

# **Monarchs, Courtiers and Technocrats; Elsyng Palace, Enfield: Place and People**

**The Documentary and Archaeological Evidence for a Fifteenth to  
Seventeenth Century Courtier's House and Tudor and Stuart Royal  
Palace; and for the Lives of its Owners and Households**

by

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with

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## **The 1967 (and 1970) Gas Main Trenches: a Description and Evaluation**

by

**Martin J. Dearne and Paul Drury**



### *The Circumstances and Location of the 1967 Gas Main Trench (MJD)*

The records relating to the rescue recording of the 1967 orbital gas main trench by Ivy Drayton and members of the EAS are problematic. Not knowing the extent of the palace, the gas main was lain in a trench machine cut across the recently scheduled area (Pl. 1) on a line which would supposedly avoid it, but in fact cut a swathe across the northern part of it. The trench was 6 ft (1.83 m) wide and Drayton in some notes within site diaries relating to the 1963 – 6 excavations gives 8 ft (2.43 m) for its depth which probably tallies with photographic evidence (though a drawn section often shows only 5 - 6 ft (1.52 – 1.83 m) of deposits and never marks the base of the trench; Fig. 2).



Pl. 1: The Gas Main Trench Looking West with [160] in the Foreground (Left Section) and Drain [159] Opposite the Nearest Excavator. The Flooding is in the Area of Walls [157] and [158].

Drayton was asked to monitor the trench by the Ministry of Public Building and Works and when it became apparent that it had ripped through palace structures called on the EAS for help, but they had only three days to rapidly (principally during a single Sunday) basically clear and record what they could of the structural features revealed, sectioned and even bodily extracted by the contractors along a c. 70 m length of it.<sup>1</sup> The size of the trench, working conditions (as the trench in some areas flooded to some depth) and time constraints evidently allowed only limited photographic records<sup>2</sup> to be made and a single

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1 No features appear to have been noted at least further west or east (though there are no records of the stratigraphic sequence in these areas), suggesting that the main structures of the palace otherwise lay to the south of the pipe trench's line. But at least one other feature (the drain [0512]/[0907]; see the main book text p 139)) must have been crossed by the trench well east of the main area recorded and drain [10A11] (main book text p 151) also ought to have been unless it perhaps was an enlarged continuation of [159] (see below) which changed its orientation radically somewhere north of the gas main trench. The circumstances of the recording then probably meant that anything less than substantial brick features are unlikely to have been recognised and even isolated and sizeable structures may well have been missed.

2 Some features shown on them can be identified with reference to the drawn records and 1963 – 6 site diary notes indicate that a black and white series included an almost complete record of the south section, but they are unannotated, the sequence



plan and section to be drawn. No features were allocated context designations so these have been assigned retrospectively, beginning at [150]. The only drawn records, as subsequently published,<sup>3</sup> make the part of the trench recorded look straight, but in fact, as photographic evidence shows, it incorporated a change of alignment coincident with the western end of feature [150] (Fig. 1; Pl. 2) and the omission of this has contributed to significant uncertainty about the actual positions of the recorded features (which were in an area whose nature has now been completely transformed by the expansion of tree cover and scrub growth).



Pl. 2: Wall [150] Looking South and Showing the Point Where the Machine Cut Turned, Truncating its Corner.

Drayton located the recorded section ‘some 80 ft [24.38 m] n. of the ... cesspit’ ([107]) excavated in 1965<sup>4</sup> and showed it 86 ft (26.50 m) north east of the north east end of the excavated section of the large drain found in the 1963 – 6 work ([118]).<sup>5</sup> She, at least in part, also apparently used the edge of the possible moat [100] found in 1963 Trench A, and which she evidently assumed ran in a straight line and was present in the gas main trench section, to locate that trench in relation to the 1963 – 5 work.<sup>6</sup> However, whilst subsequent remote sensing evidence suggests that this moat (or large ditch) could have run in a roughly straight line and might well have been what was present in the gas main trench (as [163]), modern surveying and LiDAR places the gas main trench only 11.00 m north east of the excavated end of drain [118].<sup>7</sup> Moreover the line of the moat does not seem to have been correctly plotted on Drayton’s Fig. 27; and in fact there is only a small amount of evidence for its line so a very precise orientation cannot be established even if – as is perhaps unlikely – it ran on a dead straight line. Replotting the moat line from what is available in primary records and correcting the distance from the 1963 – 6 work though, *if* the moat or ditch cut by the gas main trench ([163]) was also that found in 1963 Trench A, but more importantly using the known position of the turn in the line of the gas main trench, the features recorded

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they should be in is not always clear and some are now unidentifiable. Note that where scales are included in photographs they are in divisions of inches and feet or multiples thereof.

3 In Jones and Drayton (1984) Figs 27 – 8.

4 For 1963 – 6 features mentioned (retrospectively contexted [100] – [149]) see the description and re-evaluation of that work on this CD.

5 In Jones and Drayton (1984) 43 and Fig. 27.

6 A plan of uncertain date which survives only as a slide implies this, but also records that ‘the plotting of the [gas main] trench was done without survey equipment and in a race against time’, which comments Drayton also made in the 1963 – 6 site diaries.

7 Unless the location plan of the 1963 – 6 excavation is radically inaccurate, which does not seem to be the case.

probably lay at least very approximately in the positions shown on Fig. 1; and that they match the orientation of the structures excavated in 1963 – 6 far better than on Drayton’s plan appears to add to the likelihood that this is very broadly the correct relationship between the excavated and rescue recorded areas.

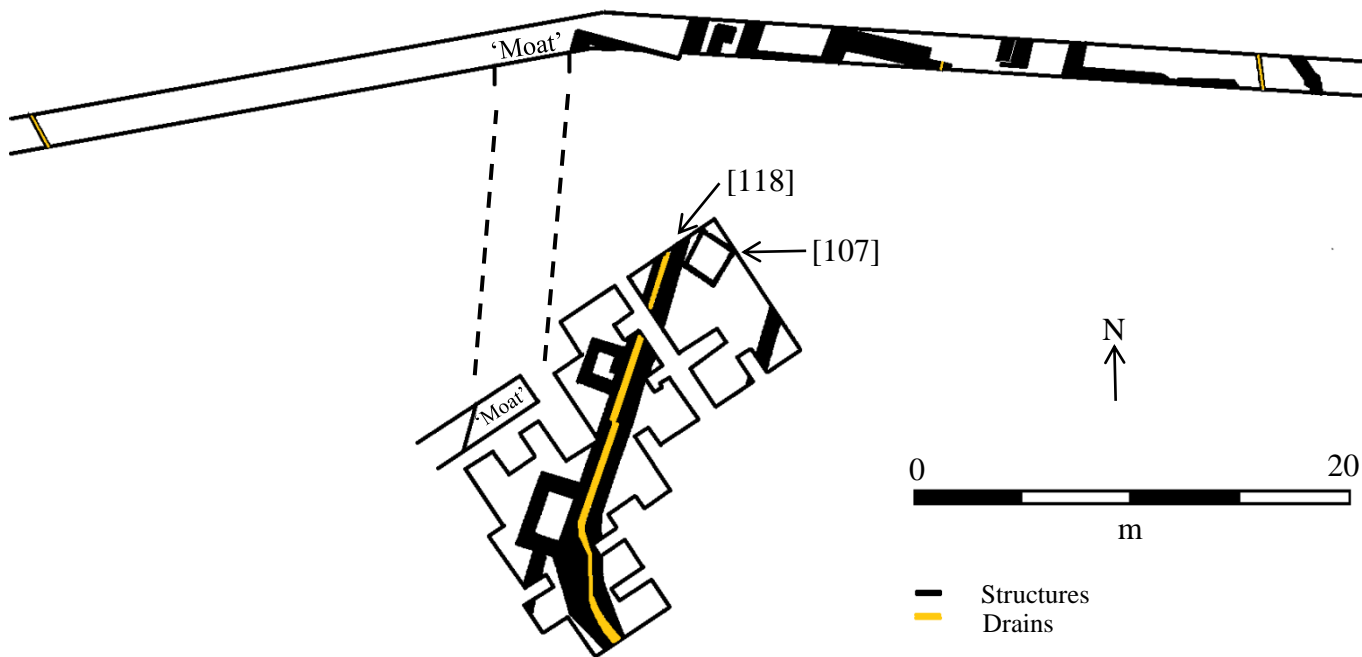


Fig. 1: Probable Relationship Between the 1963 – 6 Excavations (Only Selected Features Shown) and the 1967 Gas Main Trench Recording

The one other feature though that one might expect to be able to use to more positively tie the gas main trench to the 1963 – 6 excavations is drain [118] (for which see the separate re-evaluation on this CD). The walls encasing it ([123] and [127]) appear from (rather limited) photographic evidence to have survived to around 4 ft (1.22 m) below contemporary ground level at least in the vicinity of Trench E, so would be expected to have been present in the gas main trench even had it not ‘sectioned’ the actual drain. However, nothing in the records appears to be interpretable as this drain or its encasing walls (rather than other drains which are of quite different sizes or orientations; see below).<sup>8</sup> It will of course have been sloping at least gently downwards as it ran towards Maidens Brook, but can hardly have been absent in the gas main trench if it had continued on the line and at the depth it had in the excavated area. The 1960s excavators will have had no way of planning its course beyond the end of this, even though they walked through at least parts of it, and it is conceivable that it turned sharply south of the gas main trench, e.g. turning east (maybe to meet drain [0512]/[0907]; for which see the main book text p 139). However, its excavated orientation would take it towards gas main trench feature [151], for which there is no photographic record, but which may be identified as part of a garderobe structure. So it seems likely that the drain was in fact apparently absent because the gas main had crossed it at a point where its flow ran through a garderobe pit (see further below).

<sup>8</sup> Drayton in the 1963 – 6 site diaries (and in Jones and Drayton (1984) 46) says that ‘one of the [three] drains [found] was probably the continuation of that found previously on the site’, but beyond identifying *either* the most westerly or easterly of them as this supposed continuation she does not comment despite her published plan making it virtually impossible that either could be the drain excavated in 1963 – 6 and both being far smaller than it.

Thus, certainty about the relationship between the 1963 – 6 excavated structures and the features in the gas main trench is impossible (and, very limited, ground penetrating radar survey also failed to do more than hint at the possible presence of ?drains and ?walls south of the gas main trench and – probably – mainly east of the main 1963 – 6 work).<sup>9</sup> But it does seem likely that the structures in the two areas were united at least by the palace drainage system as augmented in Site Phase 2.

### *The Features Recorded in the 1967 Gas Main Trench (MJD with PD)*

Drayton though published little detail about what was seen in 1967 and the 1963 – 6 site diary notes, continued in 1967, add little more. She wrote that ‘most of the brickwork was clearly of Phase III’ (i.e. she believed it to be of Tudor date), but ‘in one place a later structure had been added’.<sup>10</sup> Drawn records (Fig. 2) indicate that this was [152]/[153], but why she regarded it as of Phase IV she does not say and actually a block of brickwork ([153A]) laying over [152]/[153] looks to be later in phase than [152] and [153].<sup>11</sup> She also says that she believed one of the Phase III structures was ‘the n.w. corner of [a] tower and its north wall lay along the line of the trench of 21 ft [6.40 m] where there was a cross wall’ (evidently then feature [150]), though it seems to be nearer 22 ft (6.70 m) long in drawn records. Otherwise, except for a few features noted below, she refers only to ‘another stretch of outside walling’ (maybe [154]) and ‘other, internal, walls, some showing signs of plaster’ (none now isolatable).<sup>12</sup> In order to describe the features encountered then one is very largely reliant on the photographic archive and the rather basic plan and section drawn (Fig. 2; though the originals of these are at a far larger scale than the versions published by Drayton or here). Study of these drawn and photographic records does, however, allow a description to be given in at least some cases and it is worth basically outlining, initially working from west to east along the eastern part of the recorded section where the brick built structures were concentrated, what basic facts can be established about each before a more detailed evaluation is attempted.

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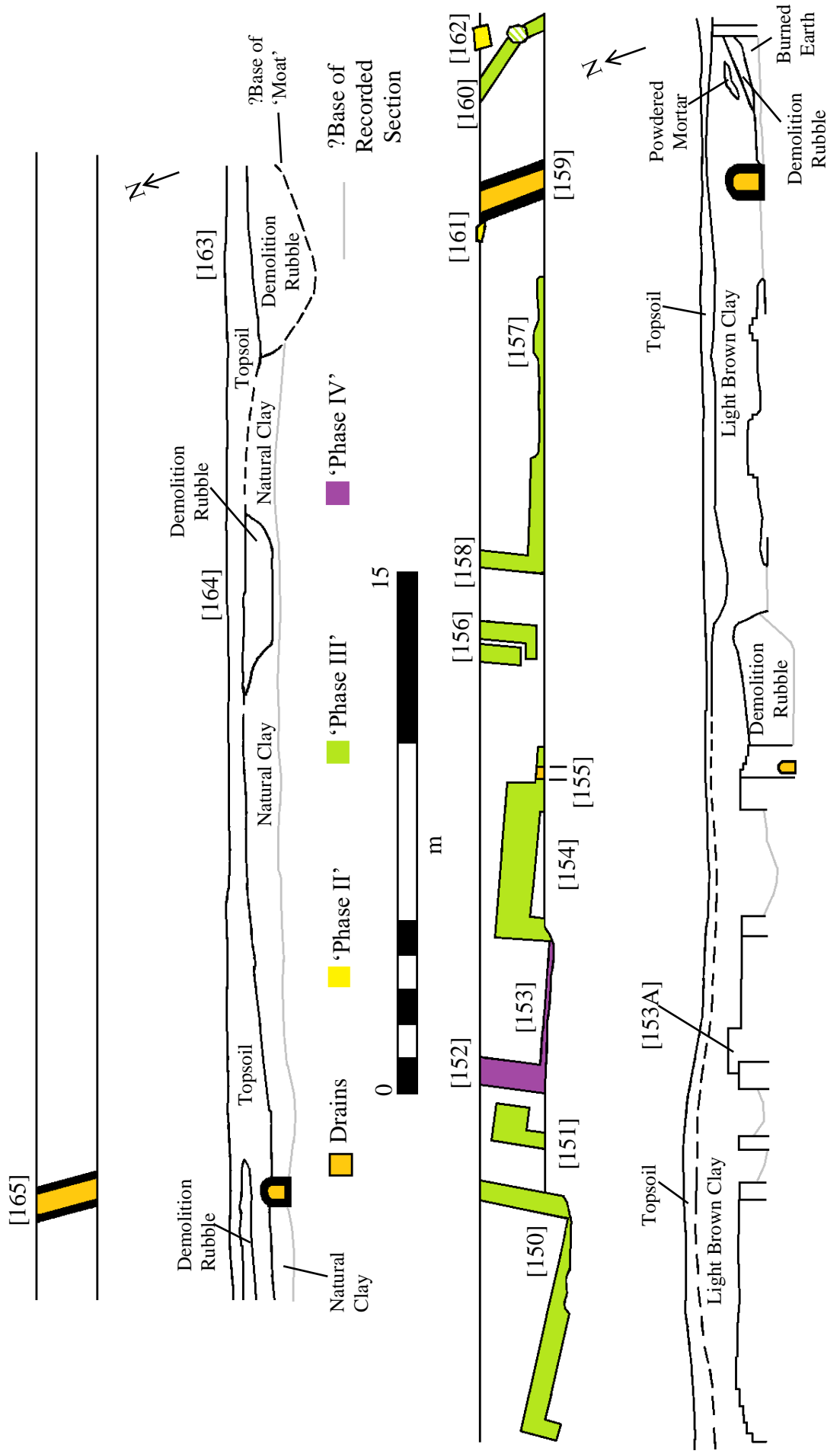
9 Linford (2000).

10 Jones and Drayton (1984) 46.

11 It is presumably possible that whoever drew the published illustrations misunderstood what Drayton meant and that she meant only [153A], but was inexplicit in her text. Otherwise it is difficult to see why Drayton would see [152] and [153] as of the same phase, why she did not regard [154] as of the same phase as [153] or why she would regard any of them as of the latest phase before demolition.

12 Jones and Drayton (1984) 46.

Fig. 2: Plan and Section of the 1967 Gas Main Trench with Drayton's Phasing  
 (For Which see the Evaluation of the 1963 - 6 Work) Indicated with Colour Coding





Drayton presumably interpreted feature [150] (Pls 2 - 4) as a tower projecting from a north south running exterior wall as it seems to have lain on the edge of [163], which she took to be a moat. Not unreasonably, she presumably saw it as complementing those fully known towers further south (1963 - 6 work [116] and [125]) and may have envisaged it as a continuation of the north west facade of the range partly excavated in the preceding years. Its walls seem to have been c. 0.58 m thick, but it would be far bigger than the two other towers. Around 1.20 m or so further east [151] appears to have been a 0.43 m wall running north to end in a 0.97 x 1.13 m square of brickwork on its east, but no more is known about it from site records, though it must have lain just out of shot to the left of Pl. 4.



Pl. 3: Wall [150] Looking East.



Pl. 4: East End of Wall [150] Where its Return to the North was Machine Truncated, Looking South.

Only 0.61 m east of [151] was [152], a 0.79 m thick wall which Drayton may have thought was of her Phase IV. Be that as it may, it clearly abutted rather than was bonded into an east west wall, [153], also marked as Phase IV on published plans, about 3.84 m long (Pls 5 - 7).



Pl. 5: Walls [152] on the Right, [153] and on the Left the Stub of the Western End Wall of Structure [154] with [153A] above [152] and [153], Looking South.



Pl. 6: [152], on the Right, Abutted by [153], Looking South

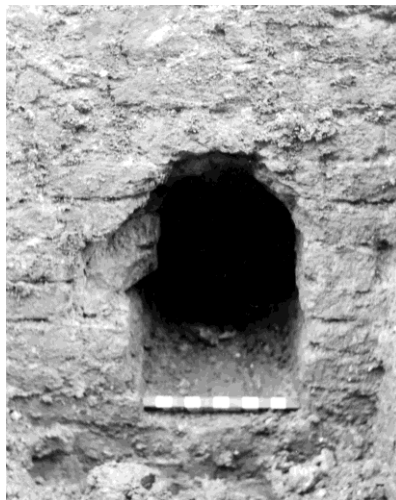
Not mentioned by Drayton (unless this was what she identified as her Phase IV modification) the drawn section (Fig. 2) and photographic evidence (Pls 5 and 7) also indicate a section of walling ([153A]) survived above and so was later than [152] and [153].





Pl. 7: Wall [153] Running up to Wall [152] (on Right) with Later Wall [153A] Above Both, Looking South

Wall [153] ran east up to a probably integral rectangular structure [154] which projected into the trench from the south. This last was presumably a substantial construction with its northern wall around 1.00 m thick (if what was recorded in plan was the wall not a wider foundation for one), an internal width of over 3.00 m and what might have been a c. 1.20 m long extension, [155], to the east pierced by what Drayton thought at least was a small drain. The ‘drain’ though (Pl. 8) did not continue across the width of the gas main trench, was only 12 inches (0.30 m) wide and 20 inches (0.50 m) high<sup>13</sup> and as it evidently ran south (not north towards Maidens Brook) whether it was a drain at all must be in doubt.



Pl. 8: The Small ‘Drain’ in the North Face of Wall [155], Looking South.

West of this records are even more sketchy. Two ?walls projecting 1.58 m into the trench from the north and together 1.28 m wide, [156], are only known from the plan (Fig. 2) which shows one forming an L-shape partly round the other (?as if to encase something such as a water pipe). About 1.58 m further east and evidently particularly disrupted/demolished, traces of two more walls, [157] and [158], probably amongst a deposit of brick rubble, seem to have been recorded, but the drawn section in this case is especially ambiguous and photographs (Pls 9 - 10) demonstrate that this area was flooded (see also Pl. 1)

<sup>13</sup> Jones and Drayton (1984) 46.

so the walls may have been founded below the level of the water table. Wall [157] appears to have been over 8.53 m in east west extent and [158] may have been about 0.40 m thick.



Pl. 9: Walls [158] (With Scale on it) and [157] (Far Right in the Side of the Trench), Looking East.



Pl. 10: Wall [157], Looking South

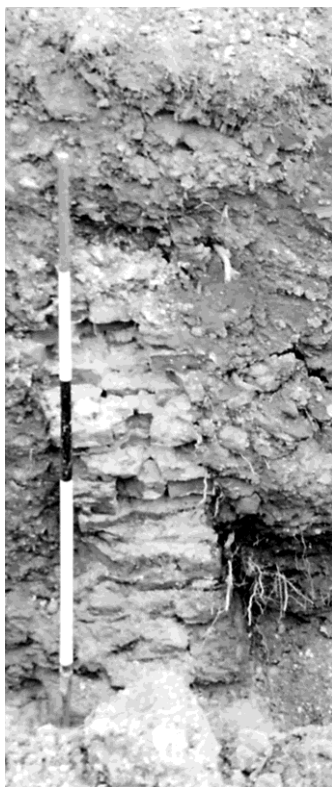
What is clearer is that not far east of this a substantial (around 0.60 m wide and 0.85 m high internally) vaulted drain [159] crossed the trench at an angle (Pl. 11).





Pl. 11: Drain [159], Presumably Looking South.

Of three other features identified by Drayton in the main area where structures were recorded one, [161], we know nothing about except that it is marked on the plan as of her Phase II, but it cannot have been more than a small fragment of brickwork perhaps suspiciously close to drain [159] to be a separate feature. A second though, [160] (Pl. 12), was a wall, perhaps only around 0.40 m thick and clearly on a quite different alignment to other features recorded. It incorporated a turn marked by an octagonal brick pillar (Pl. 13) ‘with sides 14 inches [0.35 cm] long’,<sup>14</sup> which had been extracted by the contractors and left on the spoil heap.



Pl. 12: Wall [160], Presumably Looking South.

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14 Jones and Drayton (1984) 46.





Pl. 13: Octagonal Brick Pillar Contractor Removed from [160].

The final feature, [162], is probably what Drayton commented of that it ‘might well have belonged’ to a structure of her Phase II ‘judging from its general appearance, the type of mortar (much sandier than in Phase III) and the fact that it was completely out of alignment with the other walls’.<sup>15</sup> One photograph (Pl. 14) likely shows it and indicates that it was the corner of a structure.



Pl. 14: Wall [162], Looking North.

Three other widely separated features were present at the opposite (west) end of the section recorded. One was the ‘moat’ [163]. Drawn records suggest that it had an asymmetrical, broadly U-shaped profile, give it a width of c. 6.09 m and a depth of c. 1.82 m. Around 5.18 m further west there was also a shallower (c. 0.60 m deep) and flat based ?cut [164], about 5.18 m wide, evidently filled with rubble and which one suspects was a large ditch (though as only one section was recorded one cannot be certain). The final

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<sup>15</sup> Op cit.

feature was another vaulted brick drain, [165], c. 25.30 m west of the 'moat'. It (Pl. 15) is shown with an internal width and height both of somewhere around 0.60 m and lay under a deposit of rubble.



Pl. 15: Drain [165], Presumably Looking South.

#### *The 1970 Gas Main Trench (MJD)*

A second major gas main installation project in 1970 (slightly modified to avoid the palace as its extent was then understood) was also watched by Drayton who wrote 'nothing of Elsynge Hall was revealed and the only stray finds were one or two sherds of 16<sup>th</sup> century pottery and the odd brick and tile'.<sup>16</sup>

#### *A Possible Interpretation of the 1967 Features (Fig. 3)*

The records of the 1967 gas main trench features briefly described above are then far more limited than one would like. However, often relying as much on the photographic evidence as anything, it is possible to make some positive deductions about their relationships and functions and to tentatively suggest the following evaluation (principally the work of PD) of the sequence of activity represented (which would not accord with Drayton's phasing, though on what basis that was proposed is largely unknown and elements of it seem difficult to accept).

Significant clues to interpreting what the features in the gas main trench represent seem to lie at the east end of the main recorded section. Here one can see that wall [160] had a battered but regular west face and a very irregular east face, built against a rough cut in the ground and filling its irregularities; the typical form of a retaining wall (Pl. 12). It survived to at least 1.50 m high and the cut seems likely to have been that of the moat enclosing the inner court, [160] presumably rising above ground level as a low balustrade wall. The octagonal shaft or pier, with faces 1.5 bricks/ 0.35 m wide (Pl. 13), marked a change of direction of the edge of the moat and [160] and this finds a ready parallel at Hampton Court in the stone shafts which rise above the crenelated parapet of the outer court bridge, begun in 1535, and which carry heraldic beasts.<sup>17</sup> The parallel implies that in this location the moat wall was prominent in a significant view, whether from within the inner court buildings or (less likely) of them from an approach. Together with the presence of building fragments to the west, it therefore seems that the pipe trench cut a transect across the northern edge of the inner court where a moat had curved out to the north to enclose it in what for convenience might be called Phase A.

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<sup>16</sup> EAS archives.

<sup>17</sup> Thurley (2003) 60, Fig. 61. The extant beasts are modern (c. 1950), but fragments of the originals survive.

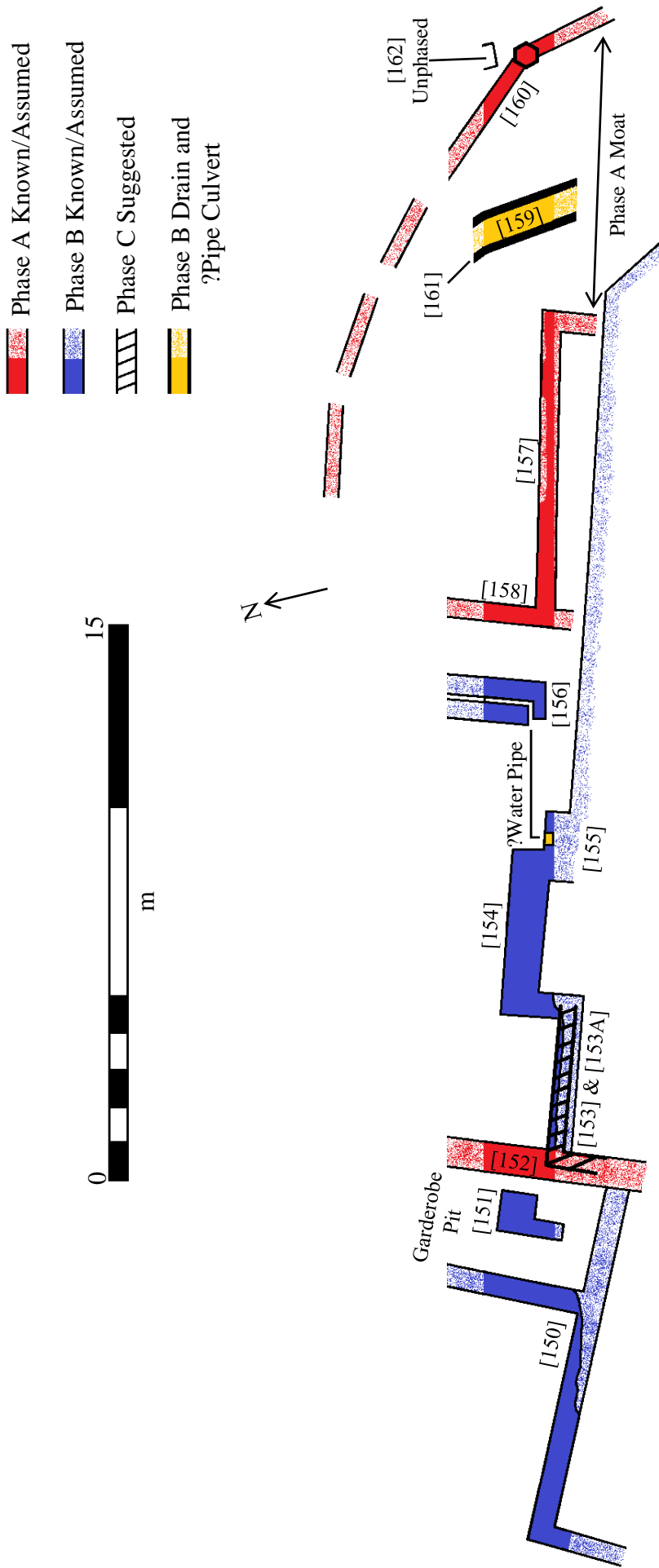


Fig. 3: Suggested Phased Interpretation



Of the building fragments west of such a moat those contemporary with it (so of Phase A) would appear to be [152], [157] and [158]. In contrast to the well-preserved walls further west, the remains of [157]/[158] seem to have been almost completely robbed.<sup>18</sup> [157] comprised only the lowest, footing course of the brick wall, with what should be the first course of the wall proper in the side of the trench; the same is true of [158] (Pls 9 - 10). Thus, whether or not the original superstructure of these walls was similar to that of [150] – [155] further west (and it probably was), their demolition history was very different. Moreover, they were found in the bottom of the pipe trench (Pl 9, and for context Pl. 1), probably at around 2.20 m below ground level and appear to have been shallowly founded in (probably natural) gravel (through which water flowed into the trench, suggesting that they were at the level of the water table). [157]/[158] then may have been parts of a structure rising from a (wet) moat immediately to their east and [152] appears likely to have been of the same phase given its agreement of alignment with them. It was two and a half bricks thick at the photographed level (Pl. 7)<sup>19</sup> and Pl. 6 suggests that it leaned slightly to the east by the time a later wall ([153]; the straight joint is unequivocal on Pls 6 - 7), was built up against it on that side.

At some point(s) it appears that, in what may be called Phase B, these structures were later demolished and the moat was filled and its retaining wall, [160], also demolished. Thus, demolition debris, originating from outside the moat and, in part at least, presumably from the demolition of the parapet was deposited against the retaining wall (Fig. 2); beneath it was burned earth, perhaps from burning associated rubbish. Above this the moat was filled on this side with ‘light brown clay’.<sup>20</sup> This deposit evidently covered the remains of [157]/[158] (Fig. 2; Pl. 10) including tip lines of mortar and small rubble trending from the east. Whether the demolition and robbing of [157]/[158] immediately predated the moat filling or whether it had happened earlier is unclear, but there is no obvious debris layer beneath the bulk fill, and the remains of the walls look rather weathered, which suggests separate events.

Be that as it may, as part of the process of filling the moat it appears that a drain was constructed, likely replacing its drainage functions. This vaulted brick culvert, [159],<sup>21</sup> was within the moat fill (Fig. 2); there is no archaeological detail of the relationship, but the culvert cannot be earlier than the filling of the moat within which it sat. This happened at Otford, Kent, the moated inner court of which was rebuilt by Archbishop William Warham in the second decade of the sixteenth century. The moat there was filled later in the century, almost certainly by Henry VIII in major but unspecified works of 1541 - 6, and brick culverts similar to [159] were incorporated in the clay filling of the moat. Here they channelled the water from a natural spring that formerly fed the moat, and collected the garderobes and rainwater pipes that originally discharged into it.<sup>22</sup> A main drain was thus built along one wall of the south lodging range, picking up one set of garderobe shafts in the excavated area and presumably more along the rest of the range. This seems to have addressed Henry’s initial aversion to the house because it ‘standiith lowe, and is rewmatische, loke unto Croydon, where I colde never be without sycknes’, in contrast to Knowle, which he acquired at the same time. The moat at Oatlands Palace, Surrey was similarly filled in during Henry’s works c. 1538 - 47, incorporating a substantial vaulted culvert in the filling.<sup>23</sup>

Filling one part of the inner court moat at Elsing does not, of course, necessarily imply filling it all, but, especially if it was at least broadly contemporary with the demolition of [157]/[158] (and probably [152]; see below), it could have been connected to a full remodelling of this part of the north of the inner court

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18 A depth of more than two courses of brick is indicated on the drawn section for [157], but the limited photographic evidence suggests that not all of this was necessarily *in situ* brickwork.

19 Though slightly wider on the plan.

20 Though this may not entirely tally with what is visible in, mostly black and white, photos.

21 The feature, [161], believed by Drayton to be earlier than [160], might alternatively have been the start of [159] turning westwards, but in the absence of a photograph no more can be said of it.

22 Philp (1984) Fig. 48, where the plan shows the drains and culverts within the Tudor moat fill. The photographs and sections, unlike the plan, make quite clear that here the culverts and drains in the latest moat were either built prior to the clay filling over the primary silt in the moat (e.g. Fig. 53, south drain) or cut through it (Fig. 50, aqueduct). The lower part of the culvert across the north side of the inner court still functions as an open channel in the bottom of a later cut, passing alongside the abutment of the Tudor bridge. See Colvin (1982) 217f for the documented history of Otford and Drury (2018), 32 - 4 for interpretation.

23 In phase B2A identified in Poulton (2010) especially pp 163 - 5 and Fig. 136; for the culvert, about 0.8 x 1.9 m, see especially p 153.

which did away at least with wet moats, even if the works were executed over an extended period of time. New structures, represented by [153]/[154]/[155], were then probably now built, perhaps continuing south of [157]/[158] beyond the line of the gas main trench, while contemporaneously or perhaps a little later more structures ([150] and [151]) were erected to their east. These seem to have been the most coherent of the features forming parts of structures recorded in the work and appear to have represented very similar looking walls of high-quality brickwork in English bond (standard before the mid-seventeenth century), two and a half bricks (c. 0.60 m) thick (except for the thickened section, [154]), with bonded internal angles to the turns. It may then be suggested that they may have all been roughly contemporary, forming the northern edge of a new range.<sup>24</sup> The wall [153]/[154]/[155] looks external (Pls 5 and 7) and if so [152], the sloping side of which [153] abutted, may not have fully survived after these new structures were built, but its stub may have been retained to serve a new function (see below).

The function of the structure represented by [153]/[154]/[155] is unclear. Photographs show that [153] and [154] bonded (Pl. 5), as probably did the thicker section of [154] to [155], the section with the small opening (Pl. 8), forming an integral structure extending east from its abuttal with [152]. The projection, [154], could, if [153] continued east to close it on the south, be a garderobe pit, or a large fireplace (c. 3.26 m wide internally) if it did not. Perhaps more likely though, given the stepped projection [155], it had a combination of these functions.<sup>25</sup> The small opening in [155], at a low level, appears to be cut, very neatly, through a wall, with no sign of a drain leading from it, and its invert apparently falling to the south against the slope (Pl. 8). Thus, rather than a drain, it is perhaps more likely that it allowed the passage of a lead water pipe. Similarly, [156] (of which there is sadly no photograph) resembles a pipe duct, if recorded rather wider than the c. 0.75 m one might expect with single brick walls to the duct.<sup>26</sup> It is then possible that a water supply pipe emerged from [155], turned to the east and was encased in [156] as it turned again to the north. It might just possibly have served a fountain on a terrace to the north.<sup>27</sup>

Further west both the internal and external angles of [150] bond (Pls 2 - 4) and it seems likely that this structure represents a room extending west beyond the general line of buildings found in 1963 - 6, with a garderobe projection or tower serving it on the north side, as Drayton indeed seems to have believed. The area between [150] and [152] can be identified as a garderobe pit with an internal pier terminating in a spine wall ([151]).<sup>28</sup> This is consistent with the tops of the surviving truncated walls found being considerably below the ground floor level of the buildings of which they formed part, but well above their foundation level which was nowhere recorded. There are no photographs of [151], but Pl. 4 shows the interior of the pit filled with relatively loose rubble over (from the visible section) what seems to be a fill accumulated in use. The east side of this pit will have been formed by [152], perhaps deliberately demolished only to a level where it could serve thus, and the pit would be in line with the major drain [118] found in 1963 - 6. If this drain flowed into and through the garderobe pit it would, as noted above, explain why this drain was not obviously represented in the gas main trench and suggest that structures [150] - [151] and [153] - [156] belonged to site Phase 2 (Drayton's Phase III; i.e. probably the remodelling by Sir Thomas Lovell) or later.

Meanwhile, at the west end of the main section recorded in the gas main trench, beyond all the building fragments, the irregular ditch-like cut [163], probably more than 2.00 m deep, about 6.00 m wide and filled with 'demolition rubble', also suggests the presence of some form of moat. This feature, presumably the continuation of moat [100] found in 1963 - 6, lay in front of the projecting room formed by [150] and this suggests that it was dug at the same time as or after the construction of that room. Logically therefore moat [100] had been cut (or extended) in some form, as [163], around [150]. Its filling with demolition rubble would also probably imply that it was still open when this part of the palace was

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24 If so though it was perhaps not the same range as that partly excavated in 1963 - 6 given the orientation of the latter.

25 See for example the east ranges of Nonsuch Palace for diverse ground plans of such projections: Colvin (1982) Fig. 18; Biddle (2005) Fig. 5; also the north side of the middle court at Oatlands Palace: Poulton (2010) especially 79 - 84 and overall phase plan. The pit would take up more space below ground than the shaft(s) above.

26 See for example the duct around Bishop Stillington's Chapel at Wells, 1477, still with its c. four inch (10 mm) pipe *in situ* surrounded by a clay jacket: Rodwell (2001) 202f and Fig. 199; 402 - 406. This one scales at c. 0.85 m overall.

27 As the palace's water supply is known to have been from the south one can rule out a water supply pipe entering the complex.

28 Piers within garderobe pits, from which presumably vaulting sprang to carry parts of a floor over, are known from e.g. Otford Palace in the 1520s (Philp (1984) Fig. 48, east of room 5).

finally demolished (as seems also to have been the case with [100]) and it may be likely to have been dry, more of a garden feature to emphasise the height of the buildings than a wet moat. Indeed, it could have been the 'ditch' in which a new perimeter wall was built in 1610/11 (see the main book text p 117). Similarly, before the final demolition it appears that there had been another phase (Phase C) of modifications represented by the demolition of [153] and construction of [153A]. This wall, its bricks less well laid and its joints roughly flushed up, overlies both [152] and [153], separated by a thin layer of fine debris and on a slightly different alignment, lacking a structural connection with the truncated walls below (Pls 5 and 7). In relation to its plan, the mortar bedding of the lowest course is visible above the east end of wall [152], a photograph (Pl. 5) suggesting (but not proving) that it continued eastwards in the same direction rather than following [154]. A quoin, if of a return, about half way across the top of [152] (Pl. 7) also suggests that it had a similar relationship to wall [152] extending southwards, and certainly that it was rather thinner than the underlying walls, one and a half or two bricks thick. Thus, wall [153A] was built after the demolition of the underlying structures, but while the course of their main walls was still known or evident. It was not a structure of similar scale or form, but rather suggests the form and scale of a garden wall. It would be consistent with the known 1610/11 remodelling of the inner court when perimeter walls are known to have been erected after substantial demolition (see the main book text p 117).

In summary then, though admitting that to a greater or lesser extent interpretation is speculative given the poor quality of the records available, a basically three phase sequence may be suggested:

Phase A: a wet moat, curving out to the north to enclose that end of the inner court, edged with a balustrade wall [160] featuring brick piers and enclosing a range represented by [152], [157] and [158]

Phase B: the demolition of this range and the balustrade wall, insertion of the drain [159], filling of the moat, and then construction of a new range and perhaps a water supply system, represented by [150], [151], [153], [154], [155] and [156] and bounded on the east by a ?dry moat [163]

Phase C: the demolition of the Phase 2 range and construction of a perimeter wall, [153A], ?in 1610/11 to enclose the north court which no longer had structures along its north side.

Attempting to tie this sequence to the main site phasing (for which see the main book text p 138) takes speculation further and must be even more tentative. That Phase C might well date to 1610/11 (within Site Phase 4 ?= Drayton Phase IV) is less problematic than the other putative phases. But for all phases all there is to go on is the suggested identification of a garderobe pit between [150] and [152] implying the existence of the large drain known from the 1963 – 6 work and itself assumed to be the work of Sir Thomas Lovell (so Site Phase 2 = Drayton Phase III); and maybe the appearance of the mortar in use. For Phase A the only evidence of the mortar is photographic and restricted to [152] (e.g. Pl. 6). It appears to be white in colour which would tally better with Site Phases 2 to 4 than the often yellower mortars of Phase 1b. But this is very slim evidence on which to build any interpretation. Moreover there is nothing that obviously rules out the garderobe pit on the line of the Phase 2 drain already existing, or the drain existing but later to be replaced by the garderobe pit, in Phase A with the changes in Phase B belonging to Site Phase 3 (largely the period of royal ownership). There is no sign in the royal period repair accounts of such works, but these accounts are often undetailed (and one set in the 1540s may be missing), so all that can be concluded is that Phase A most likely belonged to Site Phase 1a *or* 2 and Phase B to Site Phase 2 *or* 3.

This leaves three features to evaluate. The ?ditch [164], filled with demolition rubble, maybe belonged to Phase B or later but no more can be said of it, unless perhaps it represents a much shallower ornamental (?dry) moat paired with [163] as at some point existed south of the outer court south west range (see the main book text p 163). The drain [165] well west of the other features *might* also be of Phase B from its similarity to [159] and might have served the palace gardens, which appear to have mainly lain to its west (see the main book text p 213). The corner of a structure ([162]) just east of the balustrade wall, [160],



though is far more difficult to evaluate. If Drayton was right to allocate it an early position in her phasing of the 1963 – 6 site maybe [160] and the moat it edged actually changed direction to avoid it so that it was the corner of an existing building outside the actual palace and pre-dated Phase A, but with so little to go on this must be no more than a guess.