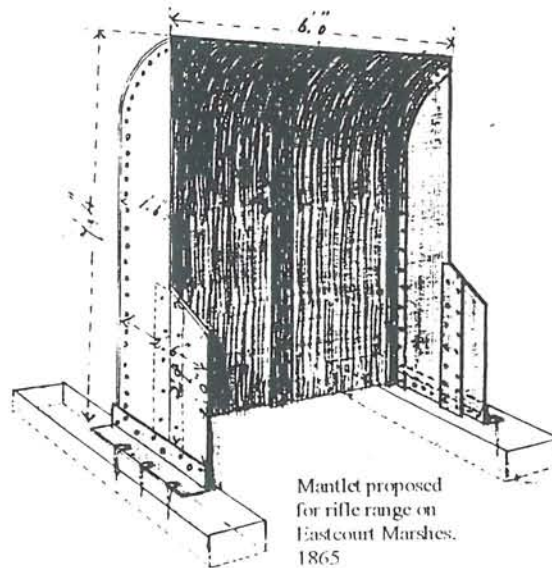


[This was succeeded by a lengthier and detailed report, with survey drawings of structures
and further photographic images, to be made available later]

EASTCOURT MARSHES, NEAR GRAVESEND



*An archaeological desk study of those
parts of Eastcourt Marshes proposed for
development as a Metropolitan Police
Firearms and Public Order Training
Centre and firing range.*

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February, 2000

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Purpose of the study

1.1 The purpose of this study is to assess the archaeological impact of the proposed establishment of a Metropolitan Police Firearms and Public Order Training Centre and a firing range on separate but adjacent parts of Eastcourt Marshes near Gravesend, and to make recommendations. This assessment was requested by Messrs. Laing Hyder FTF Ltd for supply to Gravesham Borough Council to help them consider the two Planning Applications for the proposal (GR/19990881-2).

1.2 The need for a study originated from a recognition that the development would involve interventions to the Milton Range which was first established in 1862 for musketry training of the army and substantially reconstructed in the 1890s. The scope of the study has been broadened to cover the general archaeological potential of the two areas.

1.3 This report follows a desk study of mainly environmental issues provided on 30th November, 1999, by Messrs. ECOS Environmental to the Receiver of the Metropolitan Police. That study contained a short section on the historical and archive records discovered by the company.

2. Areas covered by the study

2.1 These are referred to as the 'western' and 'eastern' areas which are separated by a plot containing a CEGB facility. Where both areas are referred to together they are described as the 'affected areas'. Boundaries are delineated in bold line on the map at Fig 1.

Western area - Application GR/19990881

2.2 This is centred on NGR TQ 6718.7419 and consists of the former main block of the National Sea Training School and car parking at the SE corner, a tennis court and some outbuildings set in mainly rough grassland, crossed by a road to a jetty projecting into the Thames.

Eastern area - Application GR/19990882

2.3 This is centred on TQ 6780.7420 and comprises grassland containing the firing points and butts of the rifle range, the ground being intersected by drainage channels.

3. *Methodology*

3.1 The study was undertaken by a physical examination of the ground and a search through the Sites and Monuments Record for Kent and the holdings of archival institutions such as the Royal Engineers Library and the Public Record Office.

3.2 A large number of secondary published sources and Ordnance Survey maps were also consulted.

3.3 The archaeological background section was written by Victor Smith and Sandra Soder, much of the local history research having been undertaken by the latter. The sections on the military rifle range and later development of the affected areas are by Victor Smith.

3.4 A local history overview of the affected areas and the country around them by Sandra Soder is included as an Annex. (*available as a paper copy only*).

4. *Geological background*

4.1 The geology of the site consists of layers of alluvial clays which, as ECOS Environmental have commented, geological records indicate are underlain by the Upper Chalk.

4.2 It is understood that Laing have sampled the strata by means of bore holes and test pits.

5. *Archaeological background*

5.1 An examination of Kent County Council's Sites and Monuments Record and of other sources revealed no evidence of archaeological deposits having been found in the affected areas. With the exception of the Milton Range whose existence gave rise to this study, neither did a visual inspection of the ground reveal any obvious surface traces of archaeological features.

5.2 The marshland to the east and west of the affected areas as well as the near hinterland have provided evidence of human activity in the Bronze Age, Romano-British and Saxon periods. This has included Romano-British pottery and Bronze Age deposits found in Westcourt and Denton Marshes 370 and 460 m (400 and 500 yards) SW of the western area and on Shorne Marshes 920 m (1000 yards) to the east of the eastern area. Other Romano-British and Saxon deposits have been noted in former marshland close to the British Uralite works 2200m (2385 yards) ESE and on Higham Marshes. There is evidence of Romano-British industrial activity and settlement on

Filborough Marshes 740 m (800 yards) to the south and settlement on the rising ground of the immediate hinterland. Archaeological discoveries were also made during the cutting of the adjacent Thames and Medway Canal from 1803, although the exact find-spots appear unknown. In addition, there is anecdotal evidence of Romano-British pottery having been washed out by tidal scouring from the vestiges of saltings, once covered with an apron of stone as part of tidal defences, just to the north of the eastern area. It is not known whether archaeological discoveries were made when the Milton Range was established in 1861 and when the National Sea Training School was built in 1967.

5.3 The North Kent Marshes have been identified as a region of archaeological importance and potential and the known discoveries outside the affected areas might suggest a pattern of human activity and of settlement across the marshlands from the pre-Roman to Saxon periods. In addition, the North Kent Marshes may contain traces of prehistoric land surfaces.

5.4 Land on either bank of the Thames upstream to London have long been subject to riverine flooding. Protection of this land by embankments and drainage schemes appears to have been undertaken variously by private and public initiatives. It is known that in 1407 a commission was charged with viewing and repairing the riverside embankments between Greenwich and Cliffe. It is not known whether the marshland of the affected areas figured in this. A map of the Chalk and Denton Levels in 1694 does not portray an embankment but a series of channels and sewers for draining the saltings to the north. Responsibility for the maintenance of riverside embankments became vest in the Court of Sewers.

5.5 A military map of 1778 (Fig. 2) also shows the layout of drainage channels in the western area and what appears to be a creek through the foreshore on the north of an embankment. A map in Hasted's History of Kent (1797) (Fig. 3) shows what may be the same embankment and this is considered by some to have also been a riverside trackway. This seems to have been close to the present outer embankment. The more prominent inner embankment along the northern edge of the affected areas was built by the Southern Water Authority in the 1970s.

5.6 The marshes appear to have used exclusively as pasture for sheep grazing by local farmers by agreement with or as tenants of the land holder, Lord Darnley of Cobham Hall. The only structures were probably sheepfolds and shelters for shepherds.

5.7 The towpath on the north side of the Thames and Medway Canal now forms the access road to the affected areas. Following the commercial decline of the canal, a single line of railway track was laid on its south side in 1845. In 1849, the canal and the railway line were taken over by the South Eastern Railway company which doubled the track.

6. *The military rifle range*

The original range

6.1 The earliest known development within the affected areas occurred when the military rifle range was formed in the eastern area in 1862 (Fig. 4). The land for its construction was mainly in the ownership of the Lord Darnley from whom it was purchased by the War Office.

6.2 The range formed part of a general enhancement of training facilities for the Home Army which, for the infantry, included the provision of additional ranges for musketry practice. This came at a time when the technology of small-arms and the design of rifle ranges were at an evolutionary stage. The range was primarily intended to serve regiments based at Chatham but gradually became used by units from other areas. Part of the reason for the contemporaneous building of Milton Barracks at Gravesend was to provide accommodation for troops using the range, although later they were also used for the general posting of regiments.

6.3 Eastcourt Marshes were chosen for the establishment of the range because of their remoteness and the absence of dwellings and human occupation within the lines of fire which were from the west to the east and parallel to the river.

6.4 Specifications for the range were settled in December, 1860 and tenders were invited in October, 1861. The successful tenderer, W.J. Sawyer of Cannon Street, London, completed the range for occupation and use in March, 1862. The purchase of land had cost the War Office £31,521 and works £2,507.

6.5 As originally constructed, the range consisted of a succession of firing points extending east at 50 yard intervals from a 900 yard point to the butts. The latter were a line of five rectilinear banks, each about 23 m (25 yards) long and separated from each other by a distance of 55 m (60 yards). These were a safety measures to stop and contain the fired bullets once they had passed through the targets on the firers' side of the butts. Detail of the arrangement for the butts and the targets is not known. However, original documentation states that the butts were constructed of earth covered with turf. These suffered slippage within a year of construction because the contractor did not entirely follow the specification for works. Conventionally, the targets would have been rectangular with a black discs or concentric rectangles as the points for aiming. There were 4 targets to each of the butts, giving a total of 20 targets for the range. These were served by butt markers stationed within a sequence of iron bullet proof shelters known as mantlets. The initial arrangement for the mantlets caused difficulties because bullets tended to strike the top of their hoods and there were also injuries to markers due to ricochets. There is a surviving design for a mantlet recommended in 1865 to be adopted at Milton Range as a substitute. (see illustration on the front cover). Heat exhaustion appears to have been a problem for the markers and there was a proposal for painting the mantlets white to reduce the effects of the sun.

6.6 The firing points appear to have been low earthen mounds. Their arrangement allowed file, volley and skirmishing fire to be practised, all key elements of infantry training.

6.7 There was a long wet-weather shelter shed for firing parties behind the 900 yard firing point and an eastern shelter near the canal towpath to the south of the 300 yard point. This eastern shelter also contained the range Policemen's quarters and was later to incorporate accommodation for the range warden. The specification of 1860 provided for the shelters to give cover to a total of up to 400 men.

6.8 There were sometimes conflicts between the War Office and local farmers who wished the times of firing to be reduced for their convenience in carrying out haymaking within the danger area and from others whose sheep that had been allowed to graze in the range area had eaten fragments of lead bullets and died. Fencing had to be erected to prevent the nuisance of sheep entering one or both of the shelter sheds for cover and fouling them. These sheds must have been very open otherwise the simple expedient of providing doors could have been used.

6.9 The present road access to the range is not the original one. This was either by marching along the river embankment from Gravesend or from the latter to Chalk and across the marshes and over a moving bridge spanning the Thames and Medway canal. Both of these routes could be extremely muddy and hard-going in wet weather. The most direct route was the present one along the canal towpath but this was in the ownership of the South Eastern Railway which permitted its use only after the War Office agreed to pay an annual rental and maintain it at their own expense.

Remains of the original range

6.10 Some time before 1895 the five separate butts were joined together to form one continuous bank and there are slight remains of this about 230m (250 yards) east of the existing butts. Some evidence of the lower parts of the butt marking positions may well exist below the present marsh surface as archaeological traces. However, this is outside the affected areas. The existing eastern shelter shed might be a rebuilding of the original one. Its structure does not appear to have ever been of such an open nature as seemed suggested by the nuisance of the intrusion of sheep in the 1860s unless it was the western shed alone that had been accessible to animals. There are likely to be foundation remains of the western shed at the former 900 yard firing point. There are no obvious traces of the original firing points but these might have been incorporated within later ones.

The present range (Fig.5 and pages of photographs)

6.11 The present range was one of a number established across England during the mid-later 1890s to provide training in the use of the new Lee-Metford magazine rifle, the precursor of the better-known Lee-Enfield. Its construction involved the abandonment of the original butts and targets. The contract for the work was let to Messrs B. Cooke of Battersea in 1895. As a consequence of building the new butts for the range, the firing points were reorganised and the firing distance shortened from 900 to 800 yards. Both shelter sheds were either retained or rebuilt and earthen firing

mounds for the new range were designed to have a base of 5.8-7.4 m (19-24 ft.), sloped on either side to a flat top of 3.7 m (12 ft.) breadth. In other respects, the overall functional layout of the range was similar to the original one except that from the start the butts were a continuous 230 m (250 yard) long mound, which is how they present today.

6.12 According to the contract plans, the mound of the butts was to be built on a raft of two layers of 30 cm (1 ft.) diameter fascines, the lower layer being transverse and the upper one longitudinal. The ground on the eastern side of the mound was excavated to provide materials for its construction. This remaining water-filled excavation is marked on some maps as a clay pit. The targets were identified by wooden numbers at the top of the mound. The latter presents with a sand facing.

6.13 Some 18 m (20 yards) to the west, and parallel with the mound, are a sequence of 44 iron target frames, set in an operating pit, and served by a long mantlet. They resemble the originally proposed frames of the Jefferies type. They consist of two parallel frames worked on a wire rope, to contain a timber-framed target and which could be raised above the mantlet for firing as required. The image on the target was on fabric or wood and supplies of patches were kept close by so that these could be pasted over bullet holes for re-use during firing practice.

6.14 The mantlet itself is a long gallery formed of riveted steel plate sections to form a shelter having a roof resting on a curved girder for overhead protection. There is also timber seating on iron frames. From here the butt markers could safely operate the target mechanism and indicate to the firing parties the points of impact of bullets fired during practice. The contract plans suggest an intention to give the mantlet a thick backing of shingle on the firers' side, to be held in place by a revetment of timber. Some possible traces of the latter may be seen, embanked in turf-covered earth.

6.15 At the northern end of the mantlet is a latrine, also of a steel plate construction. This was not accessible at the date of visit. The contract plans portray three cubicles and a compartment for a urinal. The latter was to discharge into a urine tank. The cubicles were to have earth closets which were to discharge into a wheeled truck below each seat. This was then to be moved through a small door through the outer end wall for disposal. The lower part of the external face of this wall was obscured by earth at the date of visit but the possible top of a small door from one of the cubicles could just be seen.

6.16 At intervals along the mantlet are two target stores. These each present as a steel plate box with double doors into the gallery. Both were locked at the date of visit but from the contract plans are 4.9 x 4 m (16 ft. x 13 ft.) internally, with tubular steel racking for targets along the back wall.

6.17 At several places along the mantlet are telephone jack points which connected by cables with the firing points.

6.18 Between the mantlet and butts is a drainage channel, on the western side of which was laid a 2 ft. 6-in. tramway for a hand-truck to take targets requiring servicing

to the target repair shop constructed just to the east of the eastern shelter shed. The tramway was later infilled to form a path.

6.19 The planned original arrangement of a continuous line of target frames was later modified to the present situation of 4 separate groups. What may be the remnants of top steel-framing of the original operating pits may be seen in the spaces between the groups. The extant target frames are set within wider concrete pits.

6.20 The firing points were parallel linear earthen banks at 50 yard intervals, starting at the 800 yard firing point. As they present today, the more prominent and higher banks are at 100 yard intervals, with the intervening 50 yard banking lower and less distinct. This may represent a switch in emphasis to a smaller number of firing points. Telephone jacks may be seen at some of the banks.

6.21 The eastern shelter shed and repair shop were within a fenced compound. The repair shop was demolished in the 1980s and presents today as a concrete building base, displaying a short section of tramway on its surface. The shelter shed itself is a rectangular building constructed of yellow brick with an enlargement at its eastern end. It has a pitched roof resting on timber rafters with iron ties. As commented in paragraph 6.10, the chronology of this structure is not yet clear. Plans show it to have had an enlargement at either end, giving it a hammer-head appearance but today there is only the eastern enlargement and that appears to be a recent construction. This building needs further study. Within is a bench running along its southern side. This is formed of a broad timber seat on an iron frame. On the wall above and behind is a line of cast iron clasps which may have been for the securing of rifle stocks or of equipment.

Later years of the range

6.22 The date of the present road access as a turning from the towpath is unclear but it appears to have existed since the 1920s if not earlier. It is marked on a map of 1938 (Fig. 5) which also shows that by this date a miniature range had been added on the western side of the western shelter shed. By then, if not considerably before, Milton Range Halt had been built to serve the range. From this there was a swing-bridge across the canal to the towpath. In the later 1920s and 30s, accommodation for those using the range was provided in buildings around Shornemead Fort 1110 m (1200 yards) NE. One of the magazine chambers bears the names of units which used the range during this period. A military road between the canal and the fort was closed during firing by guards placed in mantlets at either end. Other shelters replaced these in the 1980s

6.23 The range saw intensive firing practice during the Second World War. It was last used by the Ministry of Defence for firing in 1995.

7. *Historic importance of the range*

7.1 The range is typical of a number established across Britain in the last two decades of the 19th century. There were other rifle ranges in Kent, at Sheerness, Dover, Hythe, Lydd and elsewhere of various earlier and later dates. Hythe was important in being the home of the School of Musketry and had extensive ranges. Other ranges of a similar type were built around Aldershot and adjoining areas as well as at Thurrock in Essex.

7.2 In the time available it has not been possible to attempt a conservation value comparison between the range at Milton and others. It is known that a number of other ranges of this type have either gone out of use because of reduced demand or have been, or will be, modernised. The Milton Range is still in satisfactory condition and is a good surviving example of its type and date.

8. *Establishment of the National Sea Training School in 1967*

8.1 The western area remained as pastureland until 1967 when the National Sea Training School was relocated there from Commercial Place in Gravesend. This involved the construction of an accommodation and training block on the south-east corner and a detached sailors home in the south-west corner. There is a pre-construction plan, presumably a proposal, showing a network of field drains across the surrounding grassland.

8.2 For a time the school operated successfully but went into decline in the later 1980s because of a gradual reduction of admissions. The main block closed in 1998. Part of the continuing operations was transferred to the former sailors home just outside the SW corner of the western area. This is now known as the Thameside Campus of the National Sea Training Centre.

9 *Effects of the proposed development on the two areas and recommendations*

Western area

Effects

9.1 The proposed construction of buildings and a training infrastructure seems likely to involve extensive excavations for foundation trenches and piling. However, as explained above, there is a possibility that the ground is already in a disturbed condition from the preparation of the land as part of the establishment of the NSTS.

Recommendation

9.2 Despite the absence of known archaeological deposits within the eastern area, as has been suggested in paragraphs 5.2 and 5.3, there is a possibility that the pattern of human activity in the pre-Roman to Saxon periods suggested by finds in the marshes to the east and west and in the hinterland to the south might have extended into this area. A watching brief may be indicated by it would be helpful if Laing could establish for itself the extent of any disturbance to the site which may have occurred in the 1960s. This would help to better judge the nature of such a brief. The Heritage Conservation Group of Kent County Council would be pleased to discuss this issue with the applicant.

Eastern area

Effects

9.3 From the planning application, the proposed interventions appear to be:

- * the construction of a new road and paths, culverts and the creation of a new 600 m range, involving the formation of new firing points and the removal of some existing ones.
- * the creation of a new 100 m firing range in the NE quadrant of the site.
- * the erection of 2 sniper towers and weather shelters
- * modification of the external profile of part of the mantlet within the field of fire of the 600 m range and refurbishment of the target frames. The demolition and rebuilding of another part of the mantlet for the 100 m range where 'pop up' targets are to be used.
- * repairs to and reprofiling of the butts
- * adaptation of the eastern shelter shed as a briefing room

9.4 The design for the alterations to the mantlets is not yet final.

Recommendations

9.5 The interventions to the range will noticeably modify its appearance in the various ways described and alter the historical record presented by its structures. Therefore, before such changes take place, it is recommended that the site should be recorded photographically both generally and in detail and features to be altered recorded by archaeological drawn plan and elevation before development takes place. This should include the eastern shelter.

9.6 The recommendations for the affected areas have been discussed informally with a representative of the Heritage Conservation Group of Kent County Council.

9.7 It is hoped that those parts of the range, mantlet and the target frames, not affected by the proposal can be left intact to preserve the historical record they represent.

10. *Sources*

10.1 These were as follows:

* Royal Engineers Library, manuscript letter books for the Thames area June 1860-December 1864, 10th September 1862-14 June 1866, 14th January 1866-13th February 1869, referenced Gra/0/6.

* Public Record Office plans of Milton Rifle Range in 1895 and at other dates, referenced WO78/3504 and 645, plans of Pirbright Rifle Range in 1904, referenced WO78/3673.

* Property maps examined in the offices of the Ministry of Defence at Canterbury.

* British Museum plan of the Thames Defences dated 1778, referenced BM K. Top. XIII.55a

* Map showing the Thameside at Gravesend from Hasted's History of Kent, 1797.

* Various Ordnance Survey maps.

The many other sources consulted are listed at the end of the Annex.

FIGURES

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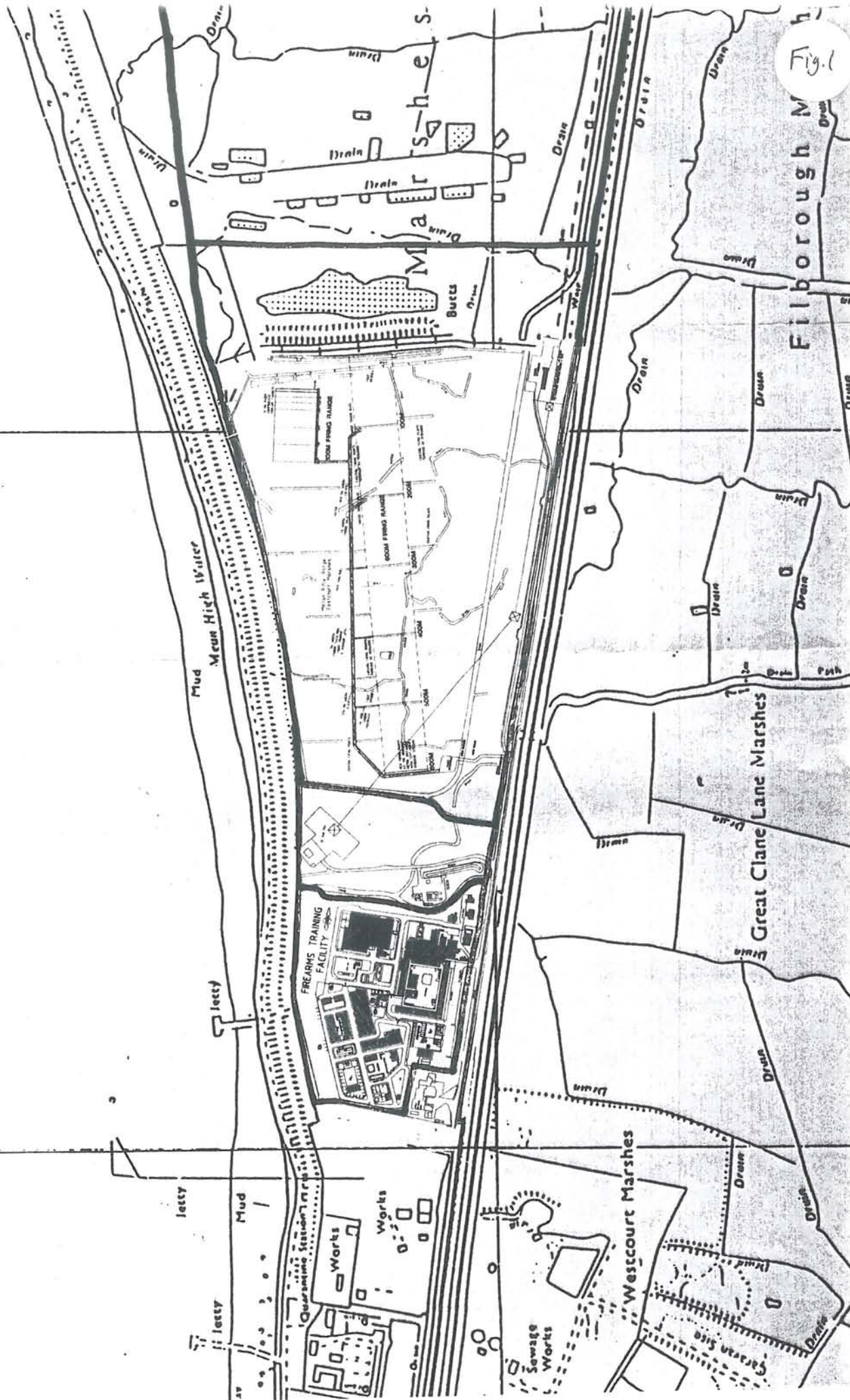
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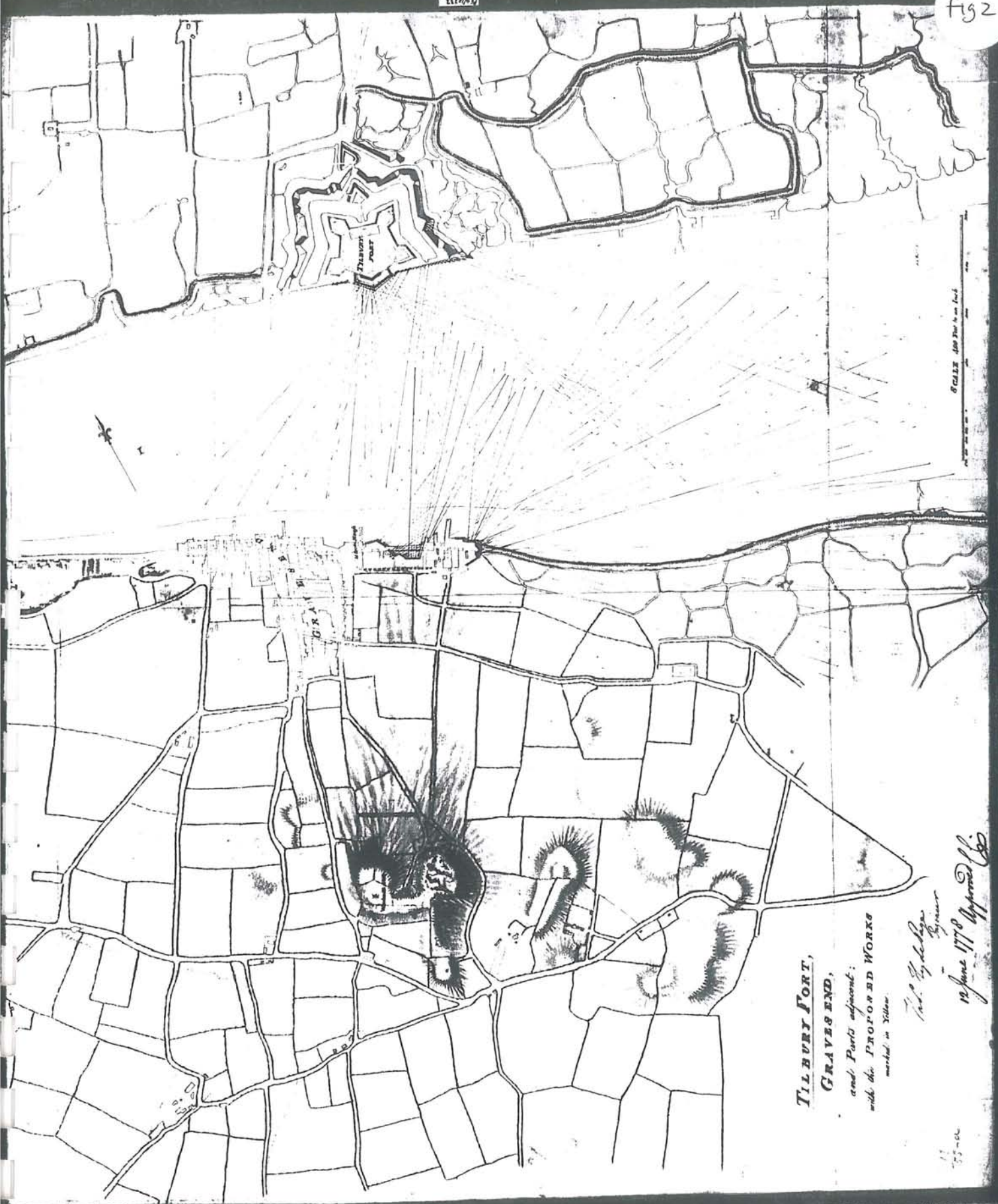
Fig. 1

Filborough Marsh

Great Clane Lane Marshes

Westcourt Marshes



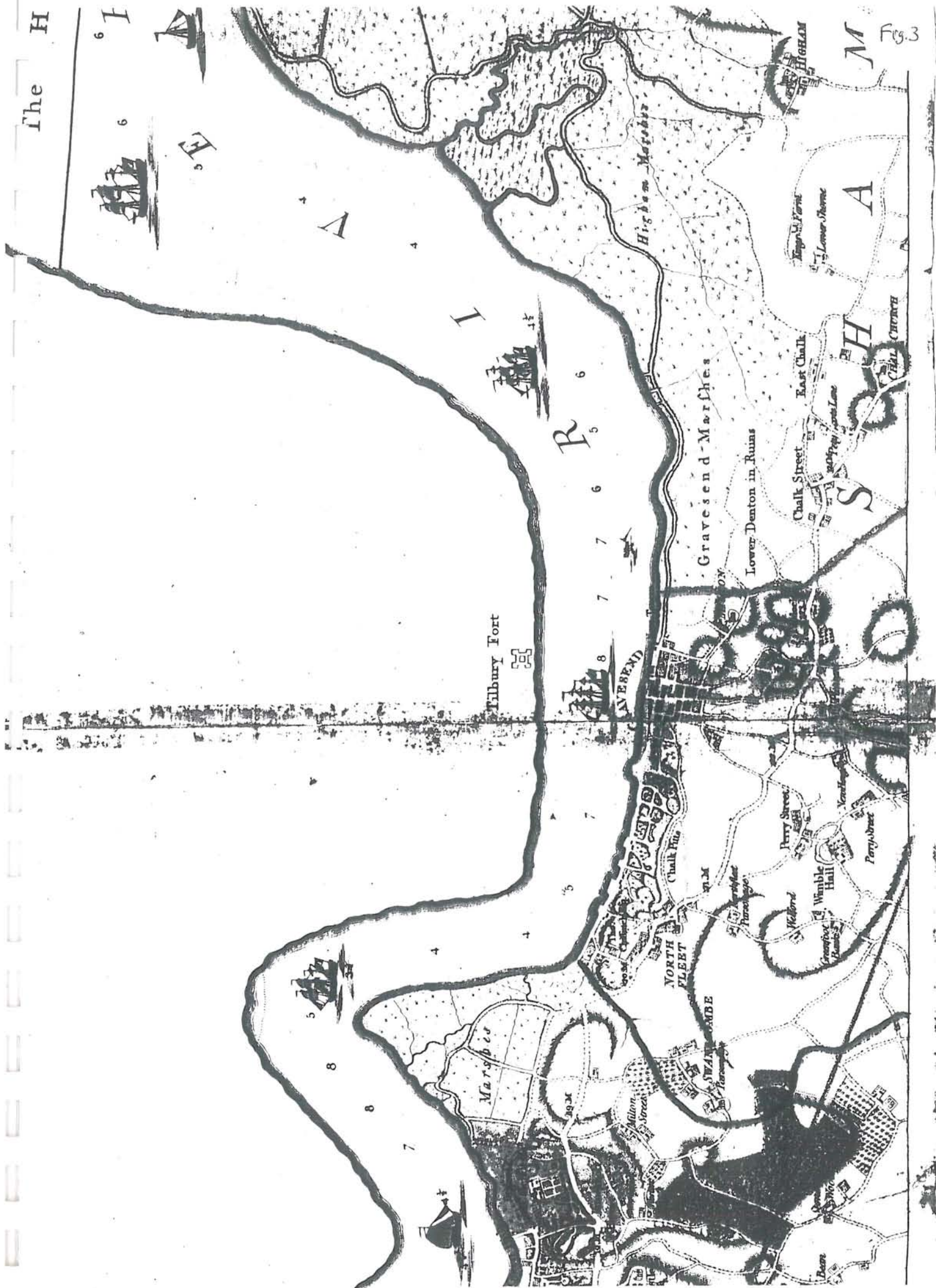


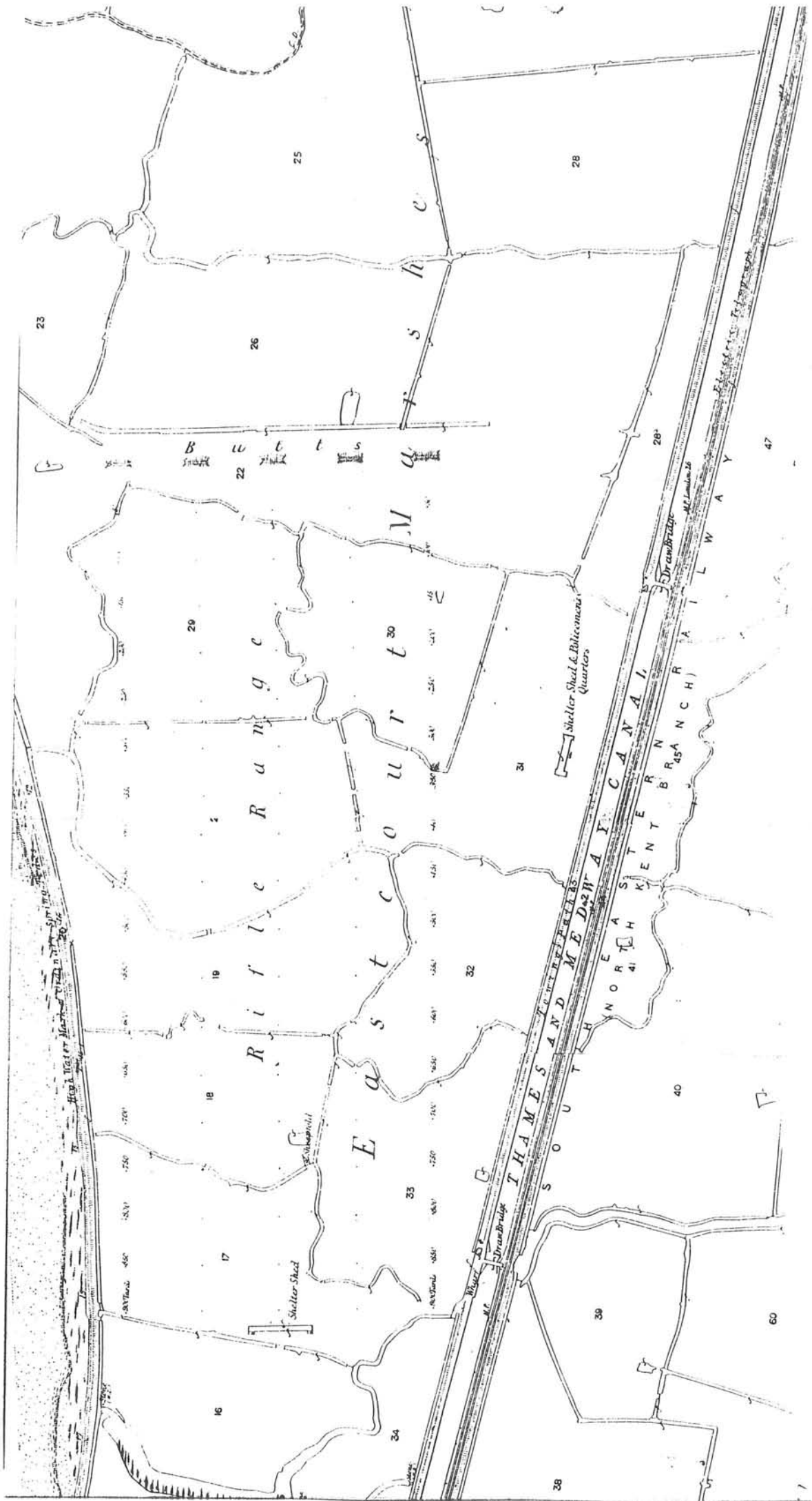
**TILBURY FORT,
GRAVES END,**
and Parts adjacent;
with the PROPOSED WORKS
marked in Yellow

T. H. H. H. H. H.

12 June 1778

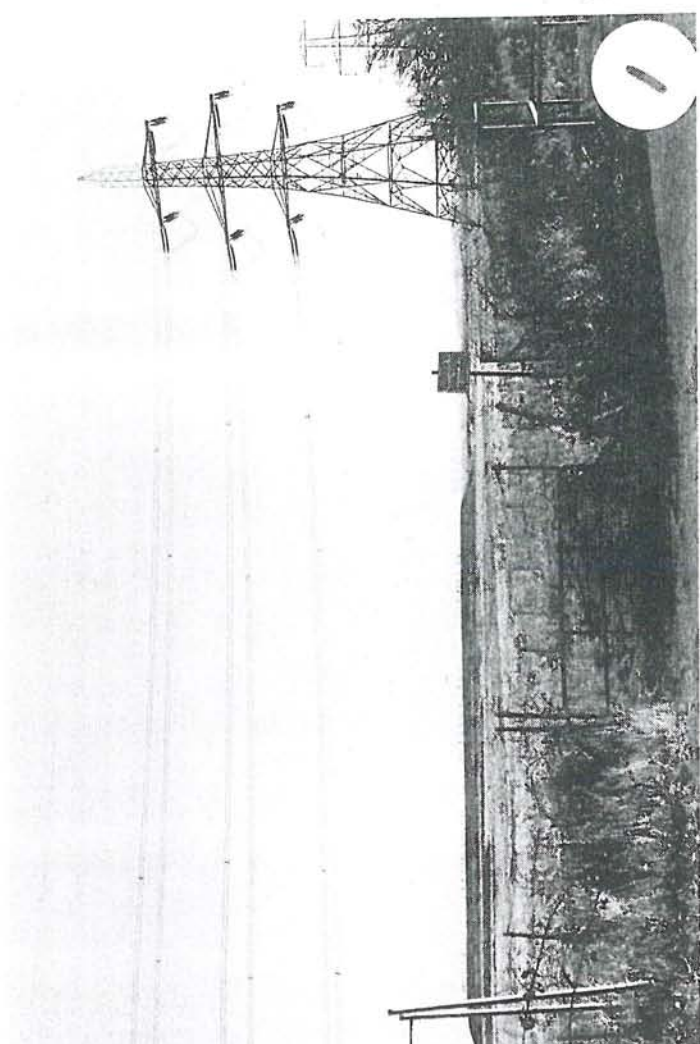
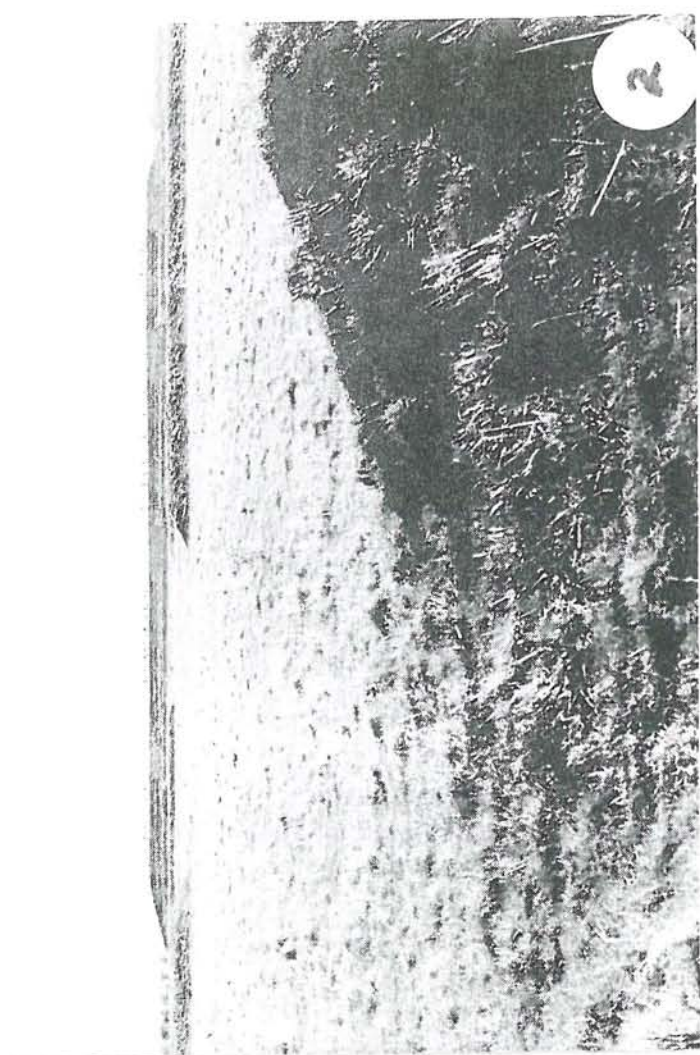
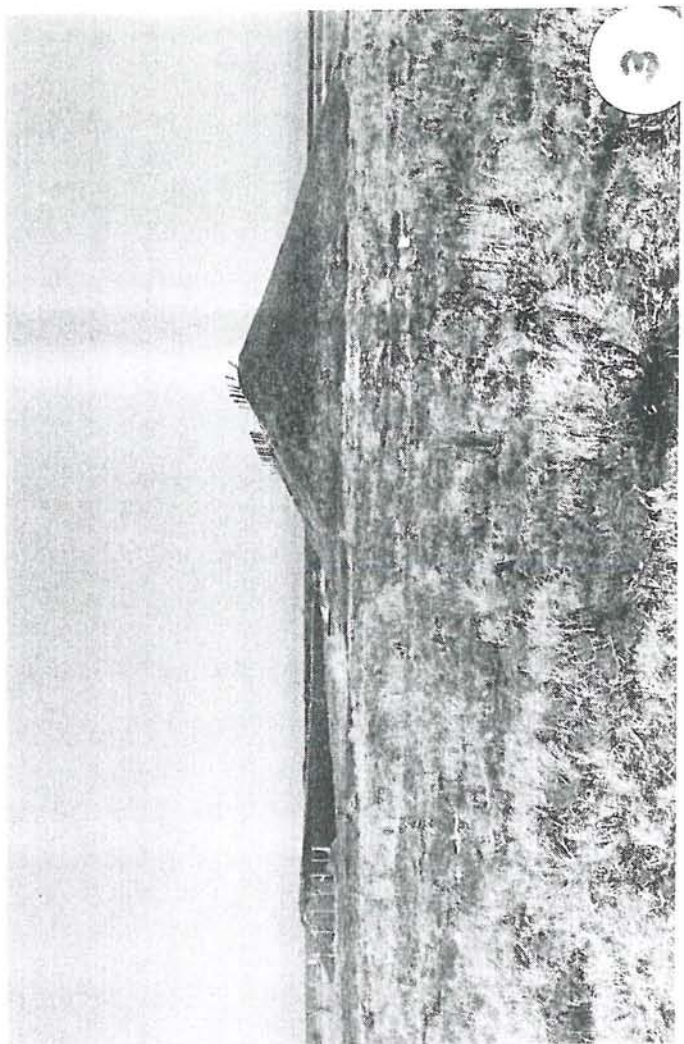
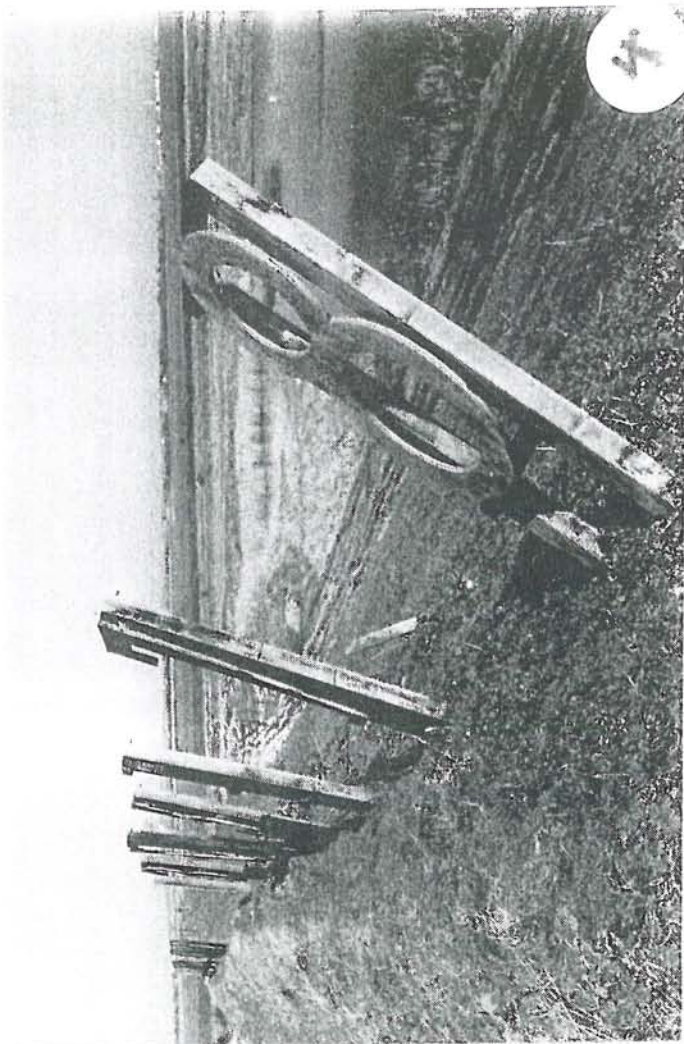
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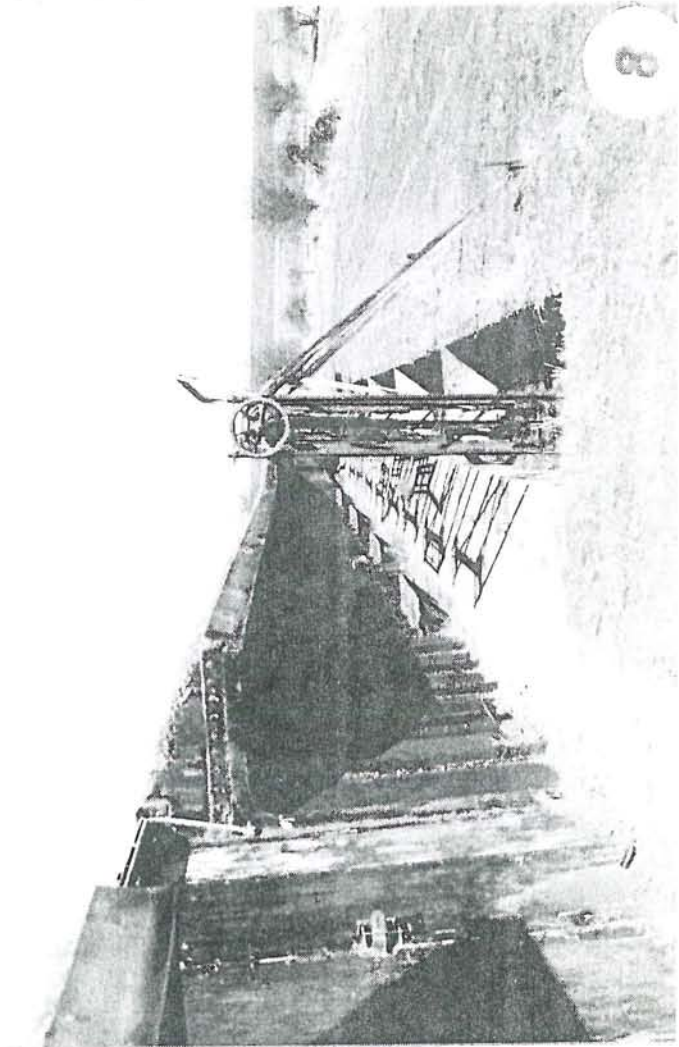




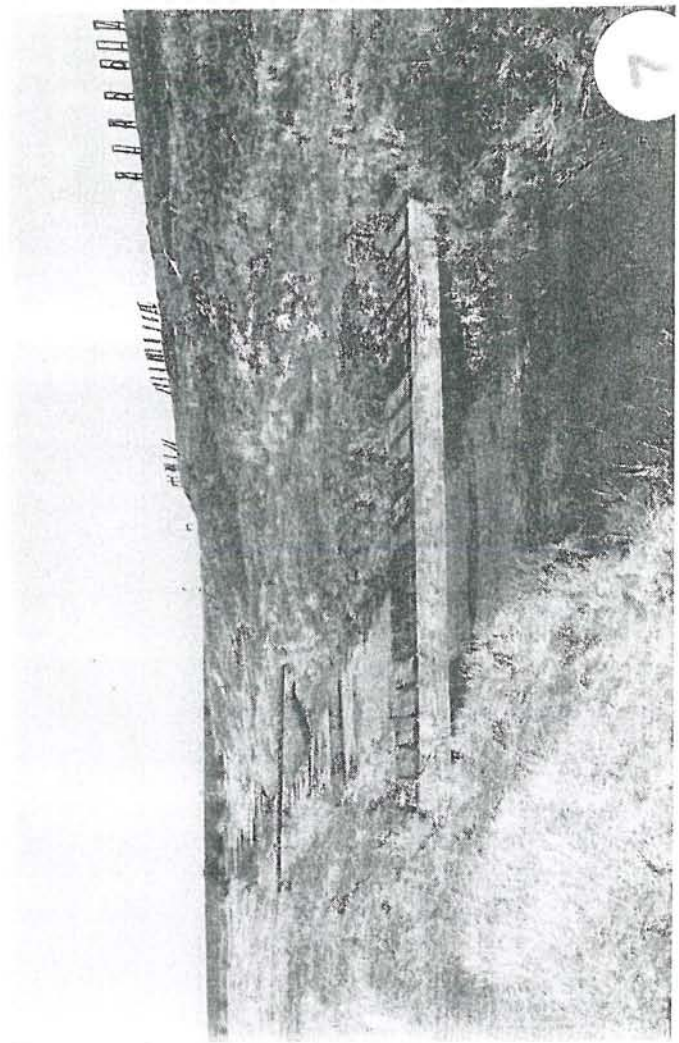
List of photographs taken in February, 2000

1. Entrance to the range from the canal towpath.
2. View down-range through the firing points to the butts.
3. The butts and mantlet from the south.
4. Timber target markers on top of the butts.
5. Ditto.
6. The butts and mantlet from the north.
7. A drainage channel on the west side of the mantlet.
8. The mantlet and target frames from the south.
9. The target frames.
10. A target store.
11. Latrine
12. The eastern shelter from the SE

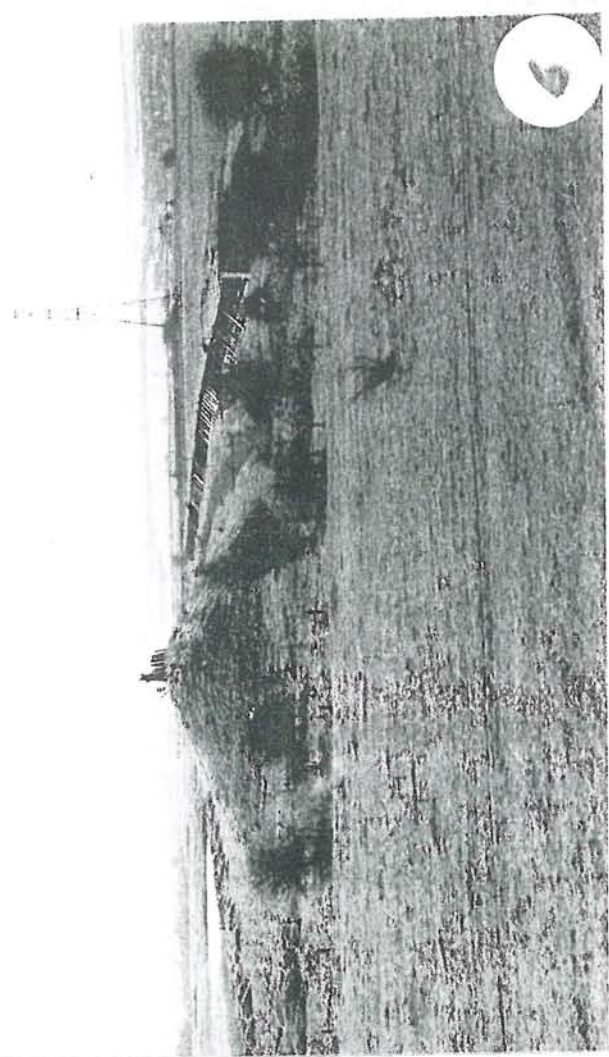




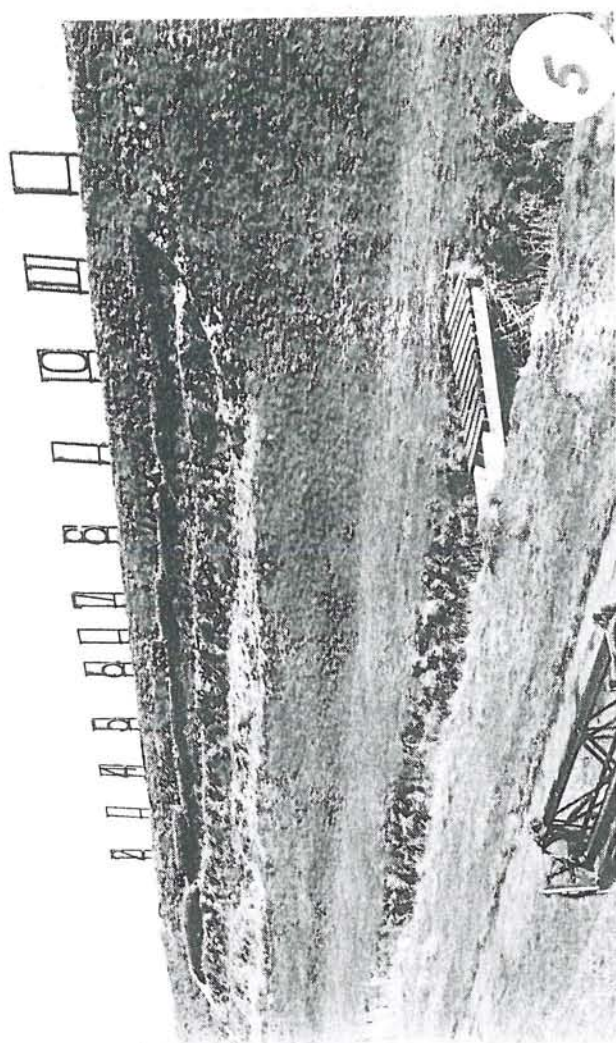
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