remains are also to be found at Bleach Green to the north of the City (96:1). The Kilkenny Woollen Mills were established here in 1906, on the site of an earlier bleach works. Electrical power was derived from a D.C. water turbine on the Nore. Taken over by the O'Shaughnessy family in the 1930s, they were also gutted by fire in the early '60s. Extensive saw-tooth weaving sheds survive, along with a chimney possibly connected with the earlier bleach works. A turbine has recently been installed, again to generate electricity (96:2).

The walls of a former woollen mill survive by a later sawmill at Purcellsinch (101:1). Picturesque ruins can also be seen on both banks of the Nore just below Green's Bridge (121, 349).

Of the non-city woollen mills, the most significant were at Annamult, on the King's River near its confluence with the Nore (203). Known as the 'Merino Factory', they were erected for £40,000 by Thomas Nowlan and Thomas Shaw in the period 1810-15, with the express purpose of giving employment to the "industrious poor". Raw material came from a flock of merino sheep, renowned for the fineness of their wool; this was spun, woven and dyed. By all accounts working conditions for the 400-odd employees were remarkably progressive, with work incentive and social welfare schemes.

Unfortunately the success of the undertaking was short lived, bankruptcy ensuing in 1822. It restarted as a flour mill in the 1850s, operating until 1870 when all work finally ceased. Impressive buildings and a massive waterwheel pit still survive in a secluded rural setting.

At Graiguenamanagh a former grain mill has been converted to the spinning and weaving of wool, trading under the name 'Cushendale Woollen Mills' (389).

Remains may still survive at Wildfield (44); other sites are recorded at Dunmore (65) and Skeard (320:2).

A knitwear factory (176) is recorded on the southern outskirts of Callan on the 1948 O.S. map. Although long since gutted and abandoned, it still survives as three two-storey ranges of ashlar limestone buildings, and possibly reflects a concerted attempt to establish a woollen manufactory (whether hand or machine weaving is unclear) in the village during the earlier part of this century.

5.3.2 Tuck Mills

After weaving, it was necessary to wash and compact the loose woollen fibre in the cloth. In the earlier 19th century this was done in a purpose-built tuck mill, otherwise known as a 'fulling' or 'walk' mill.

Four tuck mills are noted in KIAS (fig.24). Of these, two (both water-powered) are noted on the 1839 OS map: at Garrynamann Lower (192) and Rathduff Bayley (197). Although both were out of use by 1900, traces of the former may still survive. A third tuck mill was noted in the 1849 Valuation Books at Purcellsinch (101:1), and a fourth at Castletown (259) in 1901.

5.3.3 Other Textile-Related Sites

With the exception of a hosiery factory, all the non-wool sites (fig.24) would appear to be related to linen production, and date to the earlier 19th century. Unlike the North of Ireland, however, flax was not grown extensively in Co. Kilkenny, although hand spinners and weavers were active in the 1700s. [2] Most flax scutching was probably done by hand, and water-powered scutching mills are rare. Unfortunately those few that did exist are not specifically cited on the O.S. maps. Several are noted in the Official 'Returns of Scutch Mills in Ireland', published as part of the Official Agricultural Statistics between 1852 and 1874. Only one, however, is tracable on the ground with any semblance of certainty, a ruinous shell at Courtstown (204).

Three water-powered bleach mills, presumably for the conversion of brown linen to white linen, are noted on the 1839 O.S. maps. One is at Bleach Green (96:1), the very townland name suggesting a long history of linen bleaching; the site was subsumed within a later woollen mill, although original buildings may still survive. Another bleach mill was at Skeard (320:1) whose ruinous shell remains; that at Ballyhimmin (41) was converted into a cornmill.

A cloth mill, perhaps also related to linen manufacture is noted at Mullenbeg (263:1) on the 1839 map; no trace survives.

At Talbotsinch, on the northern outskirts of Kilkenny, a hosiery factory was existence by 1945 (419). Its austere modern design is self-evident, and it was undoubtedly electrically powered, but no longer used for its original function.

5.3.4 Sites of Interest

A total of 7 textile-related sites are of special note (fig.25):

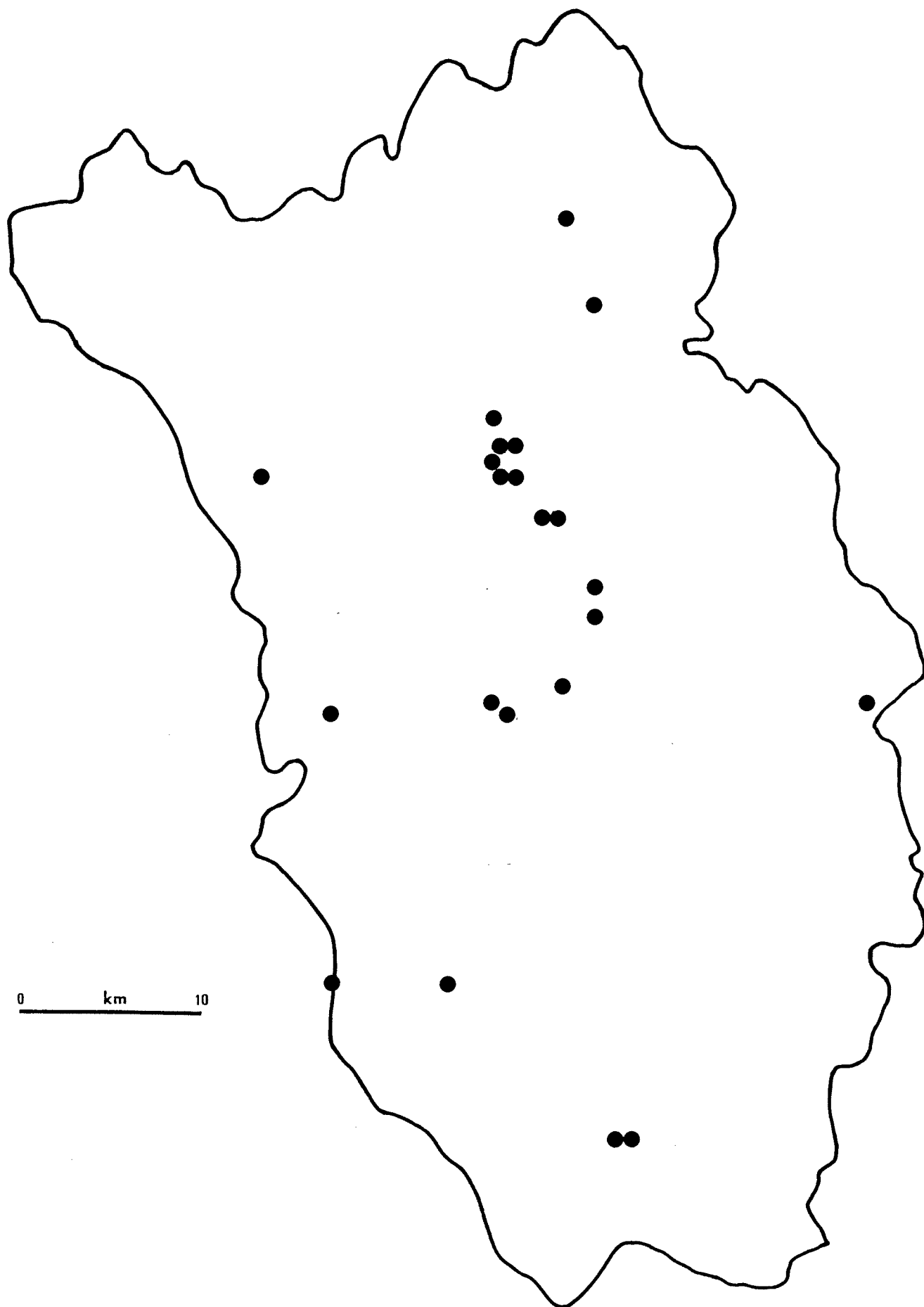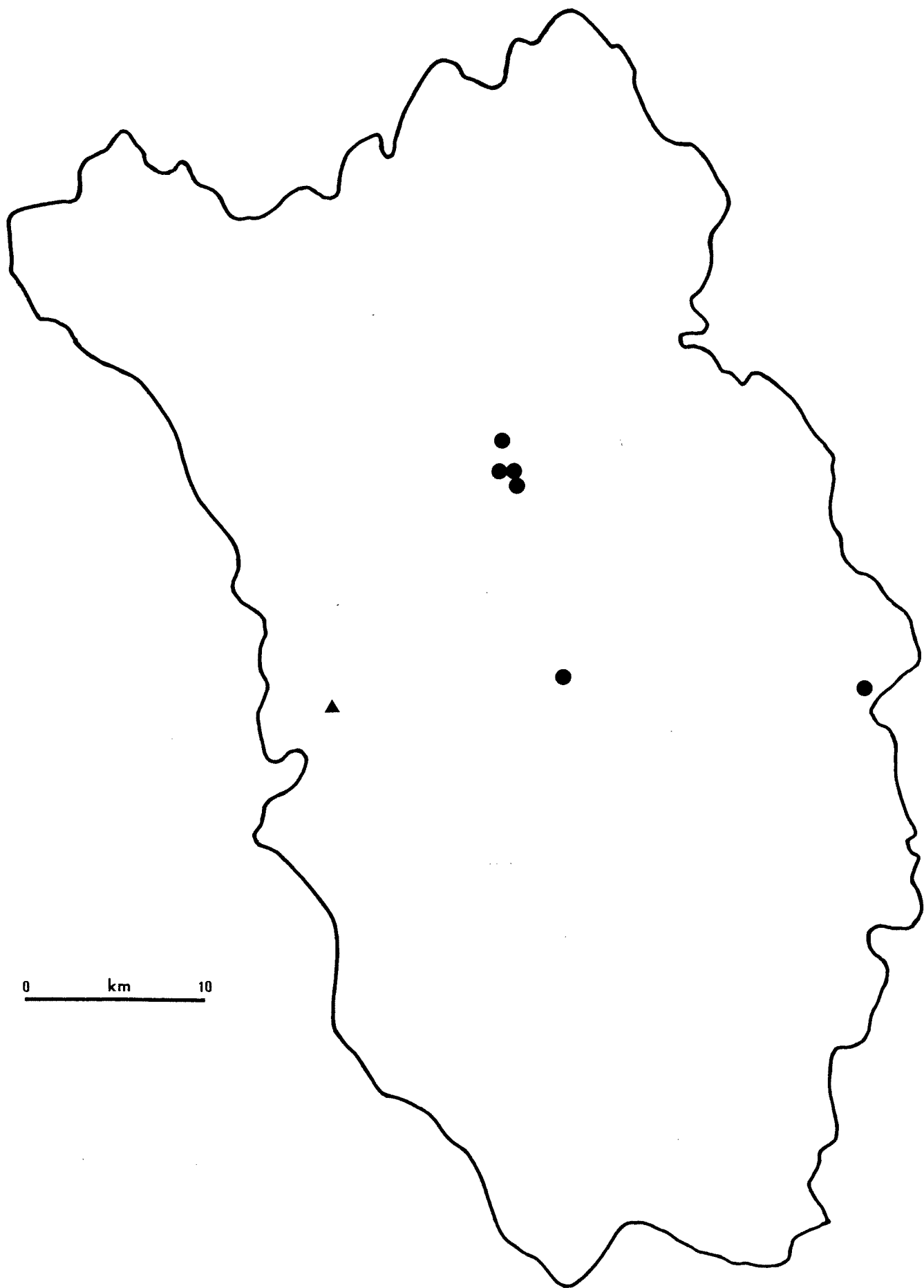| Grade	Site no.	Site type	Location (Td.)	6" map
2	203	Woollen Mill	Annamult	27
3	104	Woollen Mill	Dukesmeadow, Kilkenny	19
3	121	Woollen Mill	Green's Bridge, Kilkenny	19
4	349	Woollen Mill	Green St., Kilkenny	19
4	96:1	Woollen Mill	Bleach Green, Kilkenny	19
4	176	Knitwear Factory	Tinnamoona, Callan	26
*	389	Woollen Mill	Graiguenamanagh	29

Fig.24 Textile-related sites

Fig.25   Textile sites of interest (● = woollen mill;   ▲ = knitware factory)

5.4 Creameries and Dairies

Whilst the importance of cereals is clearly manifest in the high frequency of
grain mills, livestock farming is not so evident. Only in the case of milk cows
do we find a clear reflection in the industrial building stock, evidenced in the
22 creameries and dairies dotted around the county (fig.26).

Several creameries appear to have been set up in buildings originally erected
for other purposes (eg. a malthouse at Tobernapestia, 58; a grain mill at
Urlingford, 55). The vast majority, however, were purpose-built in the later
1800s as farmers' co-operatives. Milk was collected, separated into cream, and
butter and cheeze manufactured.

Good access to and from these buildings was vital. With the exception of a small
farm-based private concern at Mountgale (84), all are located along the main
roads, often on the outskirts of villages.

They invariably exhibit quite a distinct style of architecture. The most basic
design is the single storey masonry building with gable-roof (eg. Mullenbeg,
404). Here milk was collected and rudimentary separation of cream possibly took
place. Most creameries, however, are much larger, generally having two to four
conjoining gable-roofed buildings, usually two storeys in height, with various
other ancillary buildings. Many have ridge-top ventillators and covered loading
platforms; tapered square brick chimneys may also be found, reflecting the need
for steam generation to sterilize equipment.

Most creameries survive in a good state of preservation, and many are still used
by the Avonmore Creameries Co-Operative, mostly for the retailing of farmers'
supplies (eg. Mullinavat, 393). In two instances at least (Callan, 401; Graig-
uenamanagh, 386) they are still used for their original purpose.

Five sites are of note (fig.27):

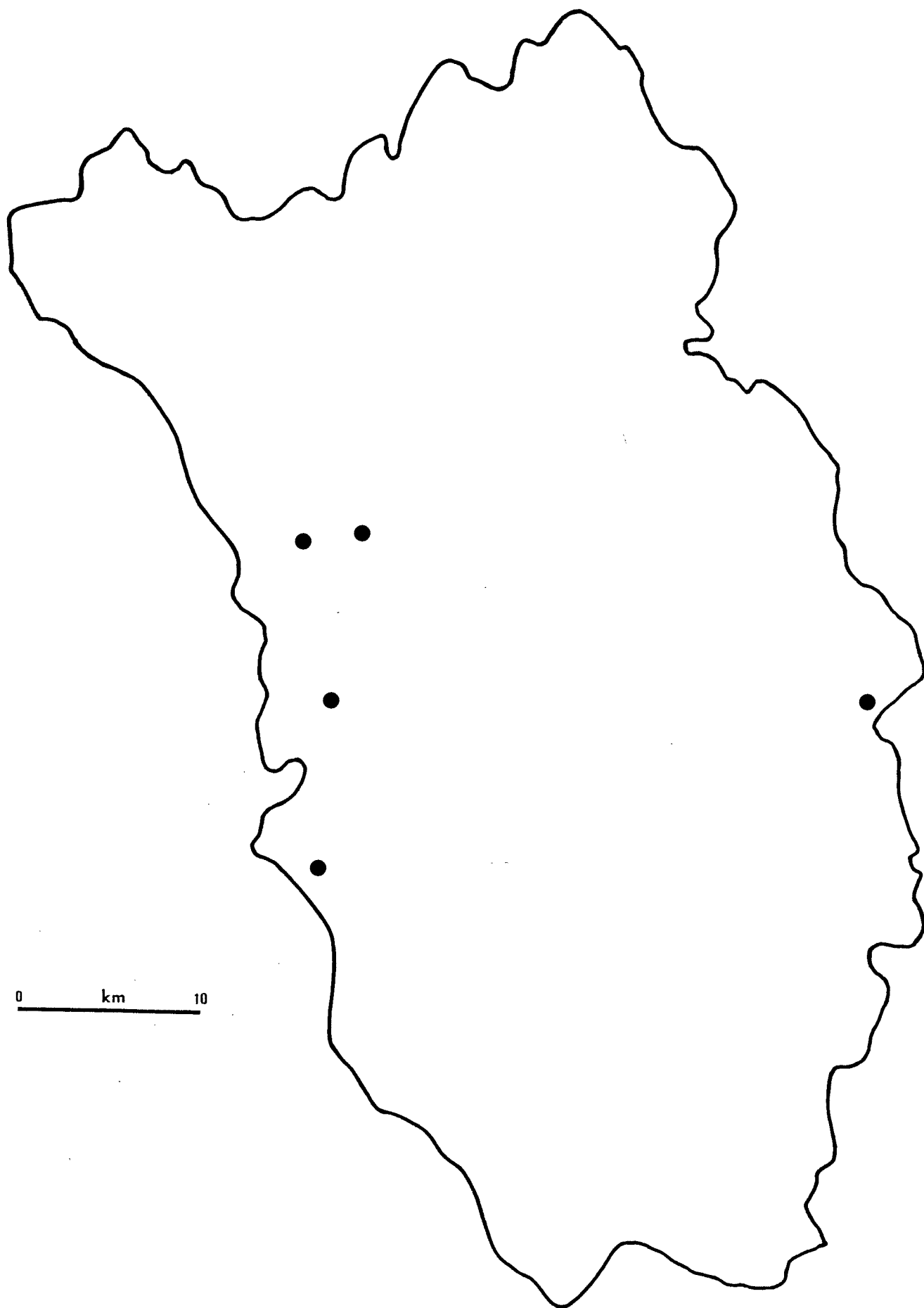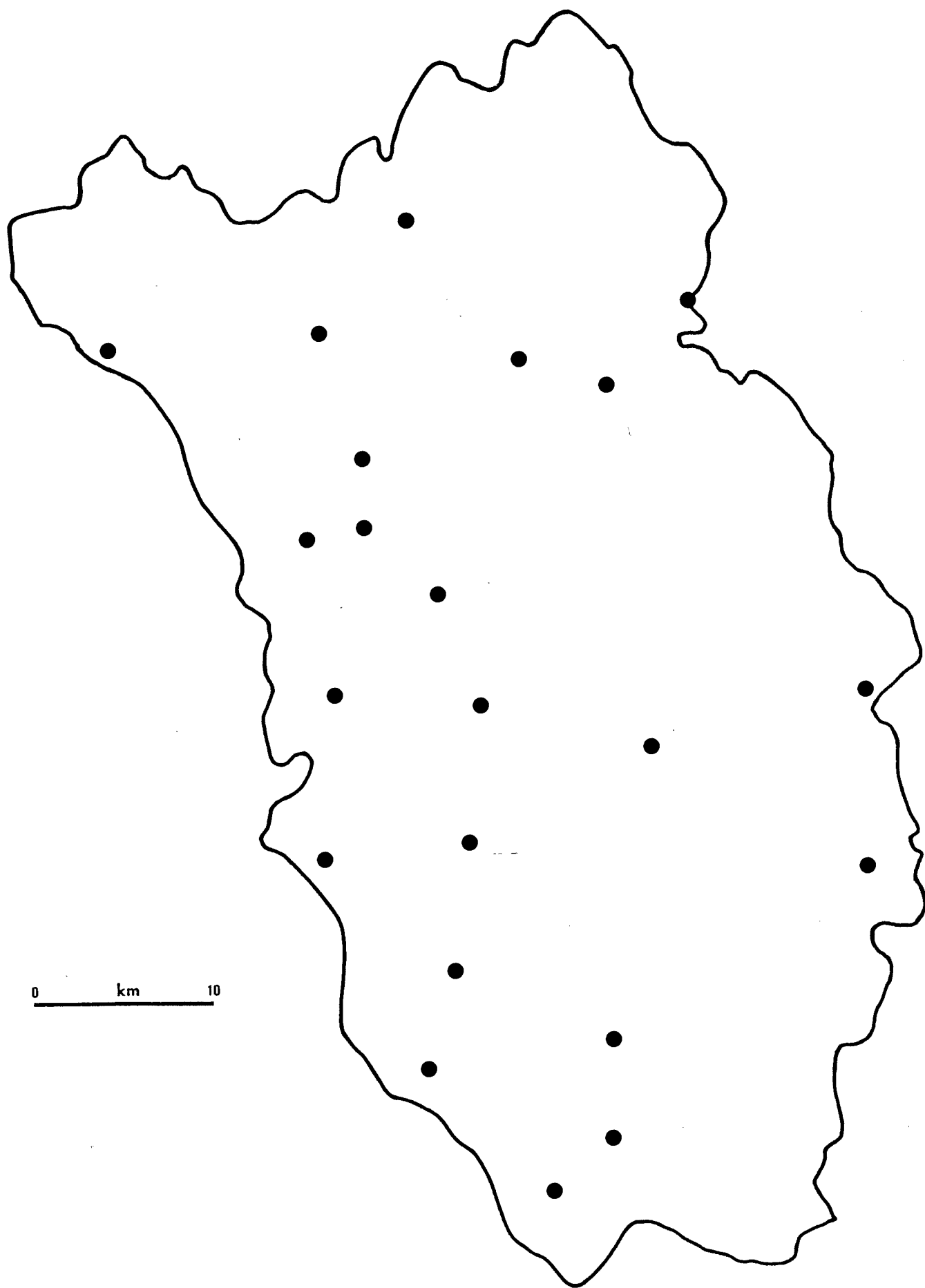| Grade	Site no.	Site type	Location (Td.)	6" map
3	82	Creamery	Knockeenbaun	18
3	226	Creamery	Coolehill Upper	30
3	401	Creamery	Callan South	26
4	83	Creamery	Ballyfrunk	18
4	386	Creamery	Graiguenamanagh	29

Fig.26 Creameries and Dairies

Fig.27 Creameries of interest

5.5 Saw Mills

The harnessing of water to power horizontal and circular saws greatly facil-
itated the processing of timber, otherwise and arduous and labour-intensive
manual process. Some 16 saw mills are noted in KIAS (fig.28), most post-dating
1850. That they originated from this date onwards is presumably a consequence of
the shift away from crop cultivation to pasture and other diverse activities
such as forestry. In one instance - at Moneenroe (27:2:3) - a sawmill can be
linked to a colliery; presumably pit props were cut here.

A number of sawmills are associated with grain mill sites, for example Castle-
comer (20:1), Kilcross (250) and Graiguenamanagh (222:2). At Coolnamuck (251:2),
Clogga (304:2), Gowran Demesne (130:2), Grange Lower (134:2), and Minnauns
(173:2), the cornmill wheel actually powered the sawmill as well.

Whilst most sawmills were powered off waterwheels, auxiliary engines were some-
times employed, as at Gowran Demesne (130:2), Glendonnell (287), and Minnauns
(173:2). Where water was non-existent, steam and diesel engines were used ex-
clusively, as at Cashel (399) and Newpark Upper (118), both on the outskirts of
Kilkenny.

Of particular interest is Liam Brett's still operational sawmill (101:2) at
Purcellsinch on the southern outskirts of Kilkenny. Here a waterwheel, formerly
driving a cornmill, still powers a circular saw on a rack bench, the cutting of
ash root stumps for hurley sticks being a speciality. Substantial amounts of
machinery also survive at Minnauns (173:2) and Gowran Demesne (130:2).

Attention is also drawn to several marble sawmills, already discussed in section
4.2.2.

The following sawmills are of special note (fig.29):

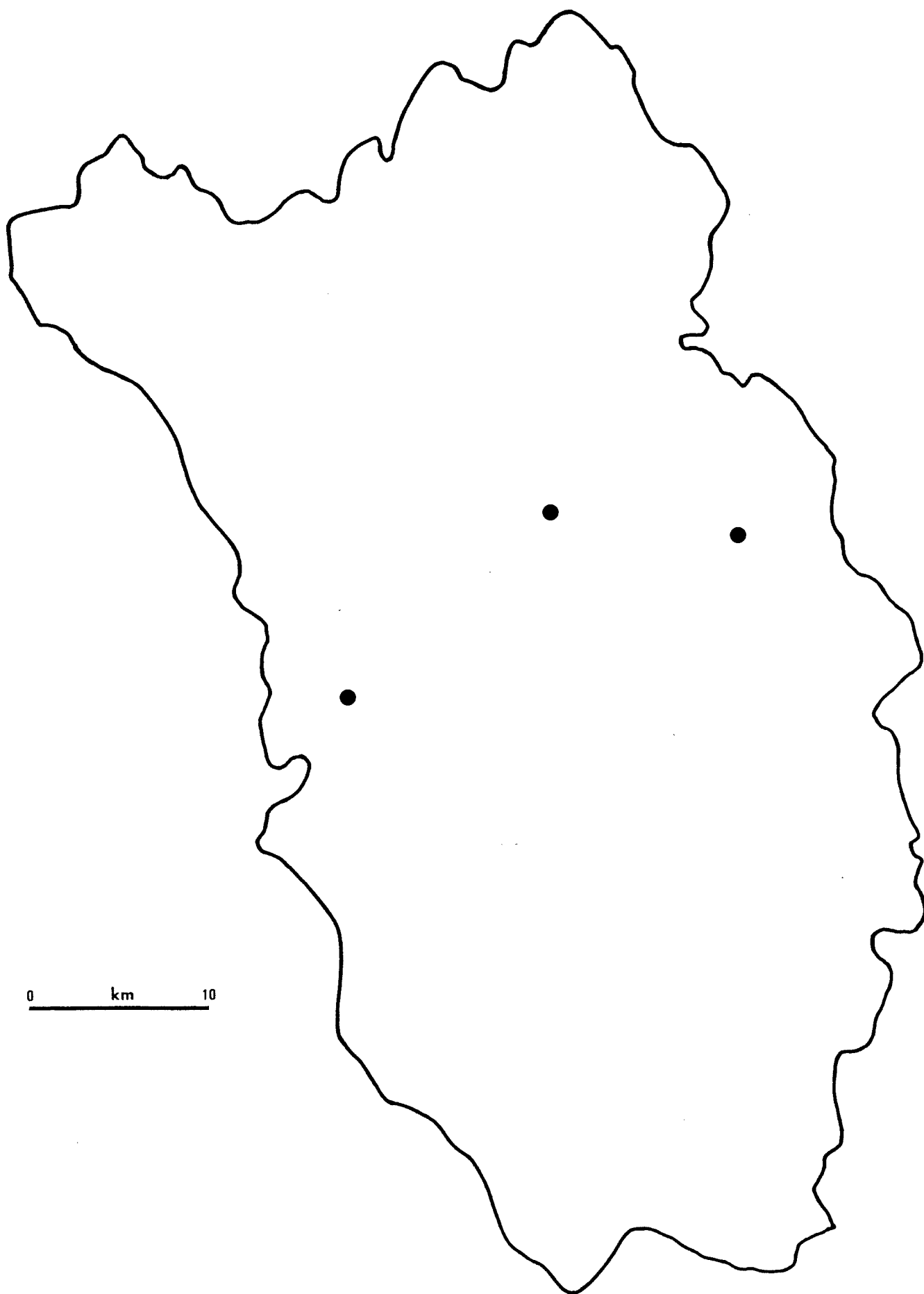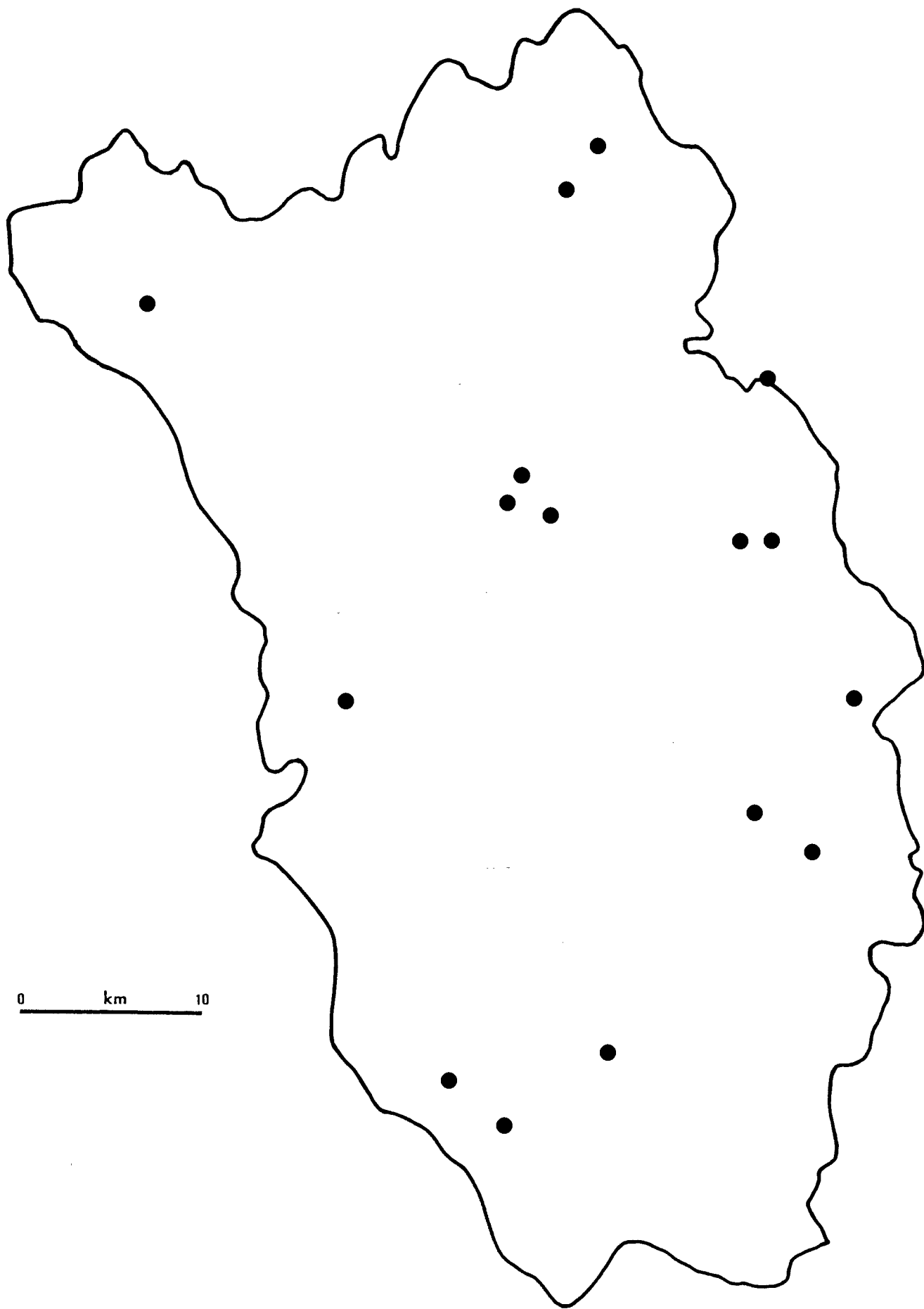| Grade	Site no.	Location (Td.)	6" map
3	101:2	Purcellsinch	19
3	173:2	Minnauns	26
4	130:2	Gowran Demesne	20

Fig.28 Saw mills

Fig.29 Saw mills of interest

5.6 Farm-Related Industry

Although sometimes not regarded as such, agriculture must be recognized as a major industry, particularly in a county such as Kilkenny; aspects such as grain milling and dairying have already been discussed in this chapter. Central to any successful agricultural enterprize is the farm, where a variety of small-scale industrial activities may take place. Some of these are included in KIAS, notably threshing mills and dovecots.

5.6.1 Threshing Mills

Harvested cereal crops required threshing to separate the grain from the straw. Prior to mechanisation this was carried out by hand, the sheaves of corn being spread over a threshing floor and vigorously thrashed (threshed) with a flail.

In 1786, a Scotsman Andrew Meikle devised the first successful mechanized thresher. Grain was separated from the straw by the action of a revolving cylinder turned by horse- or water-power. Often the separated grain was fed directly into a winnowing machine which removed foreign matter, giving the farmer reasonably clean grain.

In the first decades of the 19th century, threshing machines became increasingly popular, albeit confined to the wealthier farmers who could afford the comparatively high capital and installation costs.

Eight threshing mills are noted (fig.30), all on the 1839 edition of the 6" O.S. maps. In 6 instances, structural remains survive, 5 of which comprise long two-storey random rubble buildings with slated gable roofs (47, 155, 199, 227, 254). Although no machinery now survives internally, much of the available space was undoubtedly given over to grain storage.

No water supply is evident in four cases: Annamult (155), Kellsgrange (199), and Coolaghmore (227); they were presumably driven from external horse-walks, no immediately apparent traces of which now survive. What appears to have been an enclosed circular horse-walk is to be seen at Jenkinstown (71).

Two water-powered mills are known: at Ballygrub New (254), later converted to process root crops into animal feed, and still complete with waterwheel and millpond; and Coolcullen (47).

5.6.2 Dovecots

In the 18th and 19th century, pigeons were an recognized source of protein, whilst their droppings were a valuable fertilizer. 'Improving' landowners encouraged the nesting of birds by erecting pigeon houses, or dovecots as they are more commonly known. These were invariably built of stone, and fitted out internally with nesting boxes, to which the birds had access through a rooftop opening.

Five dovecots are noted in KIAS (fig.30), although their discovery owes more to an previous architectural survey of the county, than to specific citation on the Ordnance Survey maps [3]; others doubtless remain to be found.

All are to be found in estate demesnes, and survive in a good state of preservation. Two, at Clashacrow (Wellbrook estate, 363) and Pootlerath (364) are remarkably similar, with circular rubble-stone towers, corbelled roofs, and stone nesting boxes. That at Grange (365) is octagonal, with decorative brick quoins and slated roof; at Belline (366) two massive towers survive on either side of the house.

5.6.3 Miscellaneous Industry

A small water-powered root processing machine is noted in a former threshing mill at Ballygrub New (254).

5.6.4 Sites of Interest

In all, 10 sites are of interest (fig.31):

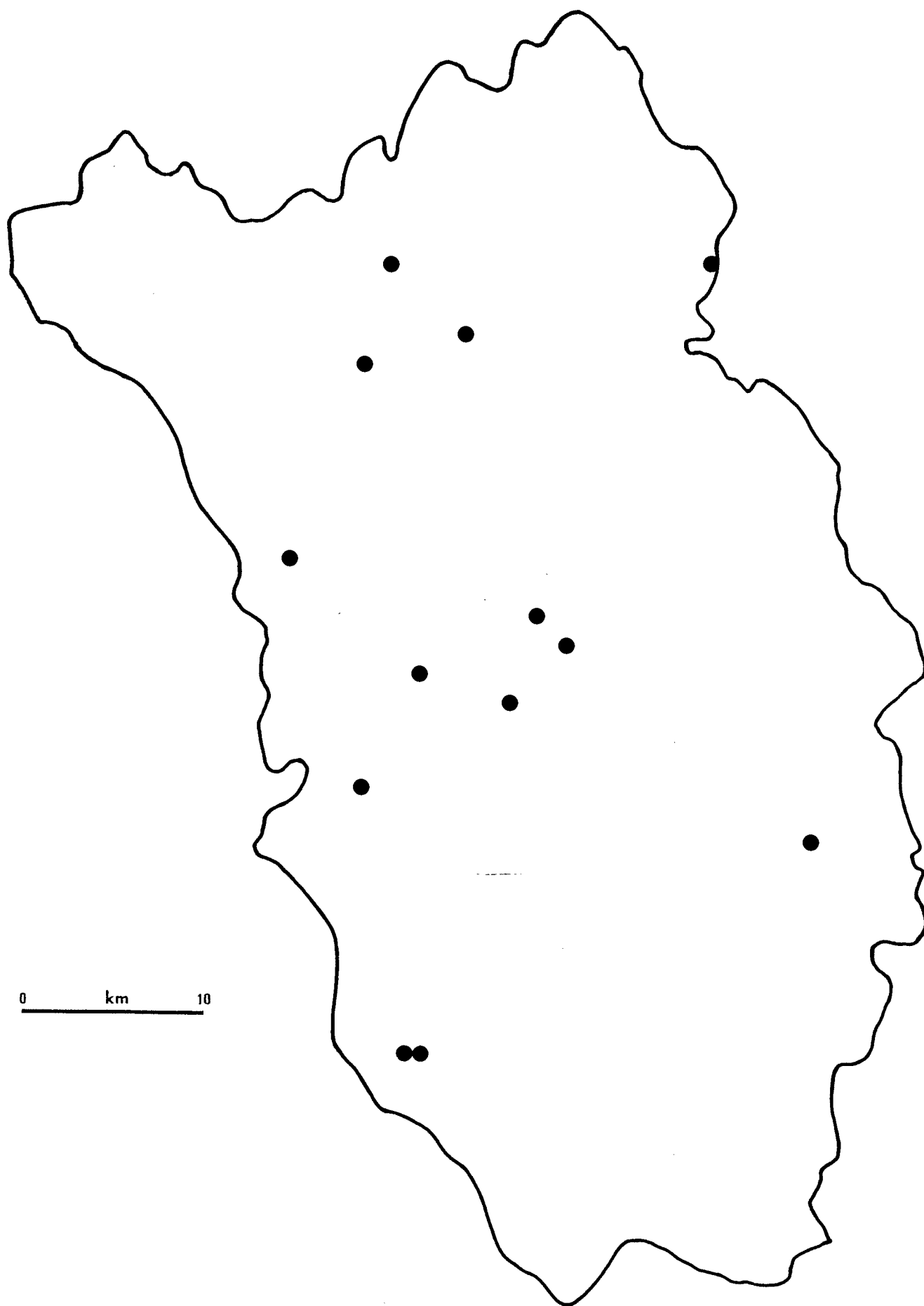| Grade	Site no.	Function	Location (Td.)	6" map
3	254	Threshing Mill	Ballygrub New	33
3	366:1	Dovecot	Belline	39
3	366:2	Dovecot	Belline	39
4	47	Threshing Mill	Coolcullen	11
4	71	Threshing Mill	Jenkinstown	14
4	155	Threshing Mill	Annamult	23
4	227	Threshing Mill	Coolaghmore	30
4	363	Dovecot	Clashacrow	13
4	364	Dovecot	Pootlerath	22
4	365	Dovecot	Grange	9

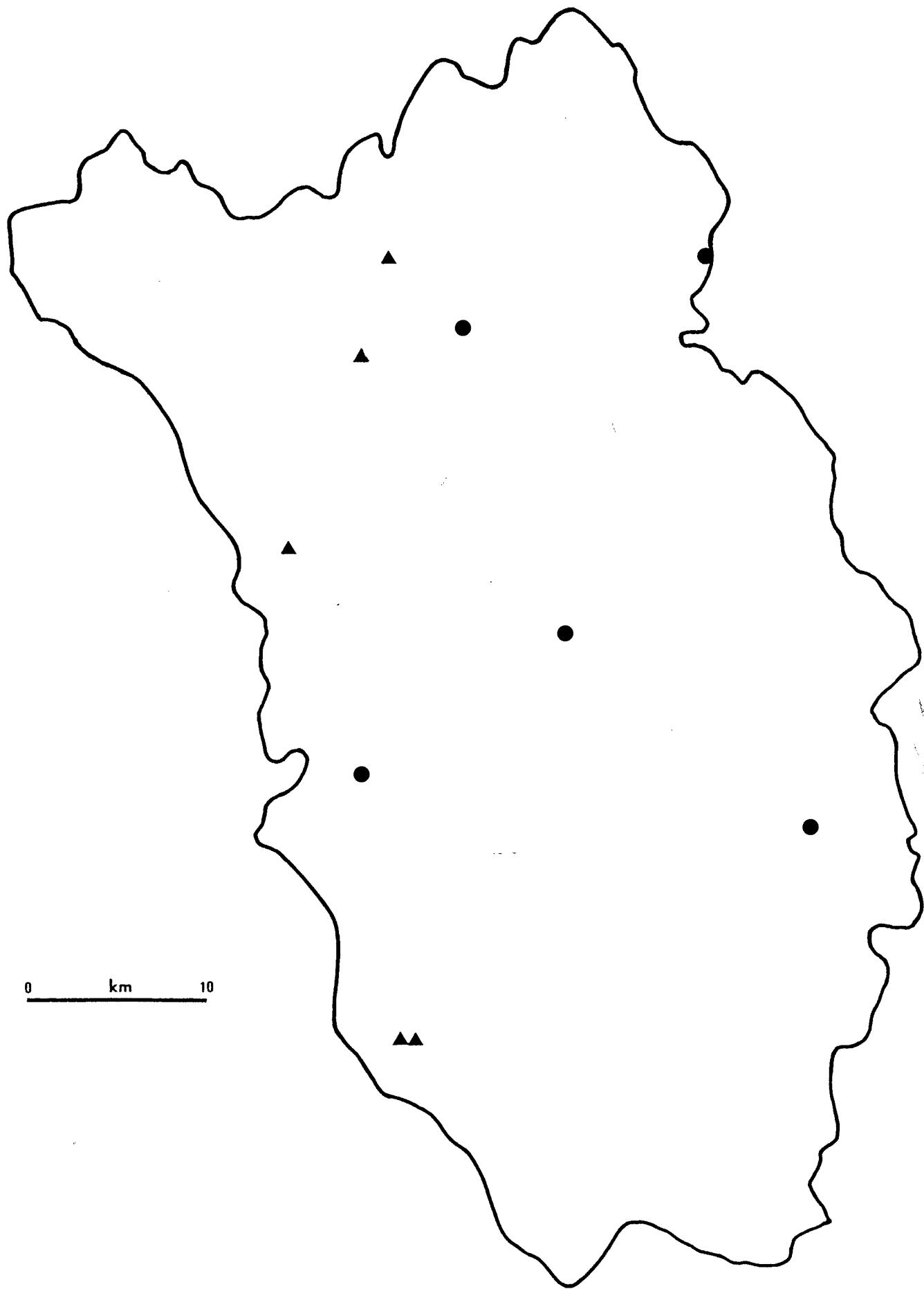Fig.30 Farm-related industrial sites

Fig.31 Farm-related sites of interest (● = threshing mill; ▲ = dovecot)

5.7   Miscellaneous Manufacturing Industries

Beside the major manufacturing industries and farm-based activities already discussed, a wide variety of small-scale and often localized activity also took place within the county. Some, but by no means all, are noted in KIAS (fig.32).

5.7.1   Bakeries

Prior to the advent of the large bakeries and their efficient distribution system, every town and not a few villages had their own local bakery. None are specifically cited on the O.S. 6" maps, and only one is noted in this survey, the still operational Molloy's bakery in Kieran's St., Kilkenny (378).

5.7.2   Fertilizer Works

A relatively recent 'manure works' is noted on the 1950 O.S. 6" map at Newrath (332), on the north side of the Suir, opposite Waterford.

5.7.3   Glass Works

Glass manufactories are comparatively rare in Ireland, but one is recorded at Gorteens (345), at the very south-east tip of the county. Its proximity to the Suir was probably no accident as it would have depended on the constant import-ation of bulky silica sand, firebrick and coal, the basic essentials of glass manufacture.

Established in the 1720s, the Gorteens Glassworks manufactured bottles, drinking glasses and window glass. Its use appears to have been short-lived however, seemingly ceasing operations early in the 1740s. By the time of the 1839 Ord-nance Survey, it was noted only by the place-name 'Glass House', and no traces now survive.

5.7.4   Meat-Processing Factories

Abbatoirs aside, two meat-processing factories are noted in KIAS. A bacon factory at Callan (174), operating from a former flour mill; and an extensive meat factory at Christendom (334), near Waterford, probably of post-Second World War date.

5.7.5   Rendering Works

The function of 'rendering works' noted at Baunta Commons (175) is unclear, but it was possibly for the preparation of gypsum plaster and/or sand-lime-cement render. Of relatively recent construction, only traces now survive.

5.7.6   Seed Dressing Mills

At the time of survey, electrically-powered seed dressing machinery was to be found in a former grain mill at Bennettsbridge (160).

5.7.7   Shoe Factories

A shoe manufactory is noted in Wolf Tone Street, Kilkenny (119). This large 8-bay saw-tooth roofed complex was erected in the 1930s and continues to operate under Padmore Barnes International.

5.7.8 Smithies

Prior to the widespread adoption of the 'horseless carriage' in the earlier 1900s, the blacksmith performed an important service in the shoeing of horses, repairing of agricultural machinery and fabrication of distinctively styled gates. [4] On account of the prevailence of smithies noted on the 1899/1900 O.S. maps, only two have been noted in this survey.

That at Moneenore (27:2:4) was probably linked to the Jarrow coal-mine, no traces now surviving. The other, at Graigue (362), just south of Kilmanagh on the Callan road, survives intact although disused since c.1987. Operated by three generations of Finlays, it still retains its open hearth, pear-shaped bellows, anvil, wheel-tyring, metal hoop bending apparatus, and assorted tools of the trade. A good example of the blacksmith's craft, in the form of a gate, is to be found at the rear of the smithy.

5.7.9 Starch Manufactories

A starch manufactory (114) is noted under what is now Smithwick's Brewery, Kilkenny, on the 1839/40 O.S. 6" map. Possibly starch was extracted from potatoes, but whether used as a thickening agent in foodstuffs, or in the laundry industry, is unknown.

5.7.10 Tanneries

Cattle not only yield beef and dairy products, but also leather. Tanneries converted the raw animal hide into cured leather for use as clothing and shoes, and involved the steeping of skins in a series of tannin-enriched basins of water (tanning pits) thus softening and conditioning the skin. The tannin itself was extracted from oak and birch trees, by soaking crushed bark in luke-warm water. Curiously however, no 'bark mills', wherein the bark was crushed preparatory to soaking, are noted on the O.S. maps.

Three tanneries are noted in the county, all town-based: Kilkenny (113), Goresbridge (135), and Thomastown (376). Only the last survives as a ruin, but complete with tanning pits, having been abandoned some 60 years ago.

5.7.11 Windmills

Given the abundance of streams and rivers, it is not surprising to find so few windmills in the county. In fact, only one is recorded, at Shankill (north of Paulstown; 79), on the 1840 O.S. 6" map. It no longer survives, having been subsumed by a quarry. Indeed the co-existence of this quarry with the windmill in 1840 raises the possibility that the windmill was used to pump water from the quarry floor. It is more likely, however, that the windmill predated the quarry's opening, possibly being erected in the later 1700s to grind corn.

5.7.12 Sites of Interest

Five sites are of particular note (fig.33):

Grade	Site no.	Function	Location (Td.)	6" map
3	362	Smithy	Graigue	22
4	160	Seed dressing mill	Bennettsbridge	24
4	376	Tannery	Thomastown	28
*	119	Shoe Manufactory	Wolf Tone St., Kilkenny	19
*	334	Meat Factory	Christendom	46

Notes

1. C.E. O'Meadhra, 1971. Interim Report on the Water Mills of Co. Kilkenny (Dublin: Office of Public Works); J. Doyle, 1985. Watermills of Kilkenny. Old Kilkenny Review, 3: 147-60.

2. P. Walsh, 1972. Linen Weaving in Kilkenny in 18th century. Old Kilkenny Review, 24: 56-57.

3 M. Craig and W. Garner, 1974. A Survey of Areas and Sites of Historic and Artistic Interest in County Kilkenny: 1st Supplement (Dublin: An Foras Forbartha).

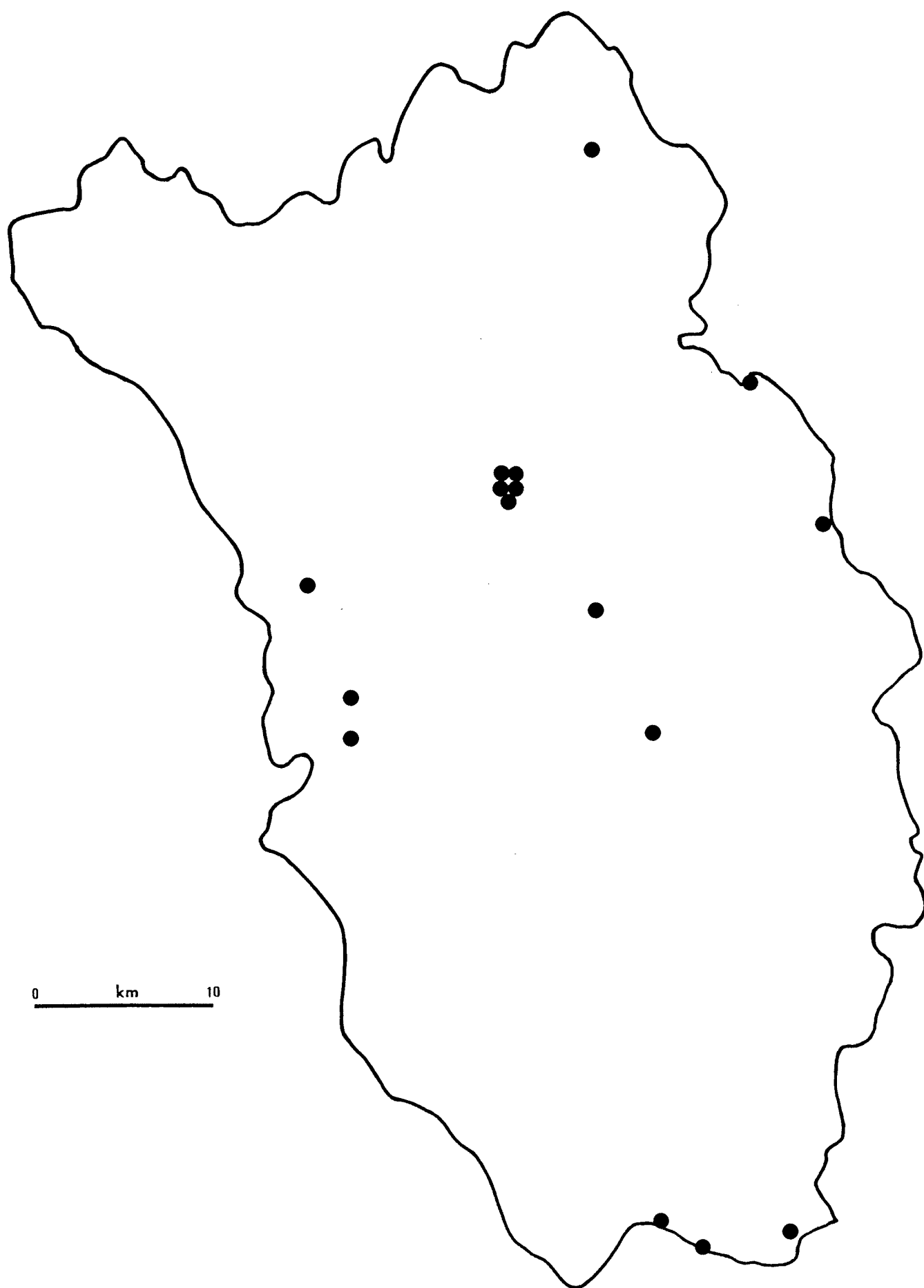4. G. Tyler, 1977. The iron gate - relic of a forgotten craft. Old Kilkenny Review, 1: 278-83.

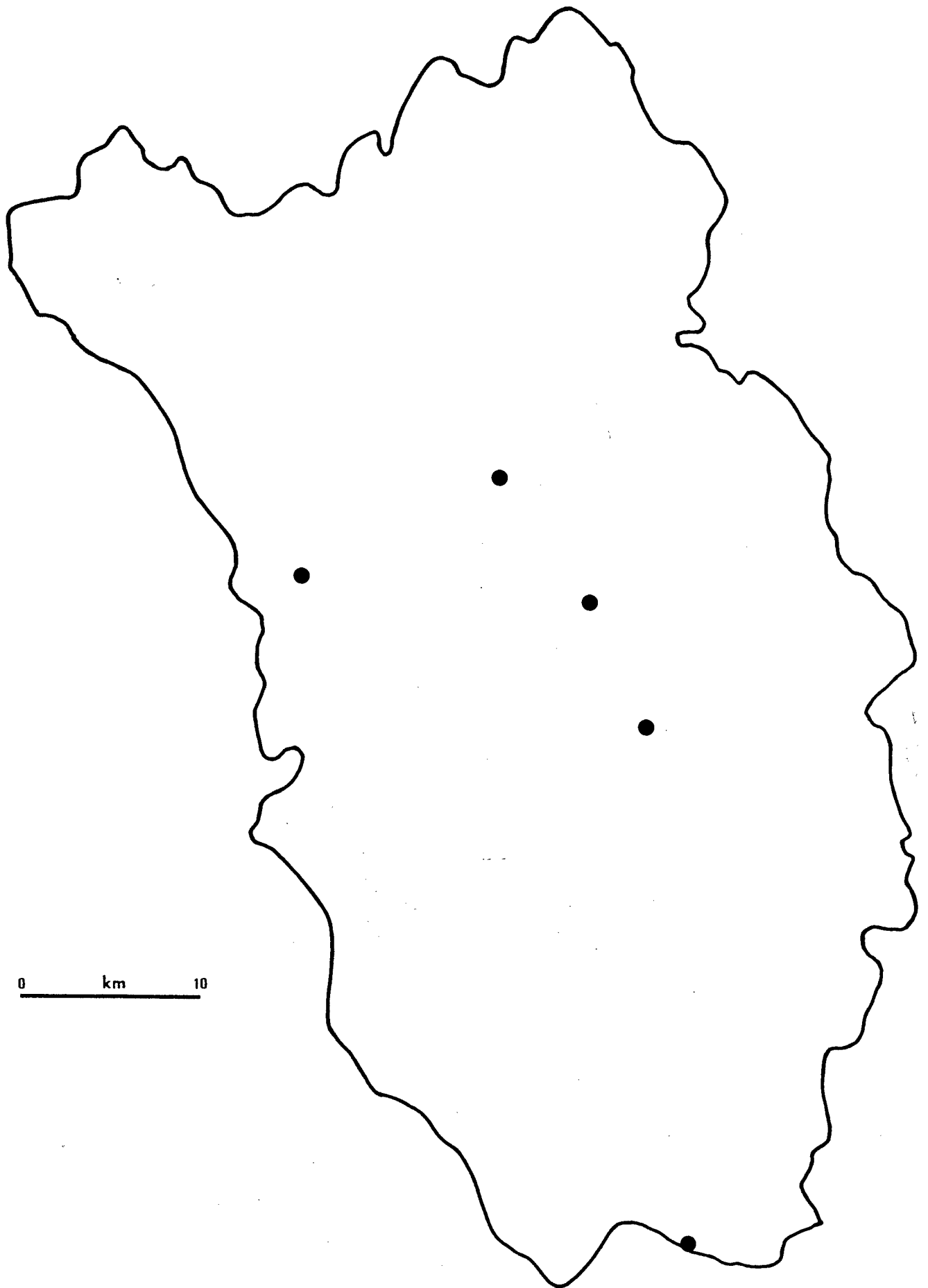Fig.32 Miscellaneous manufacturing industries

Fig.33   Miscellaneous manufacturing sites of interest

6   SERVICE INDUSTRIES

The provision of public utilities such water, electricity and gas are essential to the well-being of society. A variety of other smaller scale service industries, eg. cinemas and newspapers, have also developed over the past century. Unfortunately, the O.S. maps are not exhaustive in their coverage of such industries. What is included in this survey, therefore, can only be regarded as a nominal representation of what actually existed on the ground (fig.34).

6.1   Water Supply

Until comparatively recently, people relied on streams and wells for their water supply. During the course of the 20th century, however, these sources were superceeded by mains' supplies and tapped water, a development which necessitated the construction of holding reservoirs, water pumping stations and filtration plants.

6.1.1   Wells

Of the hundreds of wells which were once undoubtedly utilized throughout the county, 6 have been noted in this survey. At Lacken, on the southern outskirts of Kilkenny, is a small covered well (342) with an 1831 datestone. The remaining 5 wells are all spa wells, cited on the 1839 O.S. 6" maps. Such a designation implies that they were mineral-rich, and perhaps regarded as being for more than everyday use. This was certainly the case at Spahill (14), where the ruins of a spa house lie adjacent to an iron-rich enclosed well, at which there is an inscribed stone noting the rates for partaking of the waters. Nothing of interest survives elsewhere.

6.1.2   Hand Pumps

Numerous hand-operated waterpumps are to be found dotted around the country roads and village streets. Although this type of site has not been specifically recorded in this survey, the pump at Baunta Commons (400) is included as a reminder of these familiar, but now defunct, appliances.

6.1.3   Wind Pumps

Two wind-powered waterpumps have been noted, both having supplied water to animal drinking troughs. A 'Climax' engine at Annamult (408) still survives in good condition, complete with multi-bladed sails, lattice tower and windvane.

6.1.4   Reservoirs, Water Tanks and Pumping Stations

Five reservoirs have been noted: at Ardara (26), Callan (178), Dukesmeadow (106), Gaulstown (42), and Gowran Demesne (131). That at Dukesmeadow, in the grounds of Kilkenny Castle, is now an ornamental pond, whilst Gaulstown reservoir is still in use by Kilkenny County Council.

Water towers have been noted at Strangsmill (308:2) and Ballyragget (417). The former comprises a reinforced-concrete tank incongruously mounted on top of a 5-storey former flourmill (308:1). Water turbines apparently raised water from the river to the tank, it then being used by C.I.E. to clean out cattle trucks. That at Ballyragget is of more conventional design, a circular tank supported on 8 reinforced-concrete legs.

Pumping stations have been noted in 6 instances. That at Molassy (177), just west of Callan, is operational and of comparatively modern design. A smaller, disused and equally unprepossessing pumphouse is also to be found at Review-fields on the outskirts of Kilkenny (90). At Granny (310:2), two electric pumps abstract water from a former millpond. At Maudlinsland, on the Kilkenny bypass, the ornate brick pumphouse (351) serving the former mental hospital is also to be seen.

6.2 Gas Works

From the later 19th century onwards, gas was used for street lighting, and domestic heating, lighting and cooking. Until very recently, gas was manufactured from coal. However, its high cost of importation, and the large work-force necessary to convert it into gas meant that gasworks were only really viable where there was a reasonably dense population well connected to the outside world by roads and railways. Not surprisingly therefore, the only public utility gasworks in the county was in Kilkenny itself, at John's Green (112).

The Kilkenny works were extant by 1840, the first gasworks having been established in Ireland in the 1820s (at Belfast, Dublin, Newry). [1] By 1899 the Kilkenny undertaking was serving 320 consumers, gas output being 12 million cubic feet of gas per annum. By 1913, output had increased to 27 million cu.ft, to 1037 consumers. Over the ensuing decades, however, these figures did not increase significantly: in 1959, for example, 1486 consumers were supplied with 34 million cu.ft. of gas. [2]

By the 1960s, the high cost of coal and labour made coal-gas manufacture uneconomic, and most small undertakings, such as Kilkenny, closed. A few larger concerns converted to oil-based feedstock, and when this too became uneconomic in the 1970s, the major cities switched to natural gas piped from Kinsale. Kilkenny itself benefited from a feeder off the Cork - Dublin pipeline.

Throughout the whole of its working life, horizontal retorts were utilized at Kilkenny. [3] At the time of survey (July 1988), the site was being demolished, although the horizontal retort house (with truncated brick chimney), two gas-holders, offices and ancillary buildings could still be seen. [4]

Some of the wealthier landowners probably also installed small coal-gas plants to serve their large country houses. Small compact acetylene plants may also have been utilized in this context. Unfortunately, the O.S. maps do not distinguish such small-scale works, and none were located during the course of field survey.

6.3 Electricity Supplies

No major electricity generating stations are located in Kilkenny, although a number of sub-stations are to be found, one of which has been specifically noted here, at Newrath, just north of Waterford (333).

Of particular interest in the context of this survey are the small-scale hydro-

electric stations. Prior to the ESB's rural electrification programme, commenced in the 1940s [5], these provided invaluable service to small communities whose only other recourse to lighting was the paraffin and gas lamp, or oil and diesel generators.

Small hydro-electricity plants which served local communities were to be found in Greensbridge Mill, Kilkenny (121), and at a former grain mill at Callan (174). On a smaller scale, turbines have also been utilized to supply electricity to the premises in which they were installed. At the Kilkenny Woollen mills (96:1), for example, a turbine generated D.C. electricity for various machines in the factory. At Coolnamuck (251:2), the turbine provided electricity to a flour mill, saw mill, and millhouse. At a disused flour mill at Ennisnag (356), a turbine was being installed at the time of survey (July 1988).

In the last few years, the Government have encouraged the private generation of electricity in order to reduce the importation of costly oil and coal. Several enterprising operators have installed modern turbines in defunct mills along the Nore and Blackwater. The reuse of old mills reduces the need for costly new civil engineering works such as weirs and mill races. The generators have two-way connections with the national electricity grid. At times of heavy electricity consumption, the operator augments his own supply with that from the grid; when his demands are low, his excess output is fed to the grid.

Turbines have been installed in former mills along the Blackwater in the vicinity of Kilmacow (317:2, 315:2), and at the derelict Kilkenny Woollen Mills, in Bleach Green Td. (96:2). Also of note is the enormous home-made breast-shot waterwheel which straddles the Blackwater just south of Kilmacow (396).

6.4 Miscellaneous Service Industries

A variety of service-related buildings are noted IN KIAS; again, it should be noted that no attempt has been made at uniform and comprehensive coverage.

6.4.1 Cinemas

Leisure is an important facet of the service industry, and has a token representation in this survey in the form of Freshford cinema (358).

6.4.2 Fire Stations

Freshford fire station (359) is a token reminder of this still-essential service.

6.4.3 Laundrys

Two laundrys have been noted: at Smithstown (22), were a small ornate two-bay structure, now a dwelling, served the Castlecomer Estate; and Deansground, Kilkenny (117), an undistinguished and now-ruinous structure once serving the adjacent convent.

6.4.4 Printing Works

Two printing works have been noted, both in Kilkenny: in James St. (406), and High St. (379). The latter is still in operation by the 'Kilkenny People' newspaper, established in 1892.

6.4.5 Warehouses

The provision of goods storage facilities is represented here by warehouses at Abbey St., Kilkenny (375), a flour and grain store at Green St., Kilkenny (371), and an impressive 7-bay/ 4-storey quayside building at Graiguenamanagh (387).

6.5 Sites of Interest

Fifteen sites are of particular note (fig.35):

Grade	Site no.	Function	Location (Td.)	6" map
3	14	Spa Well	Spahill	8
3	408	Wind Pump	Annamult	24
4	22	Laundry	Smithstown	5
4	112	Gasworks	John's Green, Kilkenny	19
4	308:2	Water Tower	Strangsmill	43
4	342	Well	Lacken	19
4	351	Pump House	Maudlinsland	19
4	387	Warehouse	Graiguenamanagh	29
4	400	Hand Pump	Baunta Commons	26
*	96:2	Hydro-Electric Stn.	Bleach Green	19
*	315:2	Hydro-Electric Stn.	Narabaun North	43
*	317:2	Hydro-Electric Stn.	Greenville	43
*	333	Electricity Sub-station	Newrath	46
*	379	Printing Works	High St., Kilkenny	19
*	396	Hydro-Electric Stn.	Kilmacow	43

Notes

1. For a general review of the Irish gas industry, see C.J. O'Sullivan, 1987. The Gasmakers: Historical Perspectives on the Irish Gas Industry (Dublin: O'Brien).

2. Information from Gas World Year Book and Gas Journal Calendar and Directory.

3. Larger undertaking elsewhere converted to more cost-effective vertical retorts.

4. At the time of writing, what now remains is uncertain; for the purposes of site grading, it is assumed that some buildings survive.

5. For details of the rural electrification scheme, see M.J. Shiel, 1984. The Quiet Revolution: the Electrification of Rural Ireland, 1946-1976 (Dublin: O'Brien).
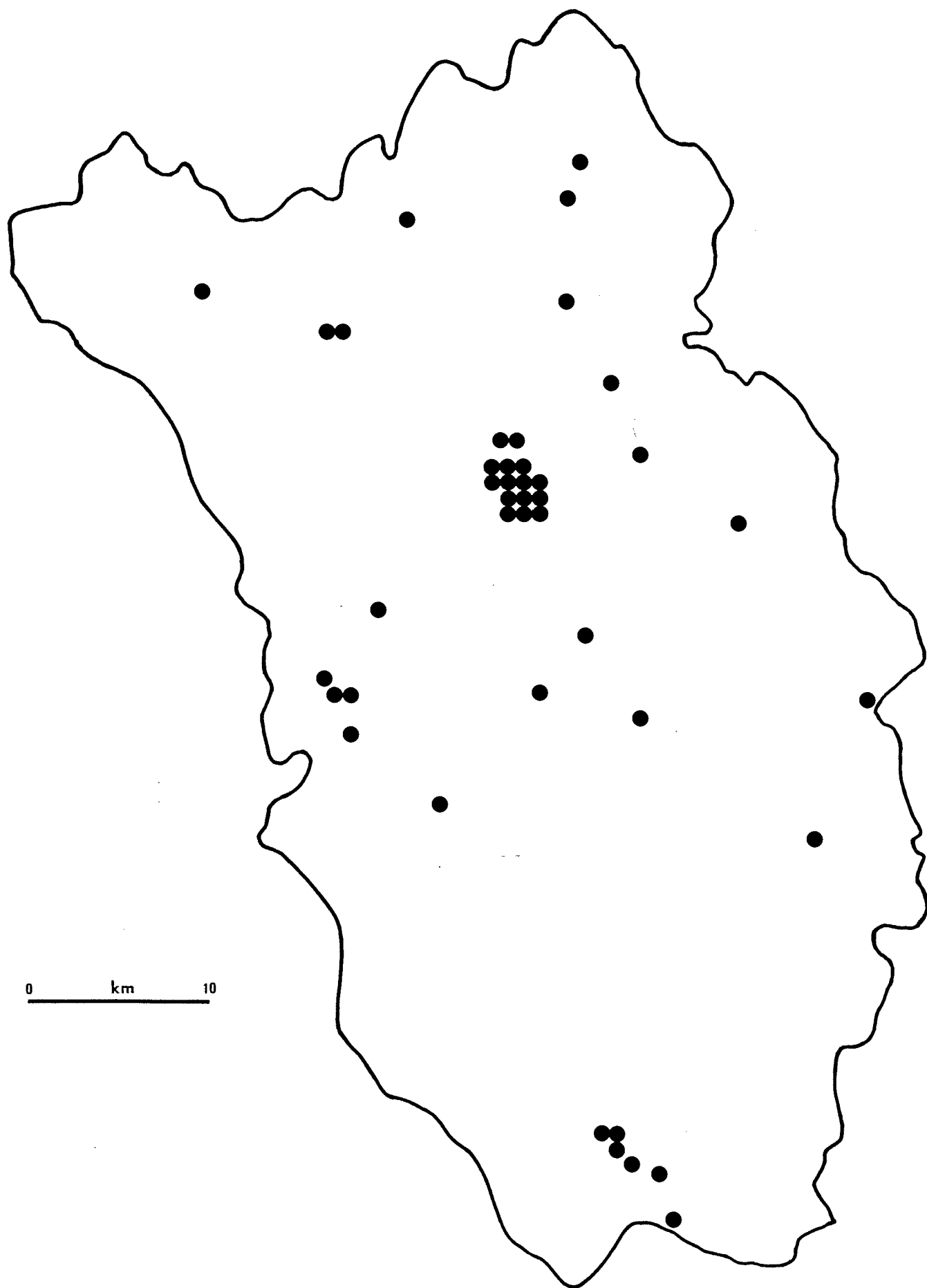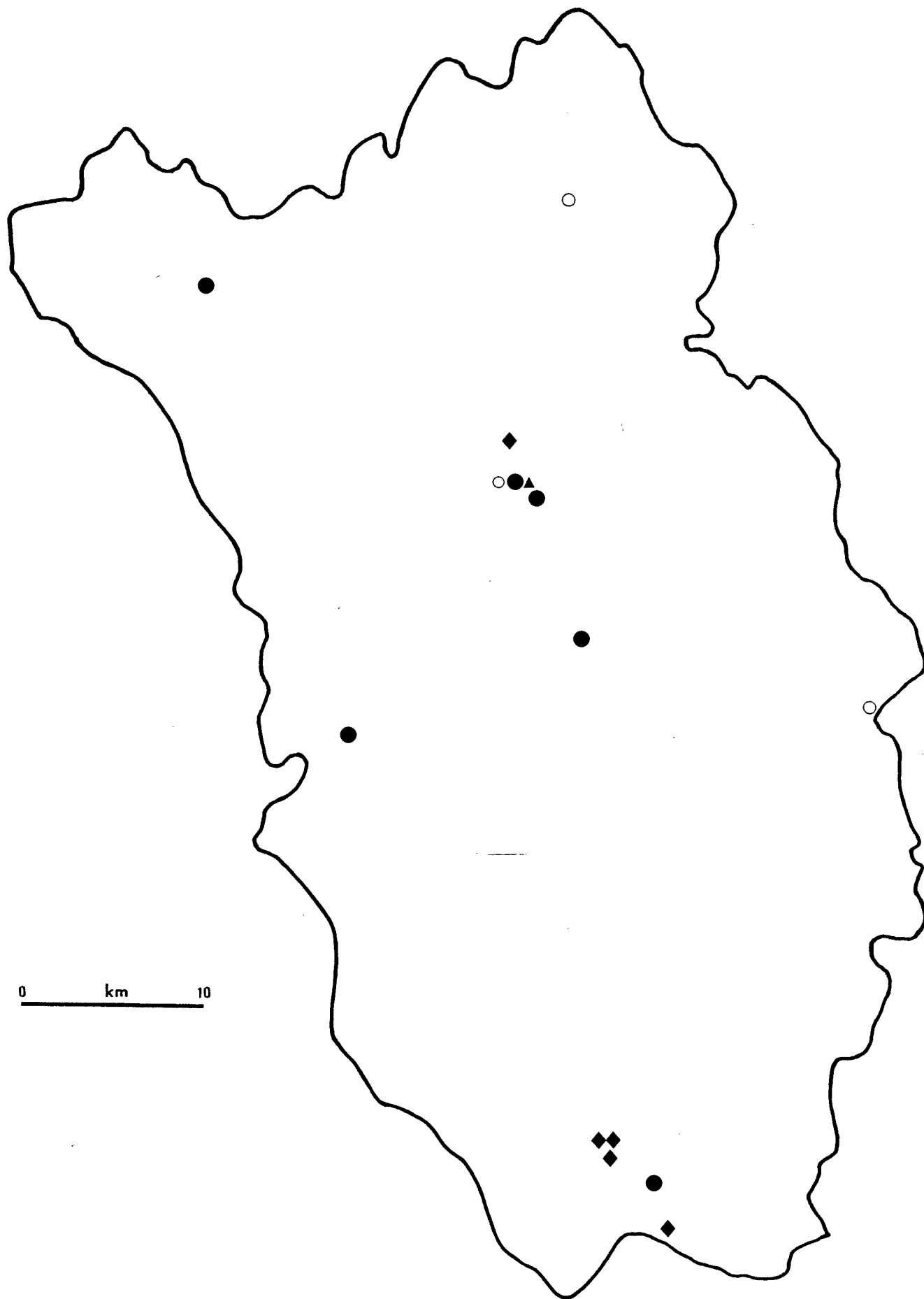
Fig.34 Service industries

Fig.35 Service industries of interest
(● = water;▲= gas; ◆ = electricity; ○ = miscl.)

7 ROAD COMMUNICATIONS

The establishment of a road network is, of course, a vital prerequisite for the speedy transportation of people, raw materials, and finished goods. Indeed, in those areas where river navigation proved difficult, of not impossible, roads and trackways were the only means of communication prior to the advent of canals and railways. [1] The investigation of the county's road network is not within the direct scope of this phase of KIAS. Two facets have, however, been surveyed in detail: bridges and toll houses; a review of less direct associations, eg. coaching inns, may be found elsewhere. [2]

7.1 Road Bridges

Given the many bridges across the county's numerous streams and rivers, only named bridges (together with some un-named bridges) were surveyed in detail; railway-related bridges are considered in chapter 8. It is thought that such a sampling strategy will adequately reflect the variety of bridges types to be found within the county, a strategy vindicated by field survey.

In all 143 road bridges have been included in KIAS, the analysis of which reflects the evolution of bridge design and modes of transport (fig.36).

7.1.1 Construction Dates

Although the erection dates of most bridges is unknown, and indeed may never be known, few are likley to predate the later 17th century. Datestones occur on only 7 masonry bridges: 1647 (Tower, 69), 1788 (Old Bridge, Freshford, 61), 1790 (Three Castles, 67), 1818 (Callan, 360), 1840 (New Dinin, 72). Documentary evidence sheds light on some other bridges: 1764 (Green's Bridge, 108; Graiguenamanagh, 223), c.1790 (Thomastown, 213), and 1792 (Dinin, 68).

Much of the later 18th century activity probably reflects the introduction, in 1765, of the Grand Jury system, whereby responisiblity for road construction and upkeep passed from the local parish to regional boards. Taxes were imposed at a county level, and on 'presentment' of road schemes by local landowners and others, monies were allocated. Whereas Tower Bridge (69) was erected in 1647 at the expense of Patrick Dowyle, Three Castles Bridge (67) was erected by presentment in 1790. The county also bore the expense of Callan Bridge (360) in 1818, and New Dinin Bridge (72) in 1840.

7.1.2 Bridge Construction

Most bridges are of masonry construction (table 4), many of random rubble build.

Road bridges		Foot bridges	
Stone	124	Stone	1
Girder	2	Suspension	1
Concrete	12	Wood	1
Unknown	2		

Table 4 Bridge types

Given that most watercourses are but small streams, most of the 124 masonry bridges have but a single span (table 5). As one would expect, the multi-span bridges are to be found on the wider rivers - the Nore (and Dinin and King's Rivers, its principal tributaries), Suir (and Black Water tributary), and Barrow. They often encompass smaller floodwater channels, and even mill races (eg. 108, 205, 246).

Number of spans	1	2	3	4	5+
Number of bridges	46	25	24	8	21

Table 5 Bridge spans

Most impressive, in terms of overall scale and number of arches in normal use (as opposed to floodwater conditions), are those across the Barrow - Gore's Bridge (136; 9 arches, all in use), and Graiguenamanagh Bridge (223; 7 arches, all in use); and across the Nore - Inistioge Bridge (242; 10 arches, 8 in use), and Green's Bridge (108; 8 arches, 5 in use),

As regards arch construction, the masonry bridges are predominantly of semi-circular and segmental profile; only 8 are of eliptical profile, and two of gothic form.

Though most of the bridges are purely functional, a number exhibit decorative elements, ranging from string courses, voussoirs and highlighted keystones (19, 21, 48, 67, 72, 159, 167, 168, 223, 228, 369, 395), to elaborate spandrel recesses, often in Palladian style (19, 67, 108, 201, 213, 223, 242, 246), sometimes with ornate balustrades (69).

7.1.3 Bridge Evolution

The evolution of bridge design may also be perceived. In early bridge const-ructions, semi-circular spans provided the simplest, most stable arch form. Wide expanses were spanned with a large number of such arches, as seen for example at Inistioge (242). Wooden truss bridges were also employed, as across the Suir at Fiddown (296.1), and over the Barrow at Mount Garrett (272).

However, as engineering theory advanced during the 1700s, so the structural stability of segmental and eliptical arches became better understood; and as construction methods improved, so fewer arches of greater span could be employed. For example, the 8 semi-circular arches of Kells Bridge (190) were widened with the addition of three eliptical and two semi-circular arches. The three-arched Dinin Bridge of 1792 (68) was augmented in 1840 by the twin-arched New Dinin Bridge (72) a short distance upstream.

The present century has also seen the erection of several new bridges, but in concrete and metal, rather than stone. An outstanding example is St. John's Bridge over the River Nore in Kilkenny (107). When erected in 1910 (datestone), it was the largest single span arched concrete bridge anywhere in the British Isles with a span of 43 m (141 ft). The 1930 Mount Garrett Bridge (272) across the River Barrow is of interest, marrying arched concrete spans with a rolling lift drawbridge. More recently, the multi-span concrete Fiddown Bridge (296:1) was erected over the Suir in 1973 (datestone), whilst the Ossory Bridge (372) was built over the Nore in the 1980s.

7.1.4 Upgrading of Bridges

As contact between towns and villages increased, so it was necessary to upgrade

71

certain bridges to cope with the increasing amount of traffic along particular routes. Bridge upgrading took a number of forms:

- In two instances, the arch soffits were reinforced with concrete (35, 395); the latter is particularly interesting given the very shallow rise on the wide segmental arch.

- In a number of cases the arches have been completely replaced with flat reinforced concrete beams (13, 29, 93, 140, 144, 257, 279, 416). At Fiddown (296:1) and Mount Garrett (272), wooden bridges were completely replaced with reinforced concrete spans. Bridge 162 has been culverted with concrete pipes, whilst bridge 409 appears to be a metal girder replacement of an earlier stone bridge.

- The masonry arch bridge were sometimes widened with the addition of further upstream or downstream arches (69, 190), although the addition of flat concrete spans is more commonly found (92, 133, 137, 168, 228, 283, 286, 303, 412). In two instances, concrete footpaths have been cantilevered out from existing stone parapets (108, 213).

- More recently, several relatively narrow stone bridges have been entirely superceeded by new concrete constructions (38, 40, 63, 413), whilst on one instance, an entirely bridge and road have been created (Ossory Bridge on the KIlkenny bypass, 372).

7.1.5 Foot Bridges

The most interesting of these is undoubtedly the simple 5-span stone flagged crossing at Graiguenamanagh (391), unfortunately of unknown antiquity. A suspension bridge, of which the piers only survive, formerly crossed the Dinin River at Castlecomer (86), and whilst a simple wooden girder type bridges is to be found some distance downstream (368).

7.2 Toll Houses

Three toll houses are recorded in KIAS (fig.37). That at Ballyrafton (70) has been heavily refurbished, and whilst Kilmaganny (367) is probably demolished. Only Fiddown (296:2), erected in association with the former wooden truss bridge across the Suir, survives intact.

7.3 Sites of Interest

Of the 143 recorded road bridges, 47 are of some note. As one might expect, all grade 1 and all but two grade 2 bridges are on the Barrow and Nore. The Dinin and Kings Rivers are also of interest in the relatively high number of grade 3 bridges. However, many grade 4 bridges are to be found dotted across the smaller watercourses throughout the county. In addition, one toll house is of note (fig.38).

Grade	Site no.	Site type	Location	6" map
1	107	John's Bridge	Kilkenny	19
1	108	Green's Bridge	Kilkenny	19
1	223	Bridge	Graiguenamanagh	29 —
1	242	Bridge	Inistioge	32
2	19	Bridge	Castlecomer	5 —
2	67	Bridge	Threecastles Demesne	14
2	69	Tower Bridge	Jenkinstown	14
2	136	Gore's Bridge	Goresbridge	21
2	159	Bennett's Bridge	Bennettsbridge	24 —
2	167	Ballyteigelea Bridge	Milltown	25
2	205	Ballylinch Bridge	Ballylinch Demesne	28
2	207	Bridge	Ballylinch Demesne	28
2	213	Bridge	Thomastown	28 —
2	246	Bridge	Kilmacshane	32
2	272	Mount Garrett Bridge	Tinnaslatty	37
3	34	Bridge	Lismaine	9
3	38	Bridge	Ballyragget	10
3	40	Dysart Bridge	Dysart Glebe	10
3	68	Dinin Bridge	Ardaloo	14
3	72	New Dinin Bridge	Gragara	14
3	183	Bridge	Newtown	27
3	190	Bridge	Kells	27
3	201	Bridge	Ennisnag	27
3	296:2	Toll House	Fiddown	42
3	311	Bridge	Kilmacow	43
3	321	Bridge	Dangan	43
3	357	Bridge	Innisnag	27
3	360	Bridge	Callan	26
4	12	Bridge	Chatsworth	2
4	18	New Bridge	Ballyhimmin	5
4	21	Bridge	Castlecomer	5
4	28	Massford Bridge	Moneyroe	6
4	48	Black Bridge	Coan East	11
4	51	Bridge	Uskerty	11
4	61	Old Bridge	Freshford	13
4	245	Bridge	Ballyduff	32
4	253	Clodiagh Bridge	Cullaun	33
4	289	Bridge	Mullinavat	40
4	344	Blackfriar's Bridge	Kilkenny	19
4	361	Bridge	Tobernapeastia	13
4	369	Bridge	Loon	6
4	391	Footbridge	Graiguenamanagh	29
4	395	Bridge	Granny	43
4	405	Bridge	Kildalton	39
4	407	Bridge	Ballyclovan Meadows	22
4	413	Black Bridge	Kilkenny	19
*	296:1	Bridge	Fiddown	42
*	372	Ossory Bridge	Archersgrove	19

Notes

1. P. Walsh, 1961. The Old Roads of Kilkenny, Old Kilkenny Review, 13: 30-34.

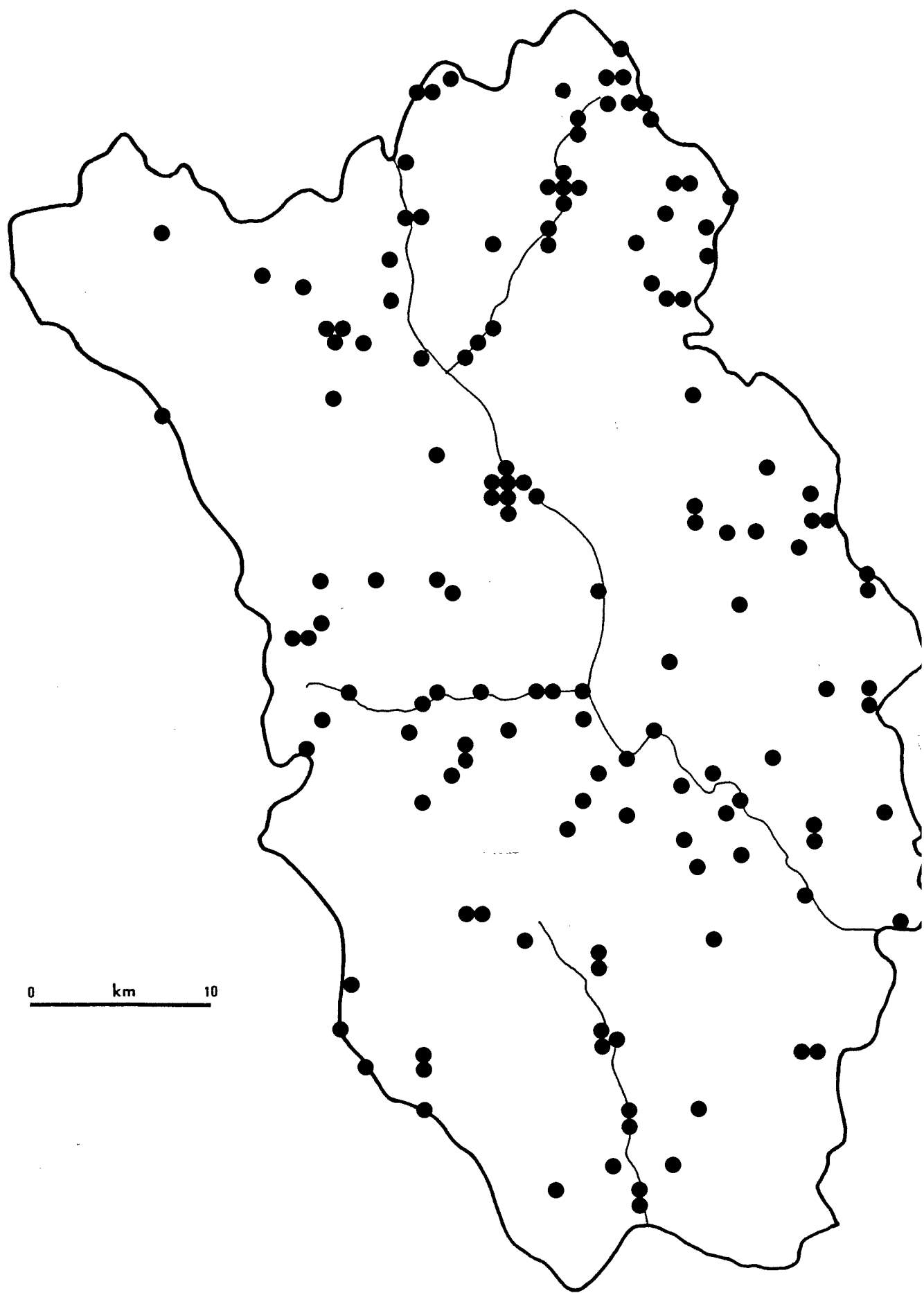2. J.G.A. Prim, 1950. Kilkenny Inns and Taverns, Old Kilkenny Review, 3: 15.
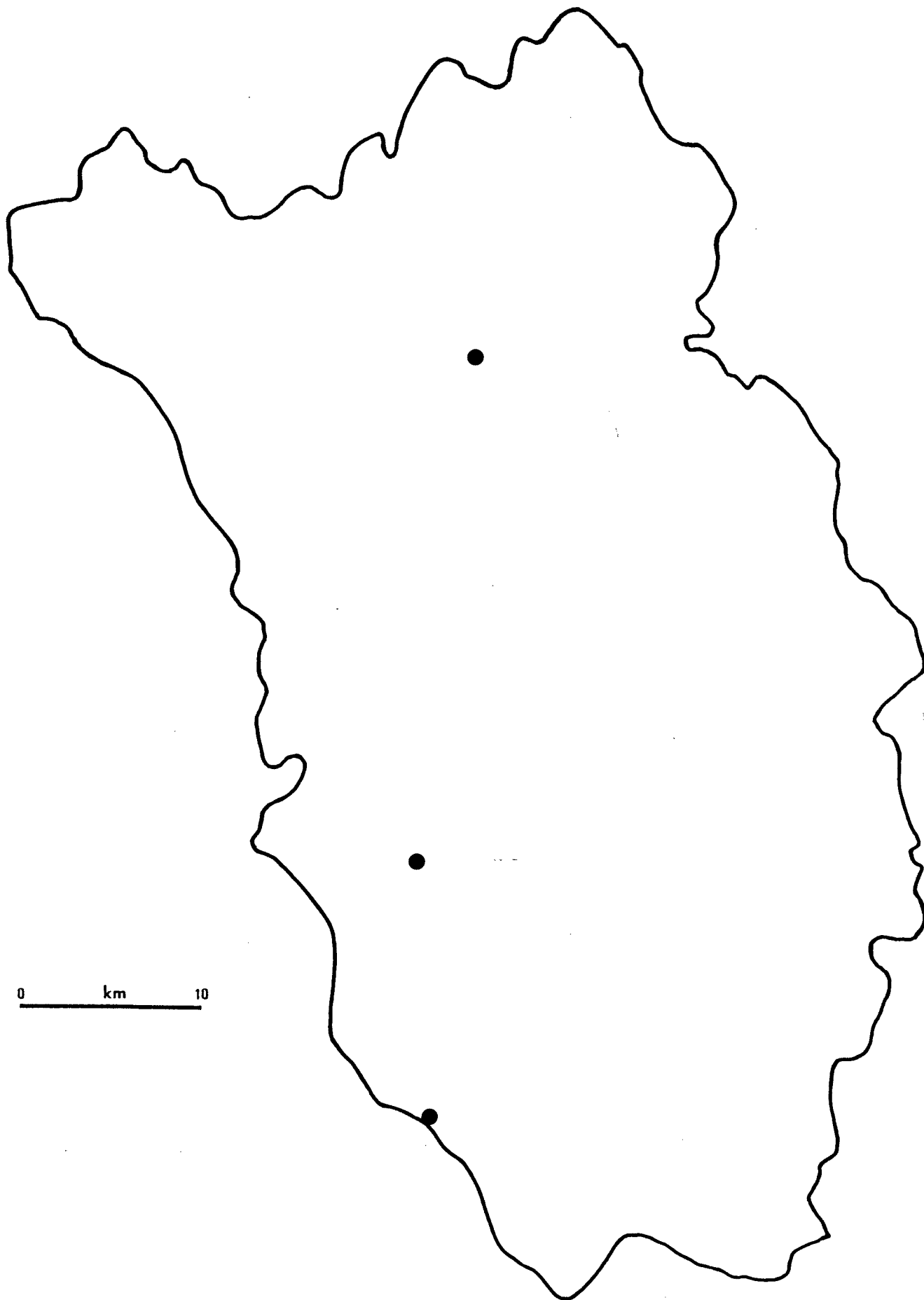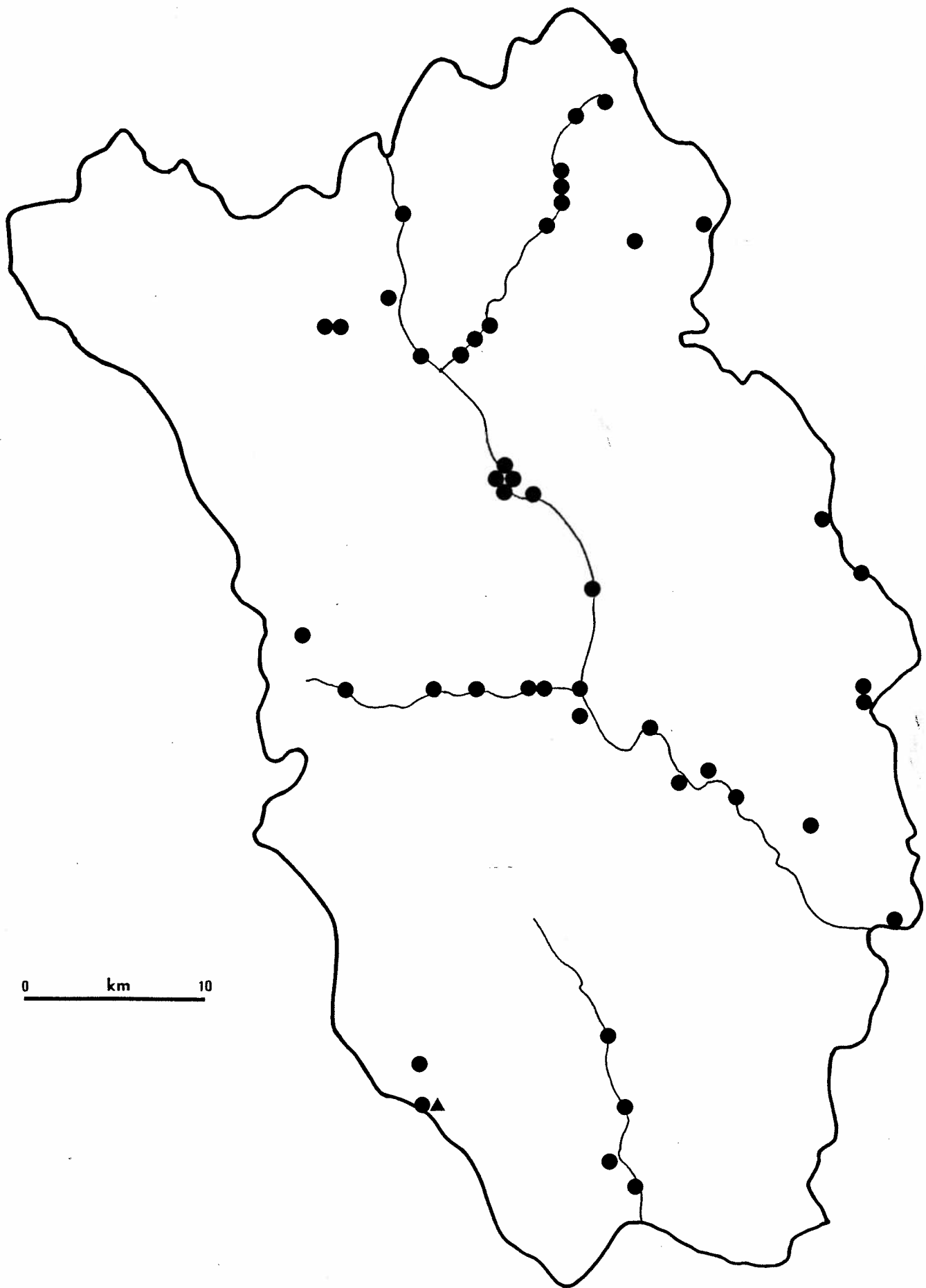
Fig.36 Road bridges

Fig.37 Toll houses

Fig.38 Road-related sites of interest (● = bridge; ▲ = toll house)

8 RAIL COMMUNCIATIONS

With the inception of the Dublin - Dun Laoghaire railway in 1834, Ireland's railway era began. By 1850 Kilkenny was linked to Dublin, and to Waterford in 1854, and Portlaoise in 1867. Lines radiating from Waterford to Limerick, New Ross and Rosslare also passed through the southern reaches of the county. As late as 1920 track was still being laid, linking the Castlecomer coalfields with Kilkenny. Despite the inevitable closure of the less economically viable lines, much of Kilkenny's track still remains in use. Beside the track-related earthworks such as embankments and cuttings, the main features to be found thereon are stations and bridges (fig.39). Each line will be considered in turn, and some of their more interesting features highlighted.

Quarry-related mineral railways have already been dealt with in section 4.2.1.

8.1 Waterford - Kilkenny - Ballyragget Line

Kilkenny's earliest railway enterprise was incorporated in 1845 as the Waterford & Kilkenny Railway Company (WKK). By 1848 their line (50) linked Kilkenny with Thomastown; both towns connected with Dublin in 1850, with the arrival of the Irish Southeastern Branch (ISE) of the Great Southern & Western Railway (GSW) at Lavistown. By 1853, the line had reached Dunkitt from whence there was a line to Limerick; the line finally reached Waterford in 1854.

Between 1865 and 1867, the line was extended northwards from Kilkenny, via Ballyragget, to the main Dublin - Limerick line at Portlaoise. Although known as the Kilkenny Junction Railway (KKJ), it was in fact worked by WKK. In 1868 the WKK changed its name to the Waterford & Central Ireland Railway (WCI), and in 1896 absorbed the KKJ. Finally, in 1900, the WCI was absorbed by the GSW.

In 1962 the line northwards from Kilkenny was closed. Although the track itself was lifted, its path remains visible over most of its course. The Kilkenny - Waterford section continues to operate: as a double track line to Lavistown (branching off to Carlow and Dublin), and as a single track to Waterford.

8.1.1 Railway Bridges

Of the 55 recorded railway bridges on this line, 35 carry the track over roads, rivers or other railways; the remaining 20 carry roads or accommodation tracks over the line (table 6).

	ra/ro	ra/ri	ra/ra	ro/ra	
KKJ	9	2	0	8	19
WKK	18	5	1	12	36
	27	7	1	20	55

Table 6 Bridge functions (ra= rail; ri= river; ro= road)

Rail-over-Road Bridges

A total of 27 railway bridges cross roads along this line. Of these, 18 are to be found on the WKK line, 14 of which are of the masonry arch type, the rest being single-span metal girders.

The masonry bridges are of coursed masonry, with sturdy retaining walls on either side to offset the thrust of the earthen embankments. With one exception, all are of segmental profile, usually square-on to the underpass; in two instances, the bridges are skew (ie. crossing the underpass obliquely). All have a modicum of decoration such as dressed voussoirs and string courses.

By contrast, of the 9 bridges on the KKJ line, only 3 are of masonry arch construction; the remainder are single-span metal girders on masonry abutments. The line is now abandoned and track lifted, and although the arch bridges survive intact, all but one of the girder spans has been lifted, only their masonry abutments remaining.

Of particular note is the 7-span masonry bridge (50:16:2) just north of the main Kilkenny terminus; a high single-span masonry bridge at Killeen (50:40); and the skew-arch masonry/brick Aughmalogue bridge at Middleknock (50:20:2).

Rail-over-River Bridges

Of the 5 bridges on the WKK line, three are of masonry arch type, with fine examples at Killeen (50:41), and Aughmalogue Bridge, Middleknock (50:20:1). The remaining two are girder bridges, of outstanding merit being the 215ft (65m) bowstring Thomastown Viaduct over the Nore, and on either side of which are twin-arched masonry abutments.

Of the two bridges on the KKJ line, a fine example of a single-span lattice girder bridge survives over the Dinin River at Dunmore (50:8).

Rail-over-Rail Bridges

In one instance, at Dunkitt (50:50), the mainline railway crosses a mineral railway (327:2) which transported limestone from the adjacent quarry (327:1).

Road-over-Rail Bridges

Twenty road bridges cross the line, of which 12 are along the WKK line. Of these, 5 are masonry arches, and three of the girder type; a further two have had their spans replaced in reinforced concrete.

All the masonry bridges are single-span, and of dressed stone with string course decoration. All are square-on to the railway line, bridge 50:30 on the Bennettsbridge - Thomastown road being a particularly fine example, with zig-zag approach.

Of the 8 road bridges on the KKJ line, all but one are single-span masonry spans; none are of particular merit however.

8.1.2 Railway Stations

Of the 9 stations along the line, 7 are to the south of the Kilkenny terminus, and one to the north. Two stations were short-lived: Lavistown (50:21), closed in 1853, and Dunkitt (50:53), closed in 1855; no traces survive.

Bennettsbridge (50:27), Ballyhale (50:38), Mullinavat (50:45) and Kilmacow

(50:54) were all closed to traffic in 1962. With the exception of the now-ruinous Bennettsbridge station, they have been refurbished as dwellings.

Kilkenny (50:15:1) and Thomastown (50:34) both remain in operation. As one would expect, the terminus at Kilkenny has the most extensive remains: a brick terminus building, covered platform, goods sheds, signal box, water tower, footbridge and sidings.

Goods sheds are also to be found at Ballyhale and Thomastown, whilst signal boxes are to be seen at Mullinavat and Thomastown.

Within the county, the northwards KKJ Branch had but one station, at Ballyragget (50:2), of which only traces now survive.

8.2 Kilkenny - Carlow Line

The Dublin - Carlow branch (80) of the ISE was extended from Bagenalstown to Kilkenny, via Gowran, in 1850. It joined the Kilkenny - Thomastown line at Lavistown and was worked by the GSW. The ISE was eventually absorbed by the GSW in 1863. The single-track line remains in use, linking Kilkenny with Dublin.

8.2.1 Railway Bridges

Six bridges are to be found on this relatively short length of line: two carry the railway over roads, one over a river, the remaining three carrying roads over the track. The former are all of simple girder construction on stone abutments; the span on one has been replaced in reinforced concrete. The three road-carrying bridges are of similar design - dressed limestone masonry arch spans, with string courses across the parapets.

8.2.2 Railway Stations

There is only one station on this line, at Gowran (80:4:1). Closed in 1962, the one-storey brick construction is now a dwelling, opposite to which is a stone-built goods shed.

8.2.3 Level-Crossing Keeper's Houses

Small one-storey stone-built houses are to be seen at Talbotshill (80:4:2) and Lavistown (80:6:2); both are still uses as dwellings.

8.3 Waterford - Limerick Line

The Waterford & Limerick Railway (280) was instigated at the Limerick end in 1848, reaching Dunkitt by 1853, and Waterford in 1854. The company was absorbed by the GSW in 1901. The line between Fiddown and Waterford was doubled in 1883, but reverted to single track in 1929. It still remains in operation.

8.3.1 Railway Bridges

Of the 20 recorded bridges, 10 are over- and 10 are under-bridges. Of the former, 8 carry the line over roads, and 2 over rivers; all the under-bridges carry the line under roads.

All but one of the underbridges are of similar arched masonry design, with string decoration and highlighted voussoirs. Most over-bridges are girder spans, many of the original double-width spans having been replaced by single-width spans in (or after) the 1920s, when the line was re-singled. Of particular note is the lattice girder bridge over the River Black Water (280:17).

8.3.2 Railway Stations

Two stations, both closed in 1963 and now used as dwellings, are still to be seen - Fiddown (280:2) and Grange (280:7) - along with signal boxes and level crossings.

8.4 Waterford - New Ross Line

In 1887, the Dublin, Wicklow and Wexford Railway Company (DWW) linked Palace East to New Ross, reaching Waterford in 1904 (in 1907 the DWW became the Dublin & South Eastern Railway). This single track (300) runs close to the Barrow for much of its 15 mile course. Closed to passenger traffic in 1963, goods traffic still plies between Waterford and New Ross, the line to the north having been closed.

8.4.1 Railway Bridges

Of the 20 recored bridges, 9 are over-bridges, the remainder being under-bridges (9 road, 2 river). Both types are of masonry arch and girder construction; interestingly the masonry bridges incorporate brick soffits, unlike earlier bridges on other lines which utilized stone almost exclusively.

Of particular note is the now-disused 580ft (177m) long bridge carrying the line over the Barrow to the north of New Ross (300:1). Erected in 1887 by Dixon & Thorne, its 6 wrought-iron spans are supported on twin cast-iron piers, the two central spans pivoting in the middle to allow shipping to pass through.

A rail-over-river bridge at Ballyvereen (300:5) is a good example of the girder variety, whilst that at Rathinure (300:7) is a fine example of the skew-arch rail-over-road type.

8.4.2 Railway Stations

The line within Co. Kilkenny had only one station, at Aylwardstown (300:19:1); closed in 1974, only the platform and single-storey brick station master's house remains.

8.5 Waterford - Rosslare Line

The Fishguard & Rosslare Railways & Harbours Company opened this line (354) in 1906. The single-track line is still in use, following the left bank of the Suir over its Co. Kilkenny course. No stations lie within the county.

8.5.1 Railway Bridges

Of the four bridges, three are single-span girders over minor streams. Of particular note is the 2130ft (650m) long Barrow Viaduct (354:1), the longest

railway bridge in Ireland, and third only to the Forth and Tay Bridges in Scotland. Erected 1902-6, it is of identical design to the Suir Viaduct (353:2), being of Pratt truss construction by Sir William Arrol of Glasgow. Each of its 13 main spans are supported on twin cast-iron piers, the 2 central spans being pivoted in the middle to allow boats to pass through.

8.5.2 Railway Tunnels

Of note is the 650ft (198m) Snow Hill railway tunnel (354:2) immediately west of the Barrow viaduct.

8.6 Suir Connection

A short portion of line (353) runs from the Waterford - Kilkenny/ Limerick track at Granny, across the Suir to the Waterford - Mallow line. The latter had been completed in 1878, via Lissmore and Dungarvan, and was absorbed by the Fishguard and Rosslare Railway in 1898. The line is no longer in use, and consequently the Suir link has been abandoned.

The only feature of interest is the magnificent 1200ft (367m) long Suir viaduct (353:2). Of Pratt truss construction by Sir William Arrol & Co. of Glasgow, its 9 spans are supported on cast-iron piers, the central span lifting to allow boats to pass through; it is similar to the Barrow viaduct (354:1), and is likely to have been built around the same time (first decade of 1900s).

8.7 Castlecomer Branch Line

During the First World War, Ireland experienced a severe coal shortage. In an attempt to relieve the situation, the Castlecomer line (60) was laid from the main Kilkenny - Ballyragget line to Castlecomer in 1919, being extended to the Deerpark Colliery in 1920. It was, in fact, the last standard-gauge track to be laid in Ireland, carrying passenger traffic to 1931, and sporadic coal traffic thereafter until its closure in 1962.

The track has been lifted and for the most part difficult to trace, save in the vicinity of bridges.

8.7.1 Railway Bridges

Of the four recorded bridges, all are under-bridges. Three were of girder construction on reinforced concrete supports, the forth being entirely of concrete. Although all the girder spans have been lifted, the piers for two 6-span river bridges can still be across the Deen and Dinin Rivers (60:3, 60:4). Immediately to the north of Castlecomer, a twin bridge carried the track over a road and river (60:7).

8.7.2 Railway Stations

Stations were at Corbetstown (60:2) and Castlecomer (60:6), where station master's houses can still be seen.

8.8 Sites of Interest

A total of 22 sites are of particular note (fig.40):

| Grade	Site no.	Site type	Location	6" map
1	50:36	Nore viaduct	Jerpoint West	28
1	353: 2	Suir viaduct	Granny	46
1	354: 1	Barrow viaduct	Drumdowney Upper	44
2	300: 1	Viaduct	Garranbehy Big	37
3	280:17	Rail-over-river bridge	Granny	43
4	50: 8	Rail-over-river bridge	Dunmore	14
4	50:15:1	Railway station	Kilkenny	19
4	50:16:2	Rail-over-road bridge	Kilkenny	19
4	50:20:1	Rail-over-river bridge	Middleknock	19
4	50:20:2	Rail-over-road bridge	Middleknock	19
4	50:30	Road-over-rail bridge	Rathduff	28
4	50:34	Railway station	Thomastown	28
4	50:38	Railway station	Ballyhale	32
4	50:40	Rail-over-road bridge	Killeen	36
4	50:41	Rail-over-river bridge	Killeen	36
4	50:45	Railway station	Mullinavat	40
4	50:50	Rail-over-rail bridge	Dunkitt	43
4	80: 4:1	Railway station	Gowran	20
4	280: 2	Railway station	Fiddown	42
4	300: 5	Rail-over-river bridge	Ballyvereen	41
4	300: 7	Rail-over-road bridge	Rathinure	41
4	354: 2	Snow Hill Railway Tunnel	Ballydowney Upper	44
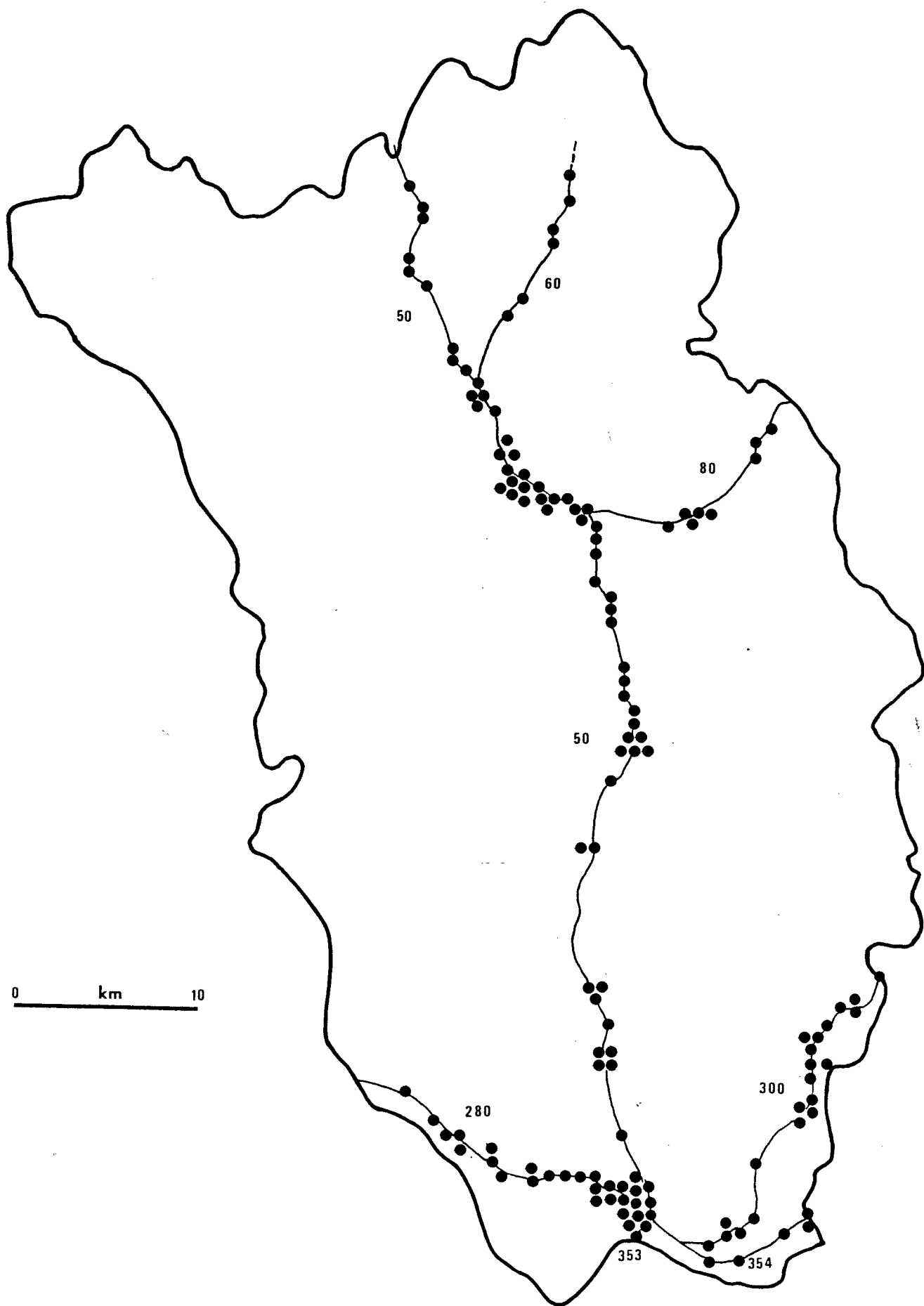
Fig.39   Railway-related sites
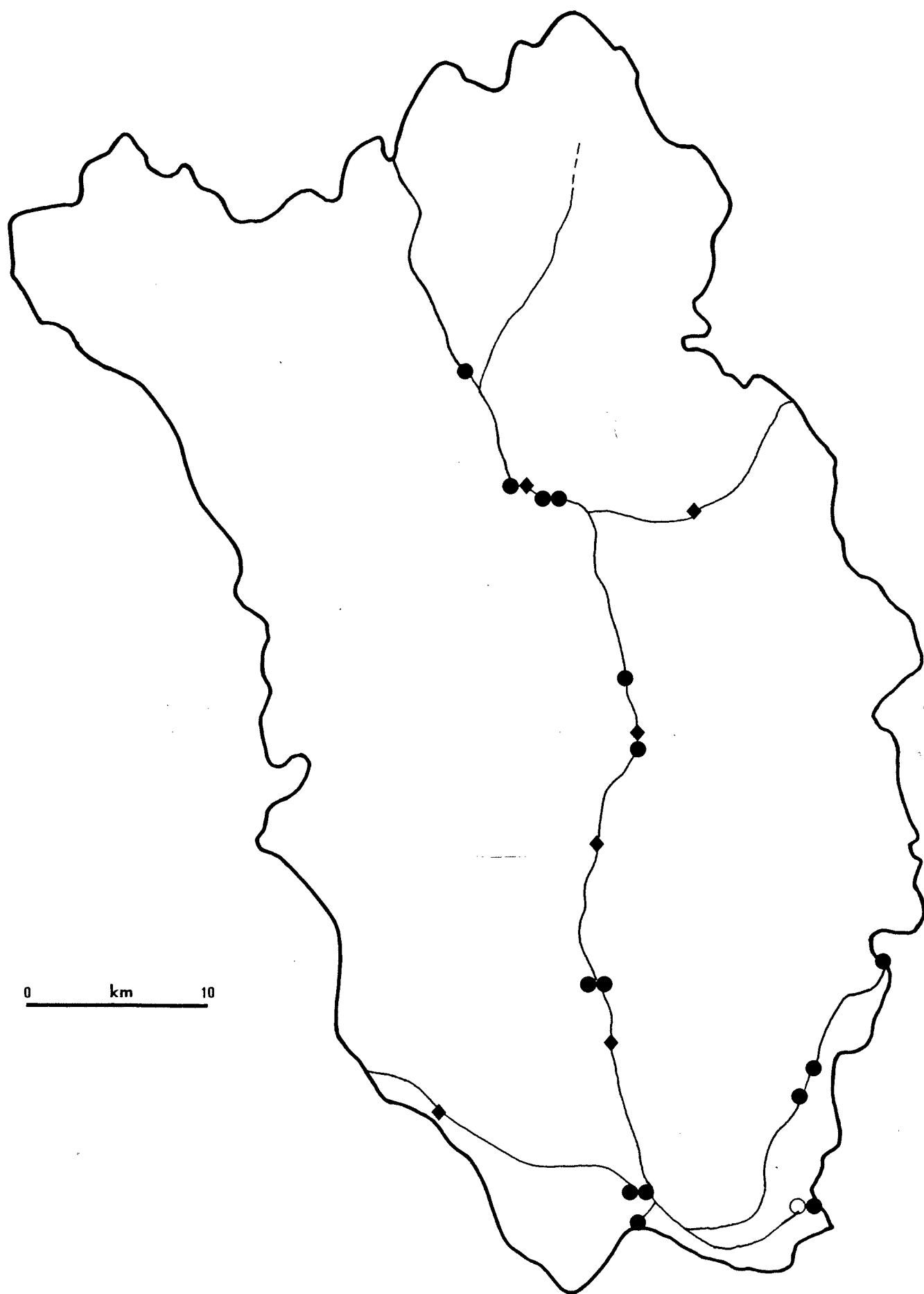
Fig.40 Railway-related sites of interest (● = bridge; ◆ = station; ○ = tunnel)

9 RIVER NAVIGATIONS AND CANALS

Given the poor state of many 18th and 19th century roads, water provided the
ideal medium for the transportation of bulky, low-value goods over long
distances (fig.41).

9.1 River Navigations

The Suir, Barrow and Nore, collectively known as the 'Three Sisters', were
important arteries in Kilkenny's transportation network. The Suir, on the
county's eastern boundary, whilst linking Waterford and Carrick-on-Suir, also
served that area of Kilkenny south of the Slievenamon hills. The Barrow, on the
county's eastern boundary, linked Waterford, New Ross, Graiguenamanagh and
Goresbridge. The Nore is the largest river to actually pass through the county,
linking Kilkenny with Thomastown, Bennettsbridge, and Inistioge, entering the
Barrow just above New Ross.

Although these rivers are quite navigable over much of their length for shallow
draft boats, in the absence of canals, only their tidal sections are accessible
to larger boats. The Suir is tidal as far as Clonmel, a distance of 35mls,
although the upper limit for traffic is now Fiddown Bridge. The Barrow is
navigable to just south of Graiguenamanagh. Between 1760 and 1785, sections of
canal were constructed over 41½mls in a northward direction, joining the Grand
Canal at Monasterevin [1]; none of these works are on the Co. Kilkenny side
however. The Nore is tidal as far as Inistioge, and from here attempts were made
in the later 18th century to make it navigable to Kilkenny town.

9.1.1 Quays

Thirteen quays have been noted along the Three Sisters; the largest quays, at
Waterford and New Ross, lie outside the county, and are thus excluded from KIAS.

Along the Suir, 7 small quays have been recorded, the largest, at Fiddown (297),
being associated with a coal yard. To the east of Waterford are a number of
small stone built jetties, their use being confined, in all likelihood, to the
movement of goods and people in their immediate vicinity. In two instances (335,
339), small navigation beacons have been installed.

On the Barrow, four quays are noted, two of which were associated with the
Ballinlaw ferry across the river (330:1, 330:2). Graiguenamanagh (388) still
retains some warehousing along its extensive riverside frontage.

Two quays are recorded along the Nore. At Thomastown (88) several hundred yards
of abandoned quay lie on the left bank, east of the town. Just south of Inis-
tioge, again on the left bank, a substantial riverside frontage is still used
for recreational purposes (100:10). Its name, the 'Lock Quay', implies an
association with the Nore Canal which meets the river at this point.

9.1.2 Dry Docks

A dry-dock (420) is recorded on the right bank of the Barrow at Graiguenamanagh.

9.2 The Nore Canal

Improvements to the navigability of the Nore in the vicinity of Kilkenny town were being made as early as 1581. It was not until the 1750s, however, with the sanctioning parliamentary finance, that a scheme to link Kilkenny with the Nore's tidal reaches at Inistioge got underway. Its purpose was to provide cheap transportation for bulky items such as grain, tallow, stone, black marble, coal and lime to the coastal ports such as Waterford. [2]

Between 1757 and 1761, William Ockenden and his successor George Smith constructed 4mls of canal, in three sections, between Kilkenny town and Bennettsbridge, at a cost of just over £10,000. The Kilkenny to Bennettsbridge section runs thus:

Canal: Kilkenny - Warrington (1.8mls, right bank)

    Scot's lock, Dukesmeadows   (100:1) 1 pair gates
    Aquaduct, Gallowshill   (100:2) over stream
    Crow's Well locks, Archersgrove (100:3) 2 pr. gates
    Archerstown locks, Warrington (100:4) 2 pr. gates

River (0.1mls)

Canal: Warrington - Kilferagh (1.1mls, right bank)

    Rimer lock, Warrington   (100:5) 1 pr. flood gates
    Kilferagh locks, Kilferagh   (100:6) 3 pr. gates

River (0.3mls)

Canal: Dunbell Big (1.1mls, left bank)

    Dunbell lock, Dunbell Big   (100:7) 1 pr. gates
    Dunbell locks, Dunbell Big   (100:8) 2 pr. gates

River (1.3mls to Bennettsbridge)

A 1761 newspaper article claimed that the link-up to Inistioge had been achieved, but this was far from the case. Although a map of that date depicts a lengthy section of canal on the Nore's right bank between Bennettsbridge and Thomastown, and a bypass at Inistioge, it was not until 1767 that contracts were placed for these sections, one with William Colles of the Maddockstown Black Marble Works. However, neither contract appears to have been fulfilled by 1777, and Parliament thereupon suspended further grant aid, a total of £28,250 having been expended between 1755 and 1775.

Kilkenny's canal history was at an end. Despite fresh proposals in the 1780s (and as late as 1906), no further work seems to have been carried out on the Nore navigation, and it was already defunct by 1840 when noted as "Old Canal" on the Ordnance Survey maps.

The Kilkenny canal was commenced at a time when many similar projects were being instigated elsewhere: the Grand Canal (1756), Barrow navigation (1783), and Royal Canal (1789). Unlike these, however, it failed, in spite of the obvious need to transport cereals, black marble etc. One reason often given for this failure is that it was started 'at the wrong end'. When the project collapsed, the navigation's completed upper reaches were rendered useless for anything other than local traffic.
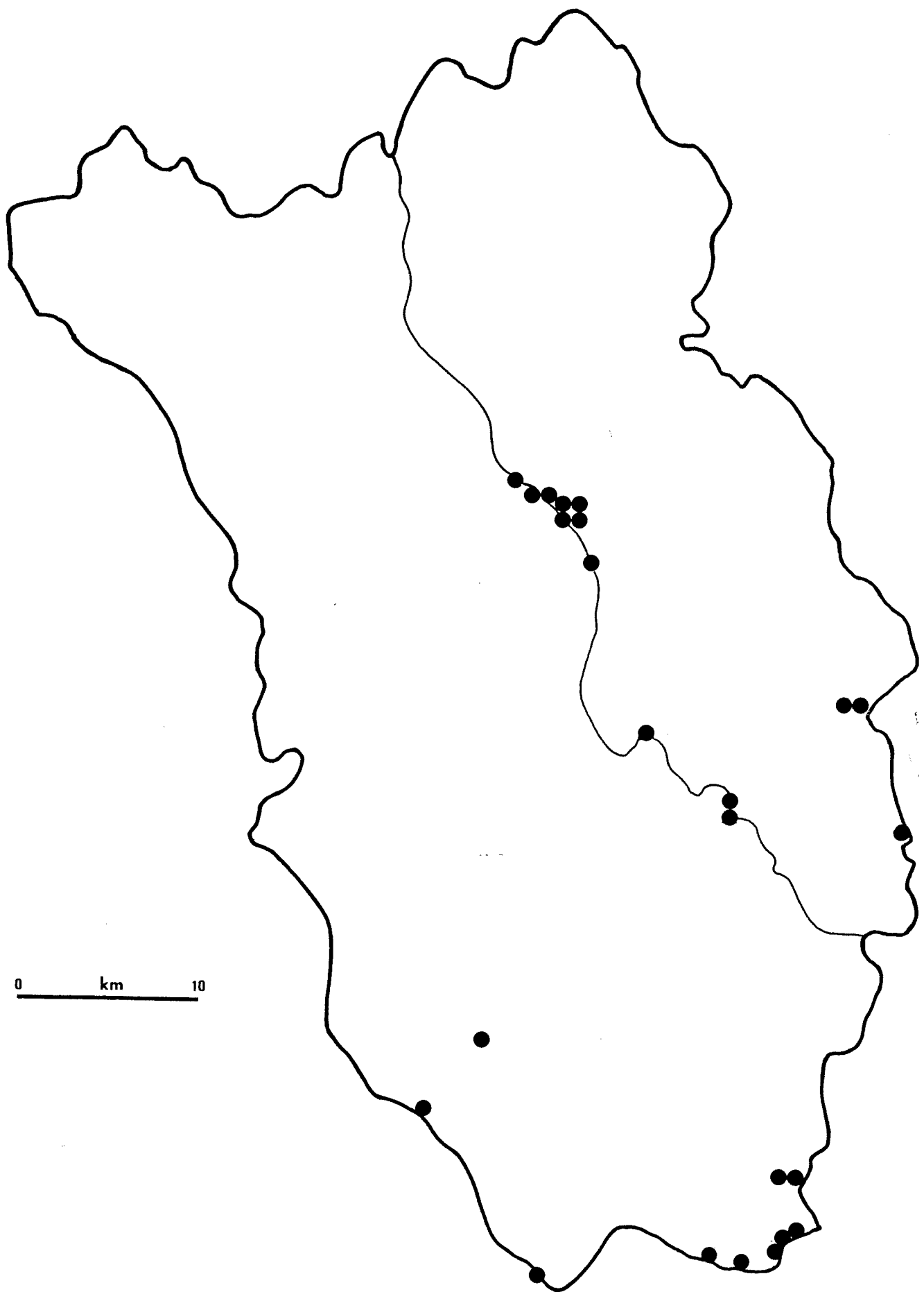
Fig.41 River/ canal sites

Despite years of disuse, most of the Kilkenny - Bennettsbridge section is still tracable today. A short section of water-filled canal survives in the vicinity of the Ormonde woollen mills (104), as do the ashlar limestone walls of Scot's lock (100:1). Its course southwards from this has been infilled and landscaped as the tree-lined 'Canal Walk'. The stone-lined basin at Crow's Well locks can still be seen (100:3); and although no traces of Archerstown lock (100:4) are visible, the overgrown course of the silted-up canal in its vicinity are still evident.

Little is to be seen in the canal's second section between the locks at 100:5 and 100:6, save its tree-lined former course. Neither of the Dunbell locks (100:7, 100:8) survive, and although silted-up and heavily overgrown, the canal is still quite evident over this section.

Below Bennettsbridge, nothing is immediately apparent on the Nore's right bank save a small dry cutting 0.2mls in length across Bennettsbridge Td., 0.6mls south of the bridge itself.

At Inistioge, a short length of canal, complete with lock gates, is visible at the Nore, just above the Lock Quay (100:10), but it is unclear whether its tree-lined ½ml line to Inistioge was ever completed.

Despite the Nore fiasco, a number of other schemes were proposed in the late 1700s and early 1800s, including the linking of Kilkenny with the Barrow at Goresbridge, and the Castlecomer colleries with the Grand Canal at Monasterevin. Although its was to be some decades before the advent of the railway, none of these proposals got beyond the discussion stage.

9.3 Sites of Interest

Eight sites are of special note (fig.42):

Grade	Site no.	Site type	Location	6" map
3	100	Nore Canal	Dukesmeadows	19
3	100: 1	Canal Lock	Dukesmeadows	19
3	100: 3	Canal Lock	Archersgrove	19
3	100: 9	Canal Lock	Kilcross	32
4	88	Quay	Thomastown	28
4	100:10	Quay	Kilcross	32
4	388	Quay	Graiguenamanagh	29
4	420	Dry Dock	Graiguenamanagh	29

Notes

1. R. Delany, 1986. A Celebration of 250 years of Ireland's Inland Waterways: 68 (Belfast: Appletree Press).

2. This section is based on: V.T.H. and D.R. Delany, 1966. The Canals of the South of Ireland: 138-144 (Newton Abbot: David & Charles); R. Delany, 1986. A Celebration of 250 years of Ireland's Inland Waterways: 63-8 (Belfast: Appletree Press); P. Watters 'The History of the Kilkenny Canal', in Kilkenny City & County Anglers (n.d.), History of the Kilkenny Canal: 21-37 (Kilkenny).
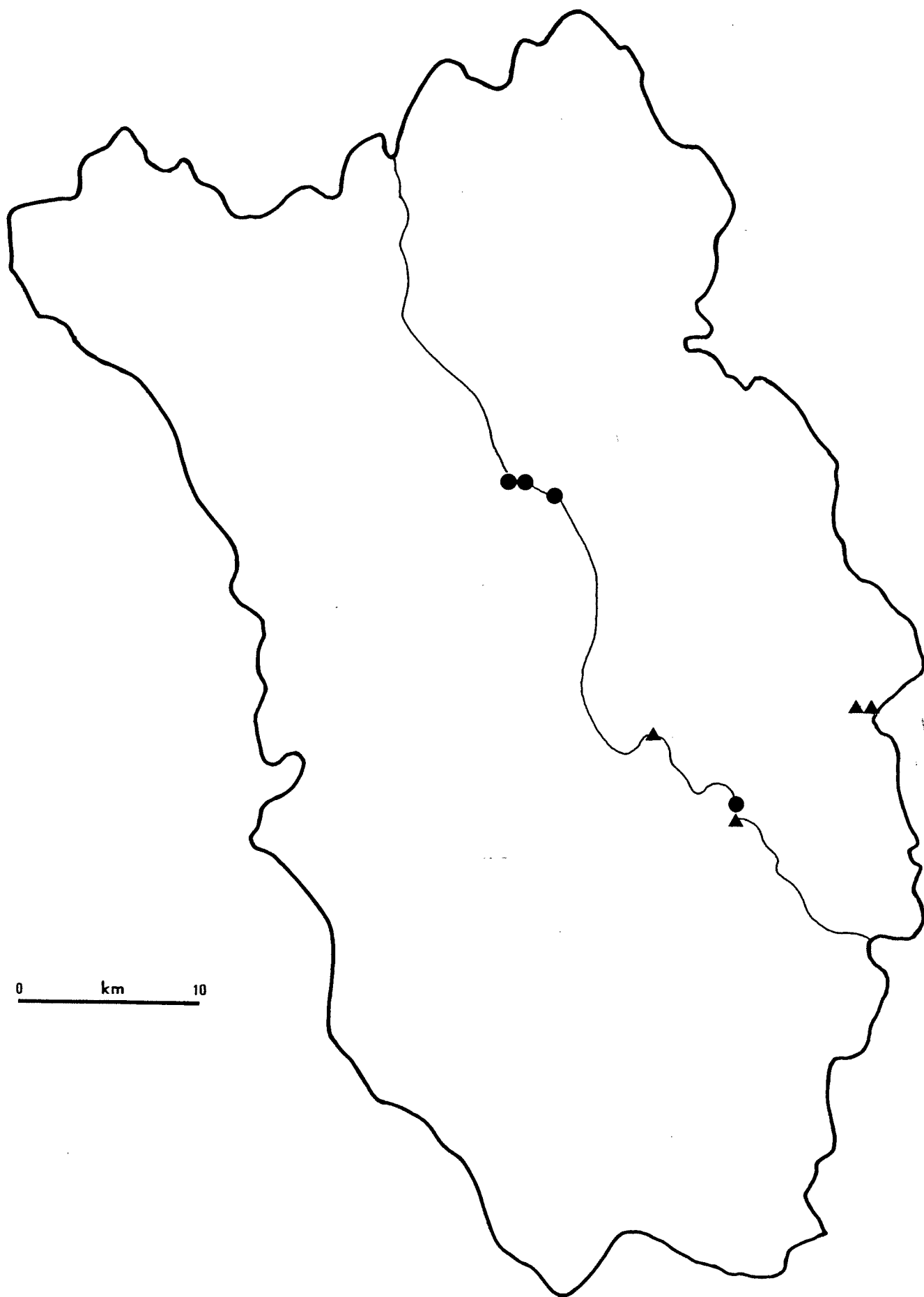
Fig.42 River/ canal sites of interest (▲ = river; ● = canal)

PART 3

AN ASSESSMENT OF CO.KILKENNY'S INDUSTRIAL HERITAGE

10   SITES OF INTEREST

In order to gauge the industrial significance of each site recorded in KIAS, they were assessed on their architectural merit and structural condition, technology and degree of completeness, and landscape enhancement value. Each site was allocated one of 7 grades as follows:

Grade 1: excellent examples of their type, encompassing outstanding features of architecture and/or technology, all surviving virtually intact and in good condition, perhaps with a landscape enhancement value.

Grade 2: of special regional interest, encompassing most elements of the grade 1 sites, but at a less imposing scale.

Grade 3: of regional interest, being good examples of their type, encompassing interesting architectural and/or technical features at a modest scale, and possibly also of some landscape value.

Grade 4: of special interest at a local level as a consequence of a particular architectural, technical or landscape feature.

Grade 5: without any particular merit, and of local interest only.

Grade -: little or no visible remains.

Grade *: not necessarily of any great antiquity, but which are still in use and demonstrative of particular industrial processes.

The significance of the 7 grades may be broadly summarized as follows:

Grade	Significance	Architectural merit/ Technical interest Structural integrity/ Landscape value
1	National	Outstanding
2	Provincial	Very high
3	Provincial	High
4	Local	Medium
5	Local	Low
-	None	None
*	Of contemporary interest	

It should be emphasized that the historical significance of particular sites has not been evaluated at this stage of KIAS. Were the background to particular sites more fully appreciated, some would doubtless be upgraded.

It need hardly be said that it is only possible to compare like with like, as the evaluation critera will differ according to the type of site. To take an example, mills can only be compared with other mills of similar function, and

not, say, with bridges. Thus a bridge will be gauged largely on the basis of its architectural form, scale, and landscape value. In contrast, although many mills may not be architecturally impressive, they might well be of high technical interest in relation to their waterwheels, transmission gearing and millstones.

The rarity value of a particular site type may also influence its grading. For example, a water pump might be complete and in full working order. Technically, therefore, it should merit a high grade. However, many such examples doubtless still exist throughout the country, and it is unlikely that any could be considered nationally significant. On the other hand, Co. Kilkenny was one of the few coal mining regions in Ireland. Although what survives of the various coal workings could hardly be described as impressive, what does exist is rare in a national context.

In all 649 site functions are recorded in KIAS (in some instances a particular site will encompass several functions), all but three of which have been graded (table 7).

Industry	Grade							
	1	2	3	4	5	-	*	
Extractive	0	0	3	7	7	39	2	58
Manufacturing	5	6	28	30	92	71	6	238
Service	0	0	2	7	16	10	6	41
Communications	7	12	18	40	200	30	2	309
	12	18	51	84	315	150	16	646

Table 7 Site grading in relation to industrial function

Of the 646 allocated grades, 181 (28%) are of some interest (grades 1-4, *); interestingly, all the 30 grade 1 and 2 sites are either bridges (mostly road over river) or mills (mainly grain mills).

As can also be seen from table 7, site survival is remarkably high, there being surface indications of 496 industrial activities, representing 77% of all site functions noted in KIAS.

A statistical analysis indicates that primary and secondary industrial sites in particular have suffered badly from agents of destruction. Unfortunately, this is to be expected. Many coal pits and limestone quarries, for example, have long ceased operation, and the ground has been made good and recultivated. Most mills are also long since defunct, and many doubtless fell quickly into disrepair where not reused as farm outbuildings etc. By comparison, the survival rate of bridges is extremely high; this is to be expected given their continued usefulness.

The remainder of this chapter briefly describes sites of grade 1-4 and *. Site number, name/ function, location and 6" map (in brackets) are detailed.

A total of 12 grade 1 sites are known (fig.43). These are of outstanding architectural and/or technical merit, and are prominent features of the landscape.

50:36 Thomastown railway viaduct, Jerpoint West (28)

Wrought-iron bowstring girder bridge, of 215ft (65m) span, with twin-arched masonry approaches, over Nore south of Thomastown. Completed in 1877, it replaced an earlier wooden bridge, and carries the main Kilkenny - Waterford line.

57 Kilrush grain mill, Kilrush (13)

Substantial double range of 4-storey mill buildings on Nuenna River west of Freshford. Complete with kiln, high breastshot waterwheel, lineshaft transmission gearing and 5 sets of millstones.

107 John's Bridge, John's St. Lower, Kilkenny (19)

Erected over the Nore by Kilkenny Corporation in 1910, it is of arched reinforced concrete. At 140ft (43m), it was then the longest single span of its type in the British Isles. Pavements are cantilevered on either side, with 6 lamp standards on the concrete balustrades; a plaque on the upstream right bank commemorates its opening.

108 Green's Bridge, Kilkenny (19)

Designed by George Smith and erected in 1764, 5 eliptical arches span the River Nore, with a number of smaller floodwater/ millrace channels. The spandrels immediately above the angled cutwaters are elaborately ornamented with Palladian motifs, and the voussoirs are highlighted in dressed stone, with decorative string course above. Unfortunately the stone parapet survives only on the downstream side, the upstream section having been removed to accommodate a cantilevered concrete footpath with metal handrail. It overlooks several ruinous mills (121, 349) immediately downstream.

172 Grain mill, Mill Island (26)

Substantial partly-shingled 6-storey mill on King's River, east of Callan. Complete with kiln, undershot waterwheel, transmission great spurwheel gearing, and four sets of millstones. An electrically-powered hammer mill still operates occasionally to produce animal feed.

187 Mosse's mill, Killinny (27)

Also known as Hutchinson's and Boland's Mill, it is Co. Kilkenny's only fully functioning traditional flourmill, being operated by William Mosse trading under the name of Kells Wholemeal Ltd. The present 5-storey mill occupies a 12th century site on the King's River west of Kells. It is complete with kiln, undershot 18ft diameter waterwheel, great spurwheel transmission gearing, and 6 sets of millstones; the mill owner's house stands nearby.

211 Grenan grain mill, Grenan (28)

On the southern outskirts of Thomastown, on the left bank of the Nore. A massive
virtually-intact 5-storey mill with kiln, two undershot waterwheels and great
spurwheel gearing; two sets of millstones remain. The ground floor is now used
as a cafe and craft shop.

223 Graiguenamanagh Bridge, Graiguenamanagh (29)

Erected in 1764 across the River Barrow, this 7-span segmental arch humpbacked
bridge is of high landscape value. The spandrels above its angled cutwaters are
decorated with rectilinear and round Palladian motifs.

242 Inistioge Bridge, Inistioge (32)

A 10-span semi-circular arched bridge across the River Nore at the east side of
Inistioge. Eight arches are in normal use. Dressed voussoirs and string courses
run the length of the bridge; the downstream spandrels have double column
additions, topped with scroll motifs.

261 Grain mill, Kilmacoliver (34)

Traditional water-powered oatmeal mill, of rubble-stone construction, two
storeys in height, on the right bank of Lingaun River, north of Carrick-on-Suir.
Almost fully intact with kiln, high breastshot waterwheel, great spurwheel
gearing, and three sets of millstones.

353:2 Suir Railway Viaduct (46)

Nine-span bridge, 1200ft (367m) in length, carrying the former Mallow - Rosslare
line over the River Suir. Of Pratt truss construction by Sir William Arrol of
Glasgow, its spans are supported on twin cast-iron piers, the central span
lifting to allow boats to pass through. Of similar design to the Barrow viaduct
(354:1).

354:1 Barrow Railway Viaduct (44)

Fifteen-span bridge, 2130ft (650m) in length, carrying the Waterford - Rosslare
railway over the Barrow. This is the longest railway bridge in Ireland, and
third only to the Forth and Tay Bridges in Scotland. Completed in 1906, it is of
identical design to the Suir Viaduct (353:2), being of Pratt truss construction
by Sir William Arrol of Glasgow. Each of its 13 main spans are supported on twin
cast-iron piers, the 2 central spans being pivoted in the middle to allow boats
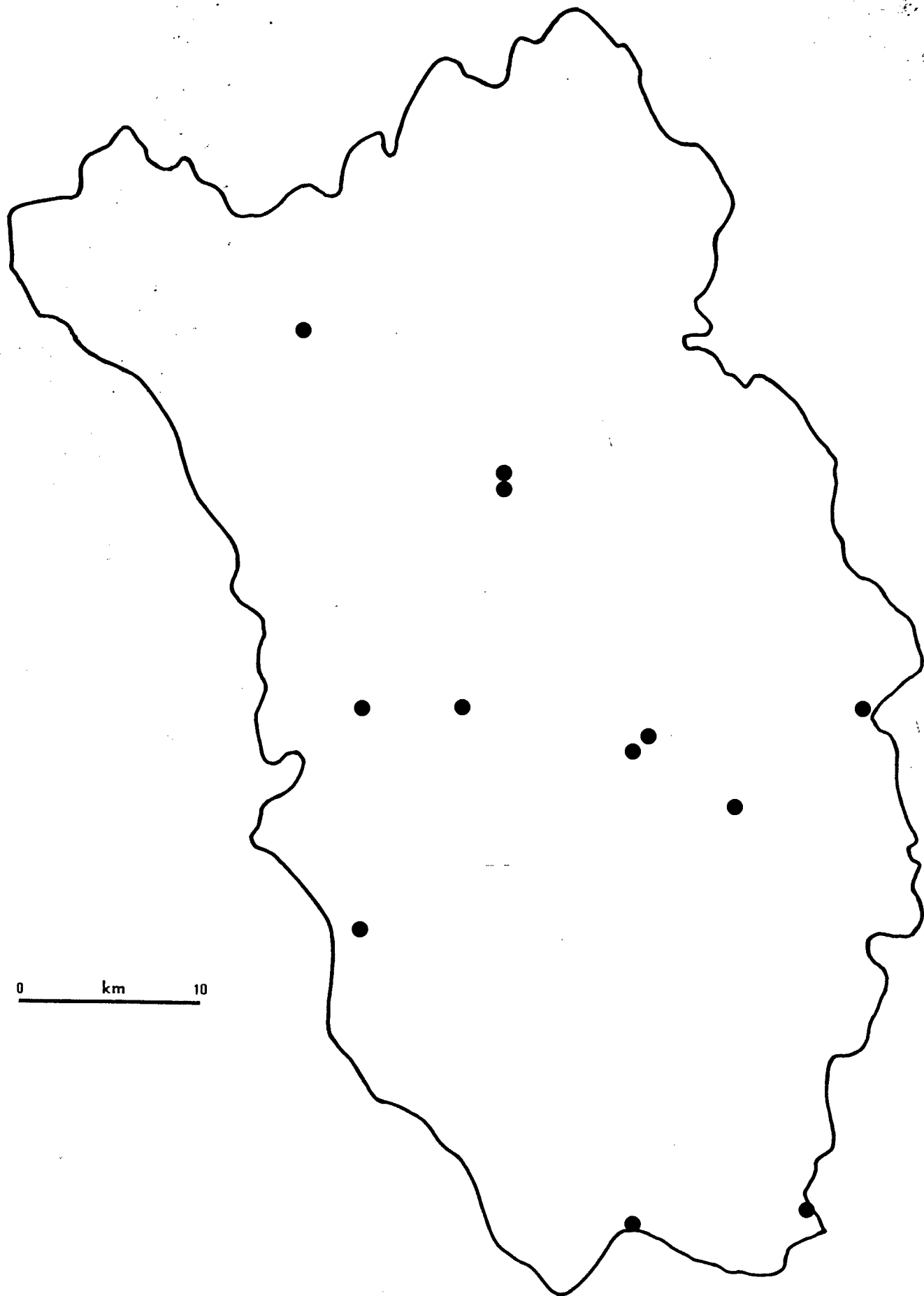to pass through.

Fig.43 Grade 1 Sites

A total of 17 grade 2 sites (representing 18 different industrial functions) are known (fig.44).

19 Bridge, Castlecomer (5)

Five-span segmental arches of varying size, and with angled cutwaters, carry the Athy road over the Deen River to the east of Castlecomer. The westernmost arch leads on to a headrace to nearby flour and sawmills (20). The spandrels have Palladian motifs with through string course; the arch keystones are highlighted on the dressed voussoirs.

41 Grain mill, Ballyhimmin (10)

A two-storey random-rubble bleach mill heavily refurbished as a grain mill, on the right bank of the Deen River, south of Castlecomer. A water turbine drove four sets of millstones, installed by MacAdam Brothers, Belfast, via great spurwheel gearing. Also generated electricity for nearby mill house.

67 Threecastles Bridge, Threecastles Demesne (14)

Seven segmental arches of different size, and with angled cutwaters, carry a minor road over the Nore. Four of the five larger arches are in normal use, the remaining two being smaller floodwater channels. The spandrels on either side of the main arch are recessed in Palladian style, whilst an inscribed parapet stone commemorates the bridge's erection in 1790, and personnel involved.

69 Tower (Jenkinstown) Bridge, Jenkinstown (14)

Four 'gothic' style arches (of which two are floodwater channels) carry a minor road over the Dinin River. The balustrade is particularly elaborate, with an external string course and cast-iron uprights supporting a worked stone capping. The upstream portion would appear, from soffit evidence, to have been a later widening. On the upstream balustrade is a stone noting (in Latin) the bridge's erection by Patrick Dowlye in 1647; this probably refers to the earlier downstream portion as it is clearly not in its original location.

136 Gore's Bridge, Goresbridge (21)

Nine arches of semi-ciruclar profile and varying size carry the Borris road over the Barrow on east side Goresbridge. A warehouse is located at the Co. Carlow end.

139 Grain mill/ Maltings, Duninga (21)

An extensive 6-storey complex with crenellated walls and towers on the Goresbridge - Paulstown road. Originally built as a flour mill, powered from the Barrow, it was later used by Minch Norton as a malt house. A massive kiln and turbine survive.

159 Bennett's Bridge, Bennettsbridge (24)

The Kilkenny - Thomastown road crosses the Nore on 6 semi-circular humpbacked arches of varying size. The keystones of the dressed voussoirs are highlighted.

167 Ballyteigelea Bridge, Milltown (25)

Five segmental arches of varying size, and with angled cutwaters, carry the Graiguenamanagh - Borris road over Barrow. Finished in dressed voussoirs and string coursing.

191 Mullin's Mill, Garrynamann Lower (27)

Three-storey random-rubble grain mill on left bank of King's River at Kells. Now used as a dwelling house, but apparently complete with machinery and external undershot waterwheel.

203 Merino Factory, Annamult (27)

Erected 1810-15 on the left bank of King's River near its confluence with the Nore. Its purpose was to create local employment in the spinning, weaving and dyeing of wool. This socially progressive undertaking functioned until 1822, being partly reused as a grain mill from the 1850s to 1870. Substantial remains survive around three sides of a courtyard; at the west side is a massive waterwheel pit.

205 Ballylinch Bridge, Ballylinch Demesne (28)

Twelve segmental arches of varying size span the Nore floodplain just west of Ballylinch Demesne; 5 arches span the river proper, the remainder serving as floodwater channels.

207 Estate bridge, Ballylinch Demesne (28)

An well proportioned multi-arched bridge providing access to Mount Juliet across the Nore. It comprises 7 equi-sized eliptical arches with angled cutwaters, with two additional floodwater channels on the eastern approach; a wooden fence acts as a parapet.

213 Thomastown Bridge, Thomastown (28)

The Thomastown - Waterford road is carried over the River Nore on 6 segmental spans of varying size. Apparently erected c.1790, although an inscribed stone plaque is now indecipherable. The bridge has recently been 'improved' with the addition of a cantilevered concrete footpath on the downstream side, and replacement of the stone parapet with metal railings.

246 Brownsharn (Kilmacshane) Bridge, Kilmacshane (32)

Carrying the main Thomastown - Inistioge road over the Nore, this bridge comprises three eliptical spans over the river proper, and a further 5 large floodwater channels. The spandrels of the three main arches have circular motifs thereon.

247 Ballyduff Mill, Ballyduff (32)

A three-storey grain mill on the Arrigle River, near its confluence with the Nore, south-east of Thomastown. Fully restored as used as a craft workshop, it still retains its pitchback waterwheel, great spurwheel gearing and 4 sets of millstones.

272   Mount Garrett Bridge, Tinnaslatty (37)

With a span of 210ft (64m) over the Barrow, this steel and concrete bridge replaced a wooden truss bridge in 1930. From each bank two arched-concrete decks, supported on circular piers, connect with a metal rolling-lift drawbridge. The footpath is cantilevered from the side; the balustrade is also of cast-concrete.

300:1   Railway viaduct, Garranbehy Big (37)

A now-defunct 580 ft (177m) long bridge carrying the New Ross - Palace East line over the Barrow to the north of New Ross. Erected in 1887 by Dixon & Thorne, its 6 metal spans are supported on twin cast-iron piers, the two central spans pivoting in the middle to allow shipping to pass through.
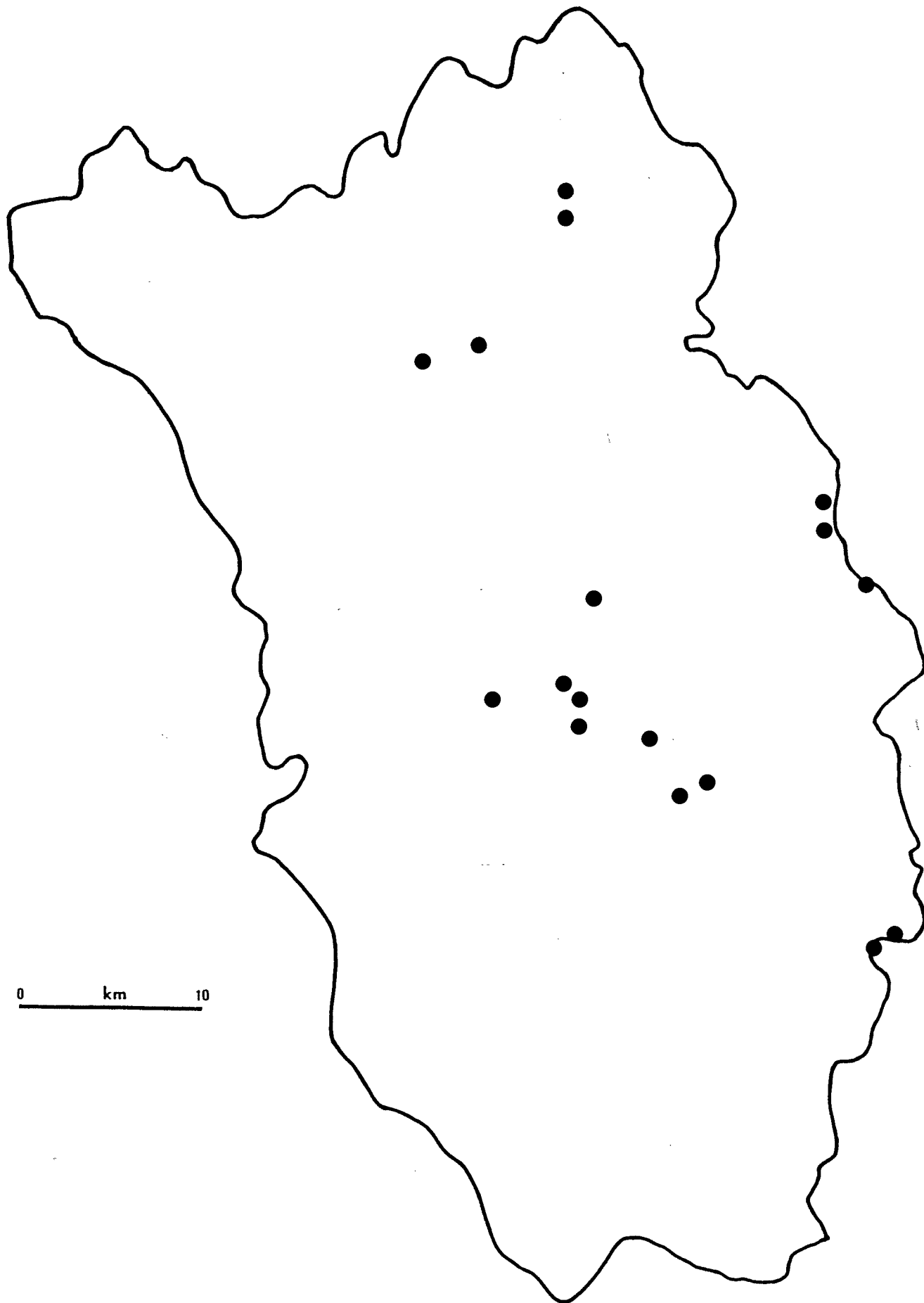
Fig.44   Grade 2 Sites

A total of 48 grade 3 sites are recorded in KIAS (fig.45), encompassing the
remains of 51 different industrial activities.

14 Spa well, Spahill (8)

Covered well with inscribed plaque, adjacent to ruinous spa-house.

34 Lismaine Bridge, Lismaine (9)

Five segmental arches, of variable size and with angled cutwaters, carry minor
road over Nore.

38 Ballyragget Bridge, Ballyragget (10)

Formerly carrying the main road over the Nore to the west of Ballyragget, the
bridge comprises 6 semi-circular arches, with angled cutwaters; two floodwater
channels and a millrace are also accommodated. Now superceeded on the upstream
side by a reinforced concrete bridge.

40 Dysart Bridge, Dysart Glebe (10)

An attractive 5-span segmental arch bridge with angled cutwaters which formerly
carried the main Kilkenny - Athy road over the Dinin River. Now superceeded by a
modern concrete bridge immediately downstream.

59 Cascade Mill, Freshford Lots (13)

Immediately west of Freshford on the Nuenna River, a rubble-stone building with
shuttered concrete extension, all now fire gutted, but with most machinery
intact: overshot waterwheel (dated 1869), great spurwheel gearing and four sets
of stones.

68 Dinin Bridge, Ardaloo (14)

Triple eliptically arched hump-backed bridge of 1792 carrying the Kilkenny -
Ballyragget road over the Dinin River.

72 New Dinin (Gragara) Bridge, Gragara (14)

Substantial double segmental span carrying minor road over Dinin River. Designer
(S. Carter), contractor (J. Wright and T. Meehan) and erection date (1840) noted
on parapet plaques. Ornamented with a decorative string course and dressed
voussoirs.

81 Grain mill, Kilmanagh (18)

Ruinous two-storey mill complete with breastshot waterwheel, great spurwheel
gearing and three sets of millstones; unusually, much of the wheel and gearing
is of wood.

82 Kilmanagh Creamery, Knockeenbaun (18)

Attractive complex of one- and two-storey rubble-stone buildings.

100 Nore Canal, Dukesmeadows (19)

Water-filled section of canal between River Nore and Dukesmeadows mill (397).

100:1 Scot's lock, Dukesmeadows (19)

Ashlar limestone walls at former lock gates.

100:3 Crow's Well lock, Archersgrove (19)

Ashlar limestone walls at former lock gates.

100:9 Canal lock, Kilcross Td., Inistioge (32)

Ashlar limestone walls at former lock gates.

101:2 Inch Sawmill, Purcellsinch (19)

Operational sawmill on left bank of Nore south-east of Kilkenny. An undershot
waterwheel powers a circular saw via bevel and belt gearing.

104 Ormonde Woollen Mills, Dukesmeadows, Kilkenny (19)

Extensive remains of former woollen mills on right bank of the Nore below
Kilkenny Castle. Operational until 1969, traces of machinery, gearing, four
undershot waterwheels and weir still survive.

124:1 Marble sawmill, Highrath (20)

Derelict two-storey mill on left bank of Nore. Undershot waterwheel pit
infilled; no machinery survives.

124:2 Grain mill/ Marble sawmill, Highrath (20)

Massive 5-storey flour mill on left bank of Nore just below Millmount House.
Later reutilized as a marble sawmill. No machinery survives, although the under-
shot waterwheel pit is clearly visible.

124:3 Millmount House, Highrath (20)

Three-storey mill owner's house dating to 1770s.

124:4:1 Grain mill/ Marble sawmill, Maddockstown (20)

Massive former flour mill on left bank of Nore, later reused as a marble saw-
mill. Now a roofless shell with no machinery, the undershot waterwheel pit is
clearly visible.

124:4:2 Grain mill, Maddockstown (20)

Four-storey flour mill on left bank of Nore. Now derelict, undershot waterwheel
pit remains, along with a millstone.

124:5 Limestone quarry, Maddockstown (20)

A 50ft high quarry face several hundred yards long on the left bank of the Nore,
from which William Colles extracted 'Black Marble'.

161 Grain mill, Bennettsbridge (24)

Fire-gutted shell of 6-storey flour mill on right bank of Nore below Bennett's
Bridge. Little machinery now survives, although a Francis turbine continues to
generate electricity for the complex, part of which is used as a pottery.

173:1, 173:2 Grain and Saw mills, Minnauns (26)

Derelict three-storey mill on King's River immediately east of Callan. Origin-
ally a grain mill, an undershot waterwheel drove three sets of millstones;
sawmilling machinery was added at a later date, also driven off the same wheel
(with a back-up diesel engine).

183 Newtown Bridge, Newtown (27)

Causeway carrying minor road across the floodplain of the King's River, west of
Kells. Nine spans in all, three (of semi-circular shape with angled cutwaters)
being in normal use at the south end.

190 Kells Bridge, Kells (27)

Carrying the Kilkenny road over the King's River to the north of the village,
this bridge is of great technical interest, the 8 semi-circular arches of the
original bridge having been widened on the downstream site with a 5-span add-
ition (3 eliptical, 2 semi-circular arches).

193 Grain mill, Kellsborough (27)

Extensive 5-storey range on left bank of King's River to east of Kells, encom-
passing two flour mills, each driven off an undershot waterwheel. Traces of one
wheel and some transmission gearing survive.

201 Ennisnag Bridge, Ennisnag (27)

A fine segmental arched bridge carrying the Kilkenny - Knocktopher road over the
King's River just north of Stonyford village. Three arches are in normal use,
with a fourth floodwater channel on the south approach. The spandrels are orn-
amented with raised circular and rectangular designs.

209 Grain mill, Jerpoint Abbey (28)

Ruinous four-storey mill on right bank of the Nore, south-west of Thomastown.
Most of the breastshot waterwheel survives along with great spurwheel gearing to
four sets of millstones.

212 Island Mill, Grenan (28)

Massive 6-storey flour mill on left bank of Nore south-west of Thomastown.
Although the building is now used as an art college, the undershot waterwheel
and much of the great spurwheel gearing survives.

226 Windgap Creamery, Coolehill Upper (30)

Imposing roadside array one/two-storey buildings showing gable design typical of
creameries.

254 Threshing mill/ Animal feed mill, Ballygrub New (33)

Former two-storey water-powered threshing mill refurbished with a turnip shred-
der and potato masher. Millpond, high breastshot waterwheel and some belt-driven
machinery still survive.

262 Ormonde Slate Quarries, Inchanalogh (34)

Extensive abandoned quarry workings and spoil heaps on left bank of Lingaun
River north of Carrick-on-Suir.

280:17 Railway Bridge, Granny (43)

Lattice-girder bridge carrying Limerick - Waterford line over Black Water. Its
three spans are supported on stone abutments and twin pairs of cast-iron piers
on either bank.

285 Grain mill, Deer Park (40)

Four storey mill on left bank of Black Water below Mullinavat. The great spur-
wheel gearing and three sets of millstones survive, along with traces of the
breastshot waterwheel.

296:2 Toll house, Fiddown (42)

Attractive one-storey building on north side of Fiddown Bridge, linked to former
wooden-truss bridge across Suir.

311 Kilmacow Bridge, Kilmacow (43)

Carrying a minor road over the Black Water, the bridge comprises 6 equi-sized
'gothic' arches (5 of which are in normal use); a millrace is also accommodated
on its western approach.

313 Grain mill, Greenville (43)

Four storey mill with adjoining mill house, on left bank of Black Water below
Kilmacow. Undershot waterwheel, great spurwheel gearing and millstones survive.

321 Dangan Bridge, Dangan (43)

Six equi-sized semi-circular spans, with angled cutwaters, carry a minor road
over Black Water north of Kilmacow.

352 Deer Park Colliery, Deer Park (5)

Extensive spoil heaps and concrete buildings of former colliery to north of Castlecomer.

356 Grain mill, Ennisnag (27)

Massive 7-storey derelict flour mill, also known as Rockview and O'Briens Mills, on left bank of King's River east of Kells. Most of the great spurwheel gearing, and four sets of millstones, survive. Its owners, the Kings' River Community, hope to restore it as a heritage centre and install a hyrdo-electric turbine.

357 Bridge, Innisnag (27)

Six segmental arches of varying size, and with angled cutwaters, carry a minor road across the King's River to east of Kells. Of particular interest is the V-shaped recess in the upstream parapet wall, said to be where the toll collector stood; the only such example in the county.

360 Bridge, Callan (26)

A substantial triple span segmental arch bridge across the King's River at Callan village. An inscribed stone on the upstream parapet records its erection in 1818 by Kilkenny Council, and rebuilding of the central arch in 1925.

362 Smithy, Graigue (22).

Recently abandoned roadside smithy, still retaining its open hearth, pear-shaped bellows, anvil, wheel-tyring (on which a heated metal hoop was placed around the cartwheel), metal hoop bending apparatus, and assorted tools of the trade; gate to rear.

366:1, 366:2 Dovecots, Belline (39)

Two massive circular towers, the upper portions of which were given over to nesting birds.

401 Callan Creamery, Callan South (26)

Imposing 4-gable roadside complex with ancillary rear buildings and chimney, still in use by Callan Co-Op.

408 Wind pump, Annamult (24)

Wind-powered Climax water pump, complete with mult-bladed sails, lattice tower and windvane. Supplied drinking water to animals.
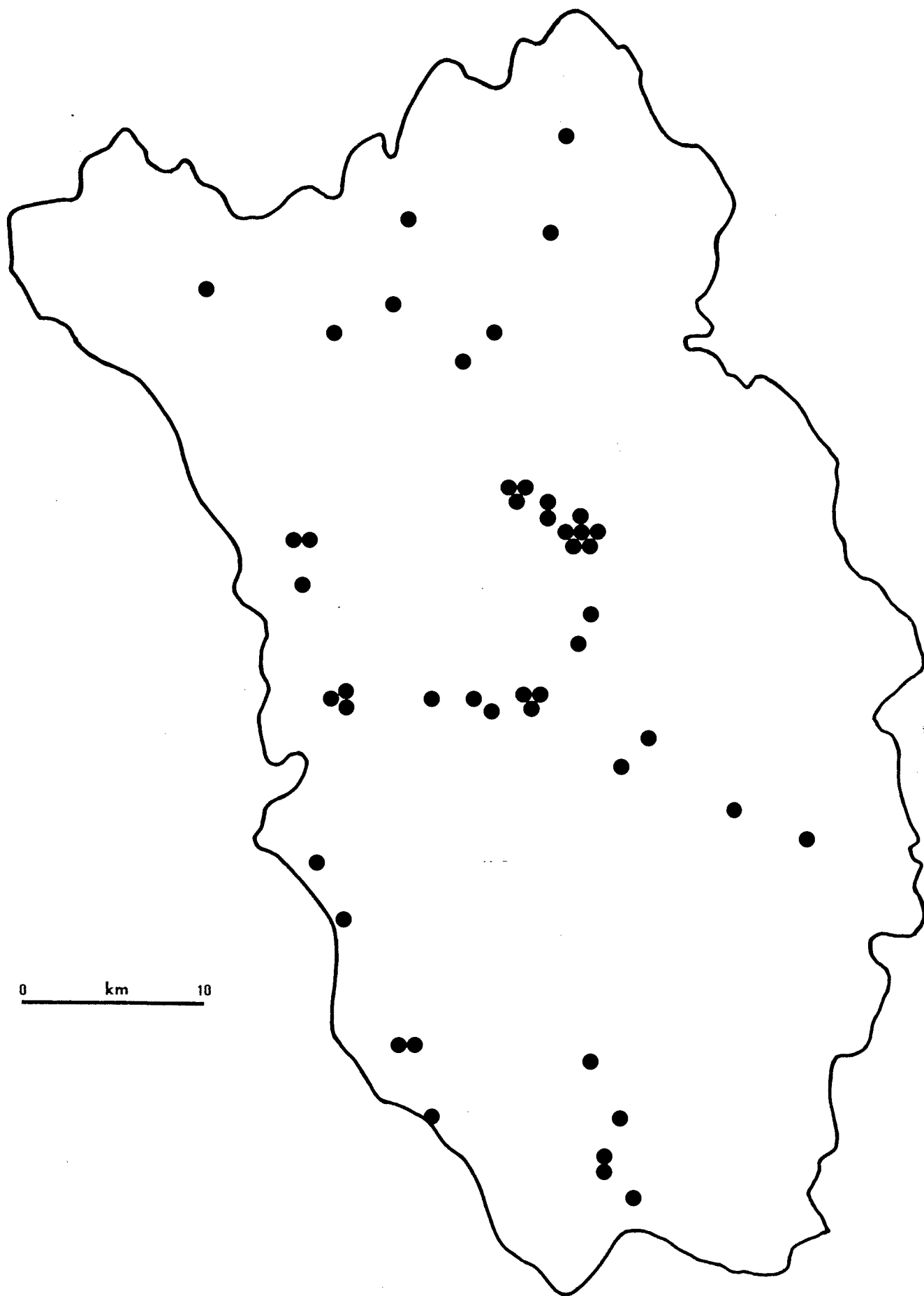
Fig.45 Grade 3 Sites

104

A total of 82 sites (fig.46), encompassing 84 different functions, are of special local interest.

10:1 Coal pit, Clogh (2)

Water-filled pit and adjoining spoil heap on north side of village.

12 Bridge, Chatsworth (2)

Four segmental spans carry Castlecomer - Timahoe road over Clogh River.

18 New Bridge, Ballyhimmin Td. (5)

Double segmental arch bridge with angled cutwaters carrys access road to Castlecomer Demesne over Dinin River.

21 Bridge, Castlecomer (5)

Single segmental arch with decorative string course and voussoirs carrys Castlecomer - Clogh road over tributary of Dinan River.

22 Laundry, Smithstown (5)

Ornate one-storey dwelling house, formerly a laundry for Castlecomer Estate.

28 Massford Bridge, Moneyroe (6)

Triple segmental arch bridge with angled cutwaters over Dinin River.

47 Threshing mill, Coolcullen (11)

Now-gutted two-storey threshing mill, formerly linked to Millfall grain mill.

48 Black Bridge, Coan East (11)

Substantial single semi-circular arch bridge with decorative string course and voussoirs spanning Dinin River.

50:8 Railway bridge, Dunmore (14)

Single-span lattice girder bridge on masonry abutments over Dinin River; of double-track width.

50:15:1 Railway station, Kilkenny (19)

Extensive complex of terminus building, platforms, sidings, covered platform, goods sheds, signal box, footbridge and water tower.

50:16:2 Railway bridge, Kilkenny (19)

7-span masonry arch bridge to north of Kilkenny railway terminus; one arch in use over road, the remainder being used as garages, stores etc.

50:20:1 Railway bridge, Middleknock (19)

Skew arch masonry rail-over-river bridge with brick soffit, highlighted voussoirs and string course, immediately east of rail-over-road bridge of similar design (50:20:2).

50:20:2 Railway bridge, Middleknock (19)

Skew arch masonry rail-over-road bridge with brick soffit, highlighted voussoirs and string course, immediately west of rail-over-river bridge of similar design (50:20:1).

50:30 Railway bridge, Rathduff (28)

Eliptical single masonry span carrying Bennettsbridge - Thomastown road at right angles over railway. Extensive approach ramps on either side.

50:34 Railway station, Thomastown (28)

Still operational two-storey ashlar limestone building, in proximity to goods shed and signal box.

50:38 Railway station, Ballyhale (32)

Single-storey ashlar limestone building, now a dwelling; a rubble-stone goods shed stands nearby.

50:40 Railway bridge, Killeen (36)

High single eliptical masonry arch span carrying railway over minor road. Just north of 50:41.

50:41 Railway bridge, Killeen (36)

High single semi-circular masonry arch span carrying railway over stream. Just south of 50:40.

50:45 Railway station, Mullinavat (40)

Double-bay single-storey ashlar limestone building, now a dwelling; with up- and down-line platforms, signal box and level crossing.

50:50 Railway bridge over mineral railway, Dunkitt (43)

Single semi-circular masonry span carrying railway over former limestone railway line. Dressed voussoirs and string courses.

51 Uskerty Bridge, Uskerty (11)

High single semi-circular arch carrys Castlecomer - Paulstown road over Dinin River.

61 Old Bridge, Mill St., Freshford (13)

Three variable-sized eliptical arches with angled cutwaters carry Freshford - Johnstown road over Nuenna River. '1788' date inscribed on keystone of upstream arch.

71 Threshing mill, Jenkinstown (14)

Circular 2-storey random-rubble building, probably a horse-walk connected to an early 19th century threshing mill.

80:4:1 Railway station, Gowran (20)

Single-storey brick dwelling, with platform and limestone goods shed opposite.

83 Creamery, Ballyfrunk (18)

Small one-storey building with ridge-top ventillation and covered loading bay; retains disused plant.

88 Quay, Thomastown (28)

Disused remains of river frontage on left bank of Nore at east end of town.

96:1 Woollen mills, Bleach Green, Kilkenny (19)

Extensive remains dominated by saw-tooth weaving sheds, and chimney (possibly connected with earlier bleach works) on left bank of Nore. Established in 1906, and opeartional until early '60s. (A turbine has recently been installed to generate electricity, 96:2).

99 Fennessy's Mill, Archersgrove (19)

Shell of massive 5-storey flour mill on Nore south of Kilkenny, formerly with two undershot waterwheels.

100:10 The Lock Quay, Inistioge (32)

Frontage along left bank of Nore just south of Inistioge, at confluence with Nore Canal with which it was probably associated. Still used recreationally.

103 Sullivan's Brewery, James's St., Kilkenny (19)

Substantial remains of disused maltings, kiln and brew house.

112 Gas Works, John's Green, Kilkenny (19)

Remains of buildings linked to former coal-gas works.

121 Woollen mill/ Grain mill, Green's Bridge, Kilkenny (19)

Ruins of former water-powered woollen mill, later converted to corn milling, on left bank of Nore below Green's Bridge. Shares V-weir with Walsh's mill on opposite bank (349).

130:1 Grain mill, Gowran Demesne (20)

Known as Dalton's mill, most has now been demolished; great spurwheel transmission gearing and millstones survive elsewhere on site.

130:2 Saw mill, Gowran Demesne (20)

Now abandoned rubble-stone building in which only the Francis water turbine survives in situ. The circular saw bench is still used elsewhere on site, powered off an electric motor.

155 Threshing mill, Annamult (23)

Long 2-storey random-rubble building of early 19th century date, probably horse-powered; no machinery.

160 Grain mill/ Seed dressing mill, Bennettsbridge (24)

Large four-storey former grain mill, later converted to seed dressing, on left bank of Nore below Bennett's Bridge. Only the latter's machinery survives, powered from electricity generated by a Francis turbine. The building is being re-converted to flour milling by William Moss.

176 Knitwear factory, Tinnamoona, Callan (26)

Three impressive two-storey ranges of buildings, of late 19th/ early 20th century date.

200 Grain mill, Kellsgrange (27)

Ruinous 5-storey flour mill, also known as Bradley's mill, on left bank of King's River east of Kells. Formerly with two undershot waterwheels, but now gutted of all machinery.

210 Arland's Inch mill, Burrellspark (28)

Small three-storey cornmill, now refurbished as a house/ offices, on left bank of Nore above Thomastown

227 Threshing mill, Coolaghmore (30)

Two-storey random-rubble building of early 19th century date, probably horse-powered; no machinery.

245 Ballyduff Bridge, Ballyduff (32)

Four segmental spans with angled cutwaters over Arrigle River.

251:1 Clodiagh Mill, Coolnamuck (33)

Ruinous 5-storey flour mill, without machinery on Clodiagh River.

253 Clodiagh Bridge, Cullaun (33)

Substantial semi-circular arch with dressed voussoirs carries Thomastown - New Ross road over Clodiagh River.

258 Annsborough Mill, Castletown (34)

L-shaped shell of four-storey flour mill on left bank of Lingaun River; traces of waterwheel and millstones survive.

276 Grain mill, Glencloghlea (37)

Ruinous four-storey mill still retaining great spurwheel gearing to two sets of millstones.

280:2 Railway station, Fiddown (42)

Large two-storey house (probably incorporating station master's house), with platform, canopied goods shed, signal box and level crossing.

289 Mullinavat Bridge, Mullinavat (40)

Multi-arched bridge carrying minor road across Black Water, just west of Mullinavat village. The bridge comprises 5 semi-circular arches of varying size, with angled cutwaters (two of which are in normal use), plus a floodwater channel.

300:5 Railway bridge, Ballyvereen (41)

Girder bridge carrying Waterford - New Ross railway over stream.

300:7 Railway bridge, Rathinure (41)

Skew-arch bridge carrying Waterford - New Ross railway over road.

304:1 Grain mill, Clogga (42)

Disused two-storey grain mill with intact overshot waterwheel. Machinery may still survive internally. Adjoins former sawmill (304:2).

308:2 Water tower, Strangsmill (43)

Large reinforced-concrete water reservoir atop a 5-storey former grain mill.

316 Limestone quarry, Granny (43)

Extensive remains of abandoned deep workings.

317:1 Grain mill, Greenville (43)

Five-storey flour mill on left bank of Black Water near Kilmacow. Francis turbine survives along with traces of machinery. Impressive cast-iron aquaduct dated 1885 (by R. Graham of Waterford) conveys headwater to mill (the wheelpit now houses a modern electricity-generating turbine, 371:2).

322 Grain mill, Dangan (43)

Three-storey mill on Black Water with traces of great spurwheel gearing.

325:1 Limestone quarry, Smartcastle West (43)

Extensive high limestone faces survive on either side of causeway road; also traces of mineral railway (325:2).

325:2 Mineral railway, Smartcastle West (43)

Abandoned railway serving limestone quarry (325:1); track still partly visible, with under-road tunnel.

327:1 Limestone quarry, Dunkitt (43)

Extensive workings; also traces of mineral railway (327:2), and associated lime kiln (327:3).

327:2 Mineral railway, Dunkitt (43)

Abandoned railway serving limestone quarry (327:1); track still partly visible, along with tunnel under railway (50:50).

340 Grain mill, Gorteens (47)

Ruinous shell of 5-storey flour mill, formerly with two waterwheels, but now devoid of machinery.

342 Well, Lacken (19)

Covered well built into hillside on south side of Kilkenny, 1831 inscription.

343 Brick works, Glenmore (41)

Low-lying marshy ground on which are a number of overgrown worked-out clay pits.

344 Blackfriar's Bridge, Abbey St., Kilkenny (19)

Three variable-sized segmental arches with angled cutwaters carry road over Bregagh River, a tributary of the Nore.

349 Walsh's Woollen Mill, Green St., Kilkenny (19)

Ruins of former water-powered woollen mill on right bank of Nore below Green's Bridge. Shares V-weir with Green's Bridge mill on opposite bank (121).

351 Water pump house, Maudlinsland (19)

Ornate stone building with brick extension, formerly containing water pump supplying nearby hospital.

354:2 Snow Hill railway tunnel, Ballydowney Upper (44)

Immediately west of the Barrow viaduct is the 217yd (198m) Snow Hill railway tunnel, still in use on the Waterford - Rosslare line.

361 Bridge, Tobernapeastia (13)

Highly skewed single semi-circular span carries Freshford - Johnstown road over Tifeaghna River on western outskirts of Freshford; attractive stream cascade nearby.

363 Dovecot, Wellbrook Demesne, Clashacrow (13)

Circular rubble stone dovecot with stone nesting boxes.

364 Dovecot, Pootlerath (22)

Circular rubble stone dovecot with stone nesting boxes.

365 Dovecot, Grange (9)

Octagonal coursed-stone construct, with brick quoins and slate roof.

369 Loon Bridge, Loan (6)

Semi-circular single span with decorative string course carries minor road over tributary of Dinin River.

376 Tannery, Thomastown (28)

Ruinous remains of former tannery; still retains tanning pits and brick chimney.

386 Creamery, Graiguenamanagh (29)

Compact range of two-storey buildings with covered loading bays and rear brick chimney; still in use by Avonmore Creameries.

387 Warehouse, Graiguenamanagh (29)

Substantial four-storey warehouse fronting Barrow just upstream of bridge.

388 Quay, Graiguenamanagh (29)

Extensive frontage on right bank of Barrow, with associated warehousing (387).

391 Footbridge, Graiguenamanagh (29)

Simple 5-span stone footbridge over Douske River.

395 Bridge, Granny (43)

Single segmental arch formerly carried Thomastown - Waterford road over Black Water. The extreme shallowness of the arch necessitated later reinforcement to cope with the increasing traffic. Now superceeded by a modern concrete bridge immediately downstream.

400 Water pump, Baunta Commons (26)

Cast-iron manually-operated roadside 'village' pump by Kelly & Sons, Kilkenny.

403 Culm Stone, Uskerty (11)

Roadside remains of edge stone used to pulverise coal.

405 Bridge, Kildalton (39)

Two semi-circular arches with dressed voussoirs carry Piltown - Fiddown road over tributary of Piltown River.

407 Bridge, Ballyclovan Meadows (22)

Four arches (three segmental, one eliptical) with angled cutwaters carry Bennettsbridge - Ballingarry road over tributary of Munster River.

413 Black Bridge, Black Mills, Kilkenny (19)

Triple segmental span with angled cutwaters over Bregagh River, a tributary of the Nore; now superceeded.

420 Dry Dock, Graiguenamanagh (29)

Silted-up remains of former dry dock on right bank of Barrow, the sidewalls of which are still visible.
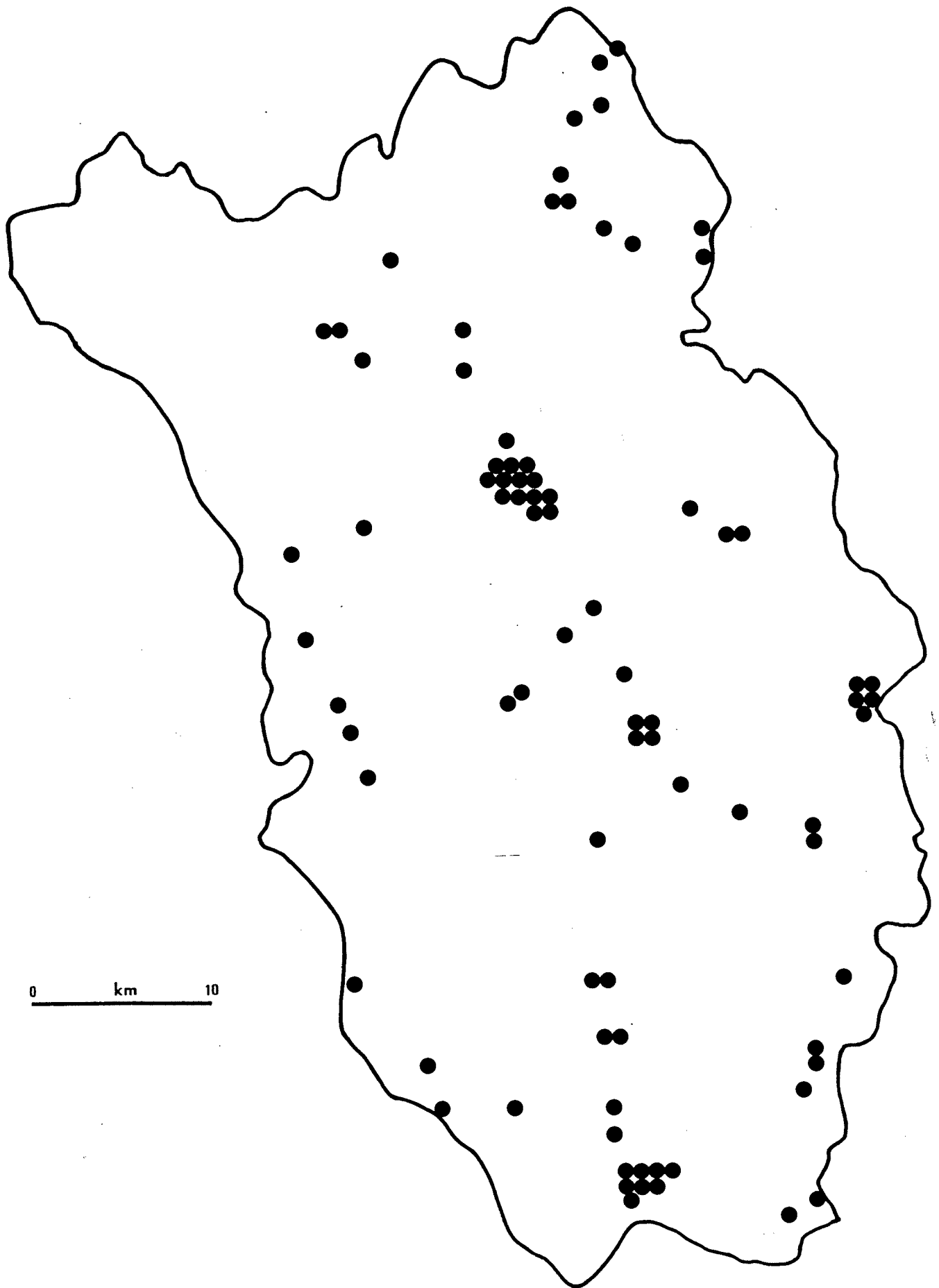
Fig.46 Grade 4 Sites

A total of 16 still-operational sites (fig.47) are of note.

27:4:2 Coal mine, Aghamucky (6)

Recently opened anthracite mine operated on a small scale by J. & L. Power; also coal grading and bagging plant.

96:2 Hydro-electricity station, Bleach Green (19)

Recently installed electricity-generating water turbine in derelict Kilkenny woollen mills on left bank of River Nore.

115 Smithwick's Brewery, Horse Barrack Lane, Kilkenny (19)

Extensive modern premises; portions of the earlier brewery survive.

119 Shoe factory, Wolf Tone St., Kilkenny (19)

A large 8-bay saw-tooth roofed complex of 1930s' date; still in operation by Padmore Barnes International.

138 Red Mills, Grange Lower (21)

Former water-powered flour mill incorporated into modern computer-automated animal feed mill operated by William Connolly & Sons.

288 Grain Mill, Mullinavat (40)

Former water-powered grain mill on Black Water now housing electrically-powered roller and plate mills for animal feed.

296:1 Fiddown Bridge, Fiddown (42)

1983

A central island connects two multi-span reinforced-concrete bridges across the River Suir. A (1973) replacement of a mid-19th century wooden truss bridge. Interesting toll house at north end (296:2).

315:2 Hydro-electricity station, Narabaun North (43)

Recently installed electricity-generating water turbine at Kilmacow, in former grain mill on right bank of Black Water.

317:2 Hydro-electricity station, Greenville (43)

Recently installed electricity-generating water turbine in former grain mill on left bank of Black Water.

318 Irish Clay Brickworks, Castlecomer (5)

Brickworks founded in 1968; extensive clay extraction north of roadside factory.

333 Electricity sub-station, Newrath (46)

Operational sub-station on national electricity grid.

334 Meat factory, Christendom (334)

Extensive complex of concrete buildings, still operational.

372 Ossory Bridge, Archersgrove (19)

A modern reinforced-concrete tripe-span bridge carries the southern Kilkenny Bypass high over the River Nore.

379 Print works, High St., Kilkenny (19)

Newspaper offices of 'Kilkenny People', established 1892.

389 Cushendale Woollen Mills, Graiguenamanagh (29)

Former grain mill converted to small-scale spinning and weaving of wool.

396 Hydro-electricity station, Kilmacow (43)

Recently built electricity generating breastshot waterwheel across the Black Water, just south of Kilmacow.
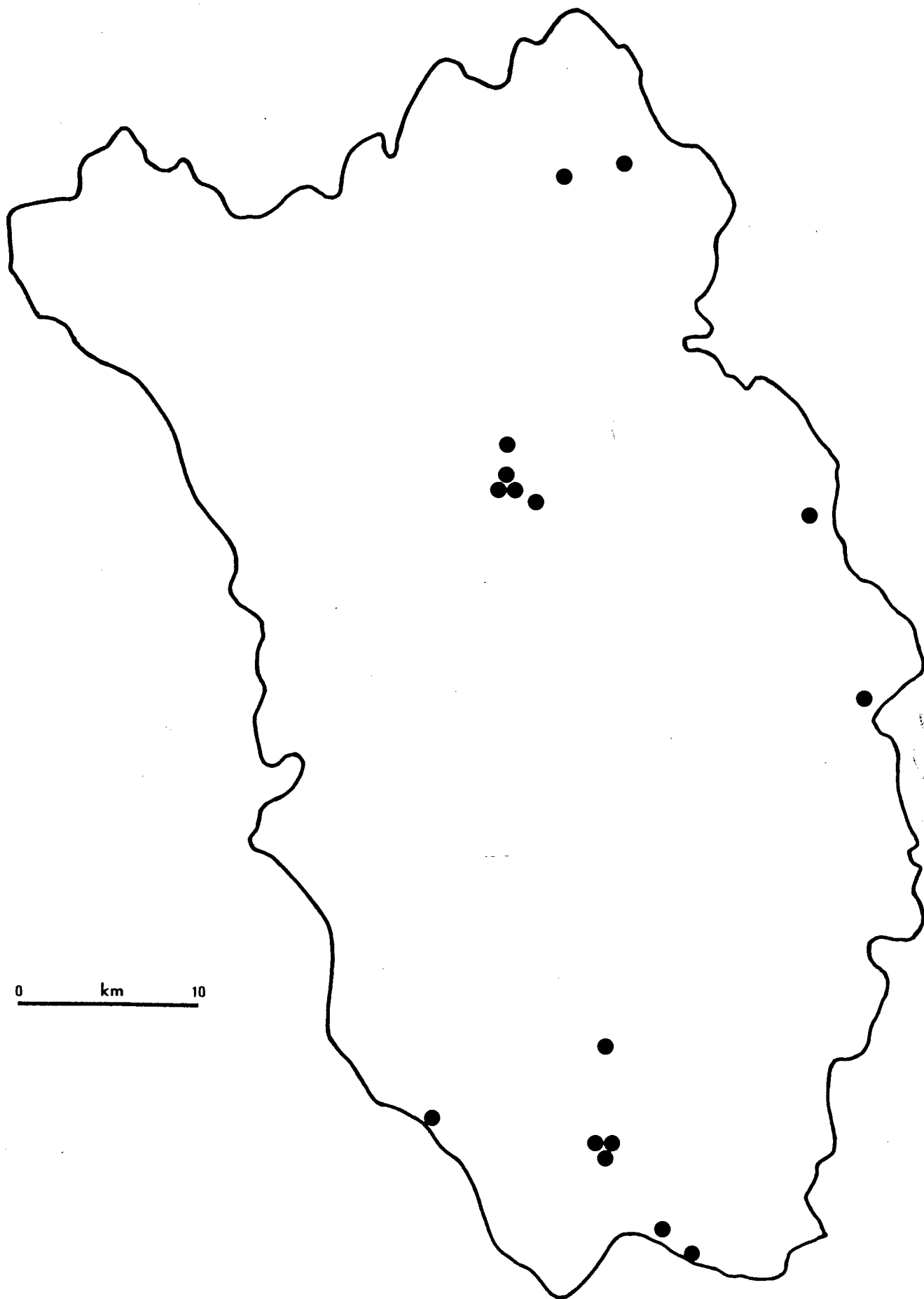
Fig.47 Grade * Sites

Although the term 'heritage' has been somewhat overused of late, it nevertheless highlights a growing appreciation of the built environment, both in town and country: shop fronts, for example, are being refurbished in original styles, and grand houses opened to the public. In contrast to this growing appreciation of architecture, however, the pursuit of industrial archaeology is still very much in its infancy in Ireland.

In Britain, industrial archaeology has been avidly pursued for many decades, its popularity being reflected in the existence of thousands of I.A. publications, numerous I.A. societies, university degree courses, and 'industrial heritage' parks notably Ironbridge and Beamish.

The North of Ireland, and Belfast in particular, is rightly perceived as the industrial 'heartland' of Ireland. Only recently, however, has there been a general awareness of its industrial legacy, with the publication of **The Industrial Archaeology of County Down** by Rodney Green in 1963, and **The Industrial Archaeology of Northern Ireland** by Alan McCutcheon in 1980.

The research and publication of both these seminal works was government financed, and the field of industrial archaeology continues to enjoy support from this quarter. Recently the Archaeological Survey branch of the Dept. Environment established an Industrial Archaeology Record, in essence a gazetteer of all past industrial sites in N. Ireland, based (as is KIAS) on O.S. maps, bibliographic references and fieldwork. The Dept. Environment also has powers to protect specific sites against demolition, unsympathetic restoration and redevelopment.

Dublin, Cork and Limerick excepted, most of the South of Ireland never experienced any significant industrialization. Nevertheless, it is not without I.A. interest as evidenced in KIAS. Furthermore, a growing involvement in this field appears discernible at local, county and national levels.

Of late a number of local groups have been set up with particular goals in mind, such as the restoration of Blennerville Windmill, Tralee, and Kilbeggan Distillery, Co. Westmeath. In the 1960s and '70s, many county councils commissioned An Foras Forbartha to carry out preliminary I.A. surveys. Cork County Council has just completed the refurbishment of Glanworth Woollen mills and is currently engaged in the restoration of Ballincollig Gunpowder Mills.

At a regional level, the Society for Industrial Archaeology in Munster has recently been established with a view to fostering an interest in I.A. in the south-west. Nationally, the Office of Public Works are currently sponsoring an industrial survey of Co. Cork. In 1986 the Council of the Royal Irish Academy set up a working party on industrial archaeology, and have commissioned an I.A. survey of Cork City, recently completed.

Clearly there is growing public awareness and appreciation of Ireland's industrial past. Undoubtedly there is scope for official involvement, at both county and national levels, in the management of this heritage resource.

The remainder of this final chapter deals with the conservation of I.A. sites in Co. Kilkenny, followed by an assessment of their tourist potential.

11.1 Planning Control

Although the neglect, demolition and piece-meal alteration of individual buildings may often pass unremarked, when the county's industrial building stock is viewed as a whole in the context of time, change, often for the worst, is clearly perceptible. Many large flour mills, some of the finest in Ireland, are now ruinous shells; historic bridges are sometimes disfigured by later additions and unsympathetic repair work. Such is the inevitable outcome of passive involvement in our industrial past.

If relics of this past are not to disappear altogether, it is evident that active involvement in the retention of selected sites is necessary, certainly in respect of grade 1 and 2 sites, and if possible also those of grade 3 merit.

The 1963 Local Government (Planning and Development) Act affords Councils the opportunity to formulate county development plans in which sites of particular historical and architectural merit may be highlighted with a view to their preservation; indeed this is one aim of KIAS.

The Act is especially pertinent when an owner applies to alter or demolish a building. In the case of former, the Act's powers extend to the control of any redesign, materials used in the proposed alterations, and to the erection of adjacent structures. To what extent an owner can be compelled to retain the site's original character is, however, debatable.

Whilst a council may refuse demolition consent, a determined owner can sidestep this, either by proceeding with demolition (and incuring a fine, probably nominal), or by wilfully neglecting the site, the passage of time ultimately ensuring that the structures be condemned as dangerous. Unlike England and Wales, councils do not have the power to compel owners to maintain buildings, nor can they instigate repairs and later recoup the cost from the owner; compulsory purchase by the council is, moreover, extremely unlikely.

The Act also enables councils to assist owners in the preservation of sites (para 14.2c). Quite what this might entail is somewhat vague but is unlikely to stretch to significant financial aid. In the current financial climate, few councillors are likely to support the public financing of private restoration schemes (particularly if job creation prospects are low). Such assistance is more likely to be in kind, for example road signing and tourist promotion leaflets.

A fundamental shortcoming of the Act is that it is not designed to give active encouragement to owners to retain important industrial sites. Moreover, the Act has limited powers to discourage unsympathetic redevelopment work.

These shortcomings can only be overcome with the provision, by Government, of some form of building protection order, for example along the lines of the Planning Act (Northern Ireland) 1972. This empowers the Dept. Environment to 'list' buildings of special architectural, historical and technical merit, and lays down strict guidelines as to what can and cannot be done to them. The Department can also grant-aid their refurbishment and maintenance; currently this is up to 20% on contract costs and 75% on architects' fees. Specialists are also on hand to give advice as how best to retain or modify a building, what are the appropriate materials to use, and suppliers thereof.

Kilkenny County Council can, of course, only operate within the parameters of the 1963 Act. Although this does provide limited powers of site retention, the Act's spirit can only be fully realised with the active co-operation of site owners.

In many instances this will entail an educative process in order that site owners might better appreciate the industrial stock in their charge. Such a

process might be instigated by the Council sponsoring a promotional leaflet extolling the merits of the county's industrial heritage and why it should be preserved. A parallel for such an initiative may be found a 20-page full-colour brochure entitled 'Understanding Historic Monuments on the Farm' (fig.48). Published jointly by the Archaeological Survey and Dept. Agriculture in 1988, the booklet is intended to give farmers an idea of the significance and date of the many historic monuments which are found in the Ulster countryside. The underlying motive is, of course, to arrest the often indiscriminant destruction by farmers of such sites.

11.2 Site Conservation and Development

Much of Co. Kilkenny's industrial stock is long since disused, and many sites are falling into decay. Some are long past redemption, although still of suff- icient merit to be recorded by interested parties (possibly members of the Kilkenny Archaeological Society). The disappearance of sites can only be arrested by conserving some of the more noteworthy sites, and/or finding some appropriate modern-day reuse.

Such conservation and redevelopment may take several forms:

- preservation of a site intact and unaltered;
- retention of a site's external character only;
- sympathetic alteration, possibly with additions.

Obviously each site will vary in its suitability for a particular treatment. Most bridges can be retained in their original condition, as they still serve the purpose for which they were originally intended. In some instances, eg. Bennett's Bridge (159), structural strengthening may be required. In other cases footpath extensions may be required, although it is arguable whether a separate footbridge should not have been provided at Green's Bridge (108).

Whilst the character of machinery-less structures can often be retained, the full preservation of those having a high machinery content, such as mills, is more problematical. Unfortunately milling in the traditional fashion would be profitable for only a few mills, Mosse's mill at Killenny (187) being a notable success. Several, such as Ballyduff (247) and Mullin's Mill, Kells (191) do retain machinery whilst being used as craft workshops and a dwelling respect- ively; their internal character is, however, compromised. Every effort should therefore be made to preserve as original at least one traditional oatmeal mill, specifically that at Kilmacoliver (261).

The huge flour mills, such as those at Kilrush (57) and Mill Island (172), are obviously more problematic in terms of restoration and running costs. Some reused is inevitable, good examples being found at Grenan mill (211), part of which is a craft shop and cafe; and Island Mill (212), now an art-and-design college. Warehousing and light engineering are other obvious reuses.


11.3 Tourist Potential

Whilst the tourist potential of archaeological sites and stately houses is well attested, the value of industrial sites in this respect is perhaps not so evident, particularly as so few have been promoted as tourist attractions in the South. In no small part is this due to the under-appreciation by locals of their locality, the potential of which is often all too evident to outsiders. Despite this apathy, and given the high tourist profile of I.A. in Britain, it is only a matter of time before industrial sites are also viewed as worthwhile tourist attractions in Ireland.

INDUSTRIAL REMAINS

■ Rural industries have produced many features surviving in the countryside. There are lime-kilns, canals, the lines of old roads and railways and mills of many kinds. The Industrial Revolution was made possible by the widespread use of wind, water and steam power. Crops such as corn and flax were easily processed by these means, and many mills, small and large, were built throughout the countryside. These industrial processes meant that spades and other agricultural implements, once forged individually by the village blacksmith, could be made in large quantities. This created the means to transform the countryside into a major food-producing area for the rapidly expanding population. This situation was dramatically changed with the famine in 1846, when the population was virtually halved, and many of the deserted farmsteads and areas of spade-ridge cultivation still visible in the countryside are testimony to those hard times.

Cornmill at Ballymagart, Co. Down. (Copyright F. Hamond)
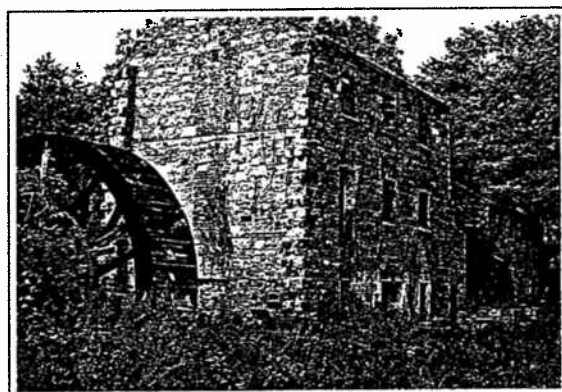
Spade ridges at Copney, Co. Tyrone.

Fig.48   Extract from 'Understanding Historic Monuments on the Farm'

The promotion of an increased range of tourist attractions are obvious to any Council. Visitors are liklely to stay longer (often overnight), eat out with greater frequency, and spend more money; this in turn will lead to greater community prosperity and employment opportunities.

A number of sites have the capacity to be developed as tourist attractions. Grenan mill (211) and Ballyduff mill (247) are cases in point; indeed both would be amenable to further development in this respect. Notable in the context of still-operative sites is Smithwick's Brewery (115), Aghamucky coal mine (27:4:2), Irish Clay Brickworks at Castlecomer (318), Cushendale Woollen Mills, Graiguenamanagh (389), and Inch sawmill (101:2). Of these, only Smithwicks actively encourage visitors. In the case of the coal mine there would be very obvious insurance risks to an otherwise unforgettable experience, whilst the remaining three might have, in the foreseeable future at least, neither the time nor staff to cope with visitors.

Some quarries, notably the Ormonde Slate quarries (262) and Maddockstown lime-stone quarries (124:5) might be amenable to retention as sites of special environmental and geological interest.

In contrast to the active exploitation of specific sites, a considerably larger number have the potential for passive exploitation through self-guided town and county trails. Here the Council might promote information leaflets, possibly with sponsorship of some of the local businesses in the areas concerned. Themes might include the 'Castlecomer Plateau Coal Trail' (possibly with a visitors' centre at the Deerpark Colliery, 352), 'Kilkenny Watermills' (along the Nore, Blackwater and King's Rivers), 'Historic Bridges of the Nore', and 'The Marble City Trail' (encompassing both buildings in Kilkenny town, and quarries to the south).

Exploration of specific areas may also prove rewarding for visitors, for example a town trail around Kilkenny, taking in the mills and bridges; the drive from Kilkenny to Inistioge, taking in Bennettsbridge and Thomastown. A close parallel is to be found in the 'Blackwater Valley Drive', jointly promoted by Bord Failte, Cork County Council and Waterford County Councils (fig.49).

Along the route picnic sites could be developed overlooking areas of high scenic value (for example on the left bank of the Nore overlooking Inistioge Bridge, 242). Many sites, being obvious features of the landscape, can be viewed from afar, although there may be instances where close-up inspection is more appropriate, in which case the owner's consent would be required.

To conclude, County Kilkenny has much of industrial interest to commend it. The retention of the more important sites requires the active involvement of individual owners and encouragement by the County Council. Whilst it is important to retain some sites for their own sake, as reminders of how we used to live and work, past industry has enormous potential to become an industry of the future.

THE BLACKWATER VALLEY DRIVE

An Alternative Route from Rosslare to Killarney or Killarney to Rosslare

The Blackwater, 120 kms. long, the second largest river in Ireland, has been named "The Irish Rhine". The aptness of this description will be clear to anyone who views the river as it flows through high gorges surmounted by castellated houses, or sees it meander gracefully through the pleasantly wooded countryside on its way to the sea.

The **Blackwater Valley Drive** offers you an alternative route between Rosslare and Killarney. By travelling to and from your destination by different routes you get the opportunity to see and enjoy as much of the changing Irish countryside as possible.

We suggest that you use the Blackwater Valley route on your outward journey, and that you use the southern route *via* Macroom, Cork City, Midleton, Youghal and Dungarvan on your return journey.

So whether you just pass through the area, or spend a few days exploring it, this guide will help you to discover and understand the many fascinating items to be found along the way. Many of the items mentioned are accessible, whereas others can be seen from the road. The guide focuses on mainly man-made features such as castles, houses and churches which are dotted throughout the valley. The natural beauty of the valley speaks for itself.

You can follow the main route and visit the features located nearby, or if you have more time to spare you can take the longer recommended sub-routes. Do remember to drive with care especially on the narrower winding sub-route roads. Whichever route you decide to take watch out for the ✳ on the signposts. This will tell you that you are still on the right road, or will direct you to an item listed in the guide. On your journey you will pass through many towns and villages. Town trails, which are guides to interesting informative walks, are available for the larger towns of Fermoy, Kanturk, Lismore, Mitchelstown and Youghal.

Many of the items mentioned in the text are usually accessible to the public, and the symbol ▲ in the margin indicates this. However, some of the buildings may open only on a seasonal basis, or on certain days of the week, please check locally. To facilitate landowners you are asked to use official access only. Items with the symbol ▢ are visible from the road, but are not otherwise accessible. Other items of interest mentioned in the text are indicated with this symbol ■.

The **Blackwater** rises in remote elevated bogland along the Cork-Kerry border. After a short southerly course it turns sharply eastwards. Through its limestone valley the river wends its way beneath the forested sandstone slopes of the Boggeragh and Nagles Mountains. In the 16th century the entire valley was covered in dense forests, and parts of today's landscape recall the former splendour of these legendary woodlands.
At Cappoquin the river's course changes dramatically flowing south through wooded sandstone gorges to reach the sea at Youghal. The cause of this phenomenon is still the source of dispute among geologists.
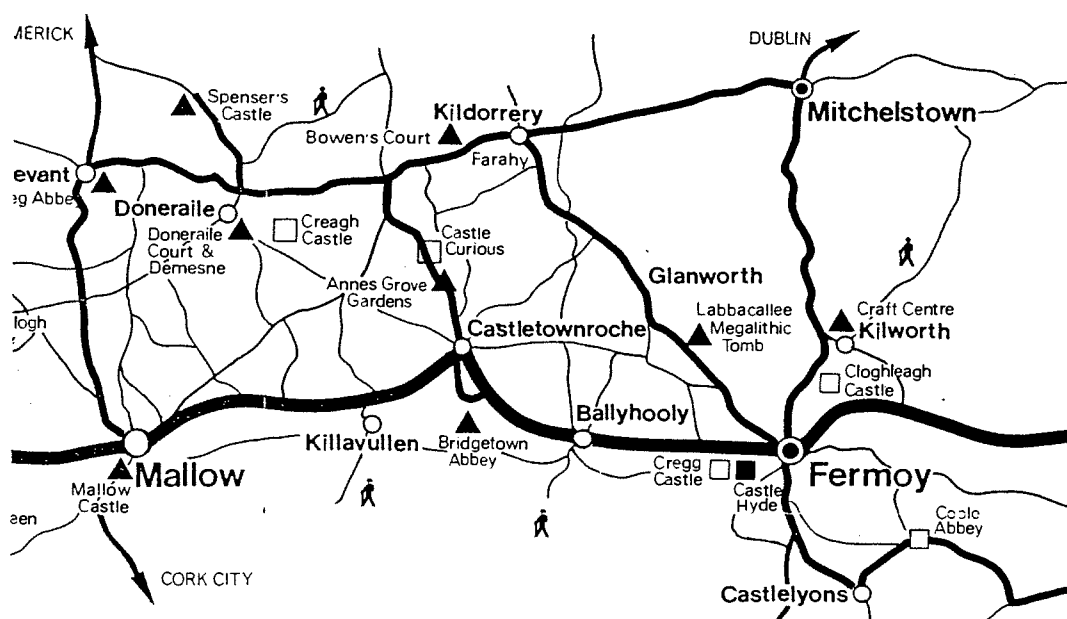

Fig.49   Extract from 'Blackwater Valley Drive'