Project Name:
N52 Tullamore Kilbeggan Link Scheme

Licence Reference No:
11E87

Townland Names:
Ballybought, Balleek Beg, Gormagh, Co. Offaly

Site Type:
N/A

Nat. Grid Ref.
Area 1: 233336/231744 to 233308/231639
Area 2: 233240/231374 to 233199/231206
Area 3: 233184/231130 to 233158/230984
Area 4: 233142/230948 to 233130/230805
Area 5: 233308/229432 to 233425/229067
Area 6: 233418/229014 to 233550/228830
Area 7: 233550/228830 to 233593/228772

Chainage:
N/A

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Status of Report:
Final

Date of Issue
10 June 2011

IAC Irish Archaeological Consultancy

ACKNOWLEDGEMENTS

Irish Archaeological Consultancy Ltd. would like to acknowledge the assistance of the following in bring the project to a successful conclusion:

NRA
Project Archaeologist Orlaith Egan

Offaly County Council
Resident Engineer John Mitchell

SUMMARY

The following report describes the results of archaeological testing along the route of the N52 Tullamore to Kilbeggan Link Scheme, Co. Offaly. The testing was carried out by David Bayley of IAC Ltd. under excavation licence number 11E87 as issued by the Department of Arts, Heritage and Gaeltacht Affairs in consultation with the National Museum of Ireland. The work was undertaken on behalf of Offaly County Council and the National Roads Authority and it took place between the 04 May and 11 May 2011.

The aim of the programme of test excavation was to determine the significance, location, date, nature and extent of any archaeological features and/or deposits, which may exist within the testing area. The subsequent results would be used to inform further mitigation of any archaeological features located within the CPO of the proposed scheme.

The works were carried out as part of the Environmental Impact Statement for the scheme.

A total of 4771 linear metres were excavated within the seven areas to be tested (Areas 1–7). Four archaeological sites were discovered during the course of the works. These sites comprised: a truncated burnt mound (Ballybought 1: Area 1); a kiln, isolated pits and linear ditches (Ballybought/Balleek Beg 1: Area 3); two groups of pits (Balleek Beg 1: Area 4); and a metalworking pit (Gormagh 1: Area 5). All sites are described in detail below.

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1 INTRODUCTION

1.1 General

The following report describes the results of archaeological testing along the route of the N52 Tullamore to Kilbeggan Link Scheme, Co. Offaly (Figures 1–3). The testing was carried out by David Bayley of IAC Ltd. under excavation licence number 11E87 as issued by the Department of Arts, Heritage and Gaeltacht Affairs in consultation with the National Museum of Ireland. The work was undertaken on behalf of Offaly County Council and the National Roads Authority and it took place between the 4 and 11 May 2011.

The aim of the programme of test excavation was to determine the significance, location, date, nature and extent of any archaeological features and/or deposits, which may exist within the testing area. The subsequent results will inform further mitigation of any archaeological features located within the footprint of the scheme that may be impacted upon by the proposed development.

A geophysical survey was undertaken across the length of the scheme by Earthsound Archaeological Geophysics in 2010 (Licence ref 10R137). This work was undertaken to inform the impact assessment for the proposed route. An Environmental Impact Statement has also been prepared for the scheme. Chapter 10 of this document deals with the Archaeology and Cultural Heritage (Roughan and O'Donovan 2011).

This phase of test trenching (11E87) was undertaken to assess specific areas of potential highlighted in the EIS and geophysical survey.

Test trenching commenced on the 4 May 2011 and lasted for 6 days. This was carried out using 1 No. 13 tonne excavator under strict archaeological supervision. A total of 4771 linear metres of trenches were excavated across the site, which comprised Test Areas 1–7 (Figures 1–3).

1.2 The Development

The proposed development will involve the development of the N52 Tullamore to Kilbeggan National Secondary route from the northern end of the N52 Tullamore Bypass to the southern end of the M6 interchange at Hallsfarm Co. Westmeath. The scheme will comprise the improvement of approximately 8.2km.

1.3 Site Description

The route of the proposed road is located in the townlands of Ballybought, Balleek Beg and Gormagh within the parish of Durrow and barony of Ballycowan, Co. Offaly. The subject lands currently comprise of relatively low flat pasture & arable fields. The physical landscape of the receiving environment consists of an undulating landscape, characterised by a large esker ridge (part of the Esker Riada system), which the proposed route will cross at Balleek Beg and Ballybought. The landscape to the south of the main esker ridge consists of undulating terrain, which for the most part is used for arable production. To the north of the esker the landscape is characterised by large tracts of level, drained bog land. A large part of this area has been subject to intensive improvement since the post medieval period, with the insertion of drains and the straightening of rivers. However, some significant areas of peat deposits still remain to the north of the scheme.

In terms of the National Grid the areas are located between:
Area 1: 233336/231744 to 233308/231639

Area 2: 233240/231374 to 233199/231206
Area 3:233184/231130 to 233158/230984
Area 4:233142/230948 to 233130/230805
Area 5:233308/229432 to 233425/229067
Area 6:233418/229014 to 233550/228830
Area 7:233550/228830 to 233593/228772

2 ARCHAEOLOGICAL BACKGROUND

(Summarised extract of draft N52 Tullamore Kilbeggan Link Environmental Impact Assessment report, Archaeology & Culture Heritage section)

Prehistoric Period

Neolithic Period
There are no recorded Neolithic sites located in the vicinity of the proposed route. The closest site dated to the Neolithic is located *c*. 1.5km north-east of the northern end of the proposed scheme (Demesne or Mearsparkfarm 2, E2792), which was excavated prior to the construction of the N6. Features here ranged in date from the late Neolithic to middle/late Bronze Age. However, an examination of the stray finds recorded within the National Museum has revealed that a stone axehead from this period has been recovered from the townland of Ballybought (Ref.:1934:6044), although no specific find place is recorded.

The Bronze Age (c. 2500–800BC)
Burial tradition in the Bronze Age varied. Cremated or inhumed bodies were often placed in a cist, a small stone box set into the ground, or a stone lined grave. A cairn excavated in the townland of Lug to the east of the route recorded seven burial cists and two burial pits. Another cist was recorded nearby to the south of this area. Burials were sometimes made within cemeteries and marked within the landscape with the construction of an earthen barrow. These vary in form and can include the ringditch, the embanked ringditch, the ring barrow, the bowl barrow and the bowl barrow lacking an external bank. A barrow is recorded within the townland of Balleek c. 475m east of the proposed route. The most common Bronze Age site within the archaeological record is the burnt mound or *fulacht fiadh*. Recent excavations on the N52 Tullamore Bypass identified two burnt mound sites at Ardan (Ref.:E2846 & E2847) located to the south of the proposed scheme.

Iron Age *(c. 800BC – c. AD500)*
Archaeological excavations along the N52 Tullamore Bypass also resulted in the discovery of an Iron Age metal working site within the townland of Ballynasrah (Ref.: E2493), *c*. 1.4km south south-east of the proposed scheme. Furthermore, tradition holds that the Slighe Mor, was established during the Iron Age period (2nd century) and was known as one of five major route ways that crossed Ireland. The proposed route crosses the esker ridge likely to represent the path of the Slighe Mor in the townland of Balleek Beg and Ballybought. It is reputed that the five roads were 'discovered' on the night of the birth of Conn "of the hundred battles", the others including Slighe Asail, Slighe Midhluachra, Slighe Cua-lann and Slighe Dala.

Early Medieval Period

The ringfort or rath is considered to be the most common indicator of settlement during the early medieval period. There are three recorded ringforts located within the landscape surrounding the proposed route in Balleek, Balleek Beg and Ballybought. A further potential ringfort has been identified within the path of the proposed route in the townland of Balleek Beg. (This is located in Area 3 which was tested as part of the Stage (i) works). During the early medieval period, many large monasteries were founded, such as the Durrow Ecclesiastical Complex, located approximately 500m to the west of the proposed route. By the eighth century AD, the layout of these ecclesiastical centres had formalised into two concentric enclosures: an inner enclosure surrounding a church and graveyard and an outer enclosure surrounding dwellings and workshops. The outer enclosing ditch or vallum at Durrow

is visible on aerial photographs. Other elements of this complex dating to the early medieval period include grave slabs and a high cross.

Medieval Period

From the twelfth century onwards the Anglo-Normans constructed ringworks, motte and- baileys, stone castles and, later, moated sites. Mottes comprise flat-topped, steep-sided conical mounds surrounded by a bank and ditch. Timber buildings and defences would have been located on the flat summit of the motte. The bailey is an outer enclosure which may or may not be attached to the motte. A motte (RMP OF009:005-001) is among the sites consisting in Durrow Demesne. The buildings and defences of baileys would have been constructed of wood. Stone castles were also constructed and examples of such sites can be seen in the townlands of Ballybought and Ballynasrah or Tinnycross.

Post-Medieval Period

During the post medieval period the landscape to the west of the proposed route was gradually characterised by the development of the ornamental demesne associated with Durrow Abbey House. The edge of the demesne landscape is located *c*. 500m to the west of the proposed route. The house and estate passed through a number of hands after the dissolution of the monasteries before coming into the possession of the first Lord Norbury in 1745. At the beginning of the 19th century, a new house was constructed, which Lewis (1837) notes as being “situated in an ample and highly improved demesne”, and consists of “a spacious mansion in the ancient style”. This house was burnt down in 1923, during the Civil War, but was rebuilt in a similar style several years later. The house and forty acres of the demesne were eventually purchased by the state in 2005.

3 ARCHAEOLOGICAL TEST TRENCHING

3.1 Methodology

The aim of the programme of test excavation was to determine the significance, nature, extent character and condition of any archaeological features that may exist within the footprint of the scheme. The test trenches specifically targeted geophysical anomalies identified by the Geophysical survey by Earthsound Archaeological Geophysics (Licence ref 10R137). In addition to these the wider test area was tested with a standard array consisting of a series of parallel trenches with occasional trenches at right angles, at regular intervals, and to the limits of the footprint of the scheme (Figures 1–3). The subsequent results will inform further mitigation of the scheme impacts on any archaeological features located within the CPO.

Testing was undertaken through the mechanical excavation of trenches by 1 No. 13 tonne tracked machine fitted with a 1.8m wide toothless grading bucket under constant archaeological supervision. Trenches were excavated to the surface of archaeological deposits or the underlying natural subsoil, whichever was encountered first.

The test excavations assessed an area of measuring 12% of the footprint of the scheme in Areas 1–7, as required under the Stage (i) scope of this NRA contract as detailed in the Part 4 Service Requirements for the contract.

At locations where archaeological features were identified, additional test trenches were excavated in order to expose the full horizontal extent of the archaeological features/deposits and to establish the location, nature, date, significance and extent of the archaeological features.

Any archaeological features revealed were cleaned by hand and recorded using customised field record sheets or 'context sheets', as well as supporting records in the form of registers or lists of drawings, photographs, and the excavation director's field diary.

All archaeological features found were drawn to scale, photographed and OD levels taken. Comprehensive drawings were produced at appropriate scales.

The layout of all trenches and the locations of any features recorded within them were recorded by our qualified surveyors using GPS survey equipment and have been be plotted in National Grid in the report illustrations.

3.2 Trench Results

The areas to be investigated consisted of four defined areas as outlined in the table below.

Area	Townland	Size of Area(ha)	% to be tested	Linear meters trenching
Area 1 Greenfield area	Ballybought	0.37 ha	12%	267 linear meters
Area 2 Greenfield area	Ballybought	0.808 ha	12%	550 linear meters
Area 3 Greenfield area	Balleek Beg/Ballybought	1.534 ha	12%	1,073linear meters
Area 4 Greenfield area	Balleek Beg	0.533 ha	12%	327 linear meters
Area 5 Greenfield area	Gormagh	1.860 ha	12%	1,253 linear meters
Area 6 Greenfield area	Gormagh	1.6737 ha	12%	1,116 linear meters
Area 7 Greenfield area	Gormagh	0.278 ha	12%	185 linear meters

3.2.1 Test Area 1

Test Area 1 (Figure 1) was the most northerly of the test areas. It was positioned in relatively low flat pastureland to the east of the existing N52. The geophysical survey suggested the presence of a series of linear ditches in this area. A total of five trenches, totalling 267 linear metres were excavated in this area (Plates 1–4). In general the stratigraphy consisted of 0.3–0.5m of topsoil overlying natural subsoil which at the southern end of the test area comprised yellowy grey silty clay with occasional stone inclusions. Towards the central part of the test area, the subsoil changed to an orange/brown silty clay and at the northern end of the test area, the subsoil varied between grey marl/clay with patches of gravel and yellowy grey clayey silt.

One site of archaeological significance was recorded in this area, this is as follows:

Townland	Ballybought
Site name	Ballybought 1
NGR	233320, 231720
Site Type	Burnt Mound and linear ditches

Description

A very badly disturbed burnt mound spread was located at the northern end of Trench 2 at 62.2m OD. The remains comprised of two deposits of burnt mound material and random small patches of burnt stones pressed into the subsoil (Figure 1; Plates 2 and 3). The first deposit (C7) measured 1.4m (north–south) x 1.1m (east–west) x 0.18m deep. The material comprised charcoal rich gravelly sandy clay with occasional inclusions of burnt stone. This material (C7) appears to have been deposited in a natural depression, which probably explains why it survived *in situ*. The second spread (C8) measured 1.3m (east–west) x 0.7m (north–south) x 0.12m deep. This deposit also comprised charcoal rich gravelly clay with occasional burnt stone inclusions. To the west of C8, was a north-east–south-west oriented field drain. The drain (C9) measured 1.3m wide x 0.16m deep. The cut of the drain had a gradual break of slope at the top, gently sloping sides and the sides broke gradually into a flat base. The fill of the drain (C10) comprised mid-brown silt with large stones throughout, but most were concentrated along the northern side of the cut. Patches of disturbed burnt spread material were also noted mixed through the fill C10.

The geophysical survey conducted in Test Area 1 indicated the presence of two linear ditches towards the northern end of the test area. The northernmost of these ditches (C3) was recorded in Trenches 1, 2 and 3 (Figure 1; Plate 4). It was oriented roughly WNW–ESE and measured 1.55m wide x 0.36m deep. The cut comprised a gentle break of slope at the top, gently sloping sides and a flat base. It was filled by a mid-grey clayey silt (C4). The second ditch (C5) was recorded in Trenches 1 and 2. It was oriented east–west and measured 0.9m wide x 0.3m deep. The fill (C6) comprised light grey clay silt with occasional charcoal inclusions. The linear orientation of the ditches combined with the nature of the fill suggests that they are drainage features and are of little archaeological significance. The remaining anomalies highlighted in geophysical survey appear to be geological anomalies as no features were identified in the test trenches excavated at their location.

3.2.2 Test Area 2

Test Area 2 (Figure 1) was located *c.* 250m south of Test Area 1 in undulating arable farmland. The geophysical survey suggested the presence of a series of curving ditches and a possible pit in this area while the EIS identified a possible enclosure. A total of 15 trenches, totalling 550 linear metres were excavated in this area (Plates 5–

8). In general the stratigraphy consisted of 0.3–0.5m of topsoil overlying natural subsoil.

The first edition OS map (1840) indicated the presence of a possible routeway at the northern end of the test area (Figure 4). This was highlighted in the EIS as a potential line of the Slighe Mor (Roughan and O'Donovan 2011). At the northern end of Trenches 1, 2 and 3, a deposit of grey, stony gravel was recorded directly beneath the grass sod (depth of trench was *c.* 0.1m). This occurred for the northernmost *c*. 30m of Trench 1 and the northernmost *c.* 15m of Trench 3. This gravelly area was identifiable as a flat, raised area at the northern end of the field and may represent the remains of the routeway/track depicted on the first edition mapping (Plate 7).

The anomalies highlighted as potential archaeological features in the geophysical survey of Test Area 2 all appear to have been geological anomalies, as no archaeological features were recorded. At the southern end of the test area, the geophysical survey indicated a ferrous response and the first edition OS map (1840) depicts a structure in this area and a linear path leading to the 'Luganine' Roman Catholic Chapel the site of which is now occupied by a modern dwelling (Figure 4). It is possible that that this ferrous response equates partly to the line of this path. Trench 13 and an additional trench, Trench 15, were excavated over this anomaly. At the eastern end of Trench 13, the grass sod sealed stone and gravel that extended 10m into the trench. The trench then deepened to 0.45m deep and the subsoil comprised orangey brown silty clay. No evidence of anything structural was recorded in the trench however this trench did contain some dumped material which included modern broken iron objects. This may also account for the ferrous response identified in the geophysical survey. A north-south oriented stone filled field drain was recorded 6m from the western end of the trench. It measured 1.2m wide.

3.2.3 Test Area 3

Test Area 3 (Figure 2; Plates 9–17) was located to the south of Test Area 2, on the opposite side of the country road. This test area comprised two fields named for the purpose of this report as the north and south field. The north field was steeply sloping field of grazing while the southern field was an elevated field of crop. This test area was identified in the EIS as an area of potential (AAP 11) – a possible ringfort (Roughan and O'Donovan 2011). The geophysical survey suggested the presence of a series of possible pits, ditches and penannular anomalies in this area.

A total of 23 trenches totalling 1073 linear metres were excavated in this area. In general the stratigraphy consisted of 0.3–0.5m of topsoil overlying natural subsoil however topsoil exceed 1m deep at two locations in the northern field at the north-west end of Trench 7, in Trench 8 and 11 and to the eastern end of the northern field in Trenches 1, 10, 12, 13 and 14. One site of archaeological significance were recorded in this area, this is as follows:

Townland	Ballybought and Balleek Beg
Site name	Ballybought/Balleek Beg 1
NGR	133184/231130 to 233158/230984
Site Type	Kiln, ditches and pits
Description This site comprised a series of ditches, a kiln and a small group of pits. An east–west orientated ditch (C11) was recorded in Trenches 17, 18 and 23 in the southern field (Figure 2; Plate 11). It measured 1.6m wide x 0.55m deep. It was filled by a brown sandy silt (C12) that was very stony at the top and contained animal bone	

and a metal object which may be a possible metal bucket handle. In the northern field a linear ditch (C22) was recorded in Trenches 2 and 3 at 86.1m OD (Plate 17). It was oriented north-west–south-east and measured 1.6m wide x 0.37m deep. It contained two fills. The basal fill (C23) comprised orange brown silty clay while the upper fill (C24) comprised orangey brown silty clay. This ditch corresponded to a linear geophysical anomaly highlighted as possible archaeology in the geophysical survey (Figure 2). It is unlikely that these two ditches represent enclosure ditches associated with a ringfort and are more likely to be post-medieval field ditches.

A kiln (C13) was recorded in Trench 19 (southern field) at 87.8m OD (Figure 2; Plates 12 and 13). It was roughly keyhole shaped and measured *c.* 3m long x 2m wide (max.). In the small section that was excavated in the kiln (at its south-east end), the break of slope at the top was quite sharp and the side was steeply sloped. It contained four fills in this excavated section. The uppermost fill (C14), comprised mid-brown clay silt with occasional charcoal and burnt stone inclusions. Beneath C14, was a layer of grey/yellow sandy silt (C15). This in turn sealed a layer of black charcoal rich clay silt (C16). The basal layer (C17), comprised dark grey silty clay with occasional charcoal inclusions. Samples were taken from C17 and a general sample was taken from the central fills for Carbon 14 dating.

Two small pits were also recorded in Trench 17 in the southern field at 81.6m OD (Figure 2; Plates 14 and 15). The first of these (C18) measured 0.8m long x 0.4m wide and was sub-oval in shape. This feature was not sectioned but the upper fill (C19) was a charcoal rich grey silty clay. The second pit (C20) measured 0.4m diameter and a half section excavated through this indicated that it was 0.16m deep. The cut had near vertical sides with a sharp break of slope at the top and bottom and a flat base. The fill (C21), comprised a charcoal-rich dark grey silty clay. A soil sample was taken from pit C20 for the purpose of Carbon 14 dating.

Other features

The geophysical survey in Test Area 3 suggested the presence of a number of possible features in the north-west part of the northern field. The trenches excavated in this area identified the presence of a dump of modern material, mostly domestic wall tiles. The topsoil in this area was particularly deep, up to 1m in depth. The geophysical survey also indicated the presence of a curvilinear ditch in the north-east of the test area. Trenches 1, 12, 13 and 14 were excavated at the suggested location of a curvilinear ditch, but three separate linear features were recorded in these trenches rather than a curvilinear ditch. None of these linear features were deemed to be of archaeological significance.

An irregular shaped pit, measuring 1.2m (north-west–south-east) x 0.55m (north-east–south-west) x 0.22m deep was also recorded in Trench 14 (Figure 2). The sides of the cut were almost vertical and broke into an irregular, uneven base. The fill comprised dark brown clayey silt. The irregular shape in plan, and the irregular base would suggest that this feature was the result of field clearance work rather than archaeological activity.

3.2.4 Test Area 4

Test Area 4 (Figure 2; Plates 18–20) was located *c.* 50m to the south of Test Area 3. This area comprised a low level flat pasture field with a small esker ridge immediately to the south. The geophysical survey suggested the presence of a series of possible pits and ditches in this area.

A total of seven trenches, totalling 327 linear metres were excavated in this area. In general the stratigraphy consisted of 0.3m–0.8m of topsoil overlying natural subsoil

which generally comprised yellowy grey sandy clay, with occasional bands of gravel. One site of archaeological significance was recorded in this area. This is described below.

Townland	Balleek Beg
Site name	Balleek Beg 1
NGR	233142/230948 to 233130/230805
Site Type	Groups of pits

Description

Two groups of pits were identified at opposite end of the test area.

An isolated pit (C25) was recorded 3m from the northern end of Trench 7 (Figure 2; Plate 19). It measured 0.5m (east–west) x 0.4m (north–south). A section was excavated through this pit and was found to be 0.16m deep. The cut had a sharp break of slope at the top, with steep sides that broke into a flat base. It was filled by C26 a dark grey silt clay with charcoal inclusions and iron pan flecks.

A large pit (C27) was recorded 5m from the northern end of Trench 1 (Figure 2; Plate 20). It measured 1.7m in diameter while a section confirmed that it was 0.17m deep. The cut had a very sharp break of slope at the top, near vertical sides and a flat base. The fill (C28) comprised dark brown clay silt with occasional charcoal and angular stones. A second pit (C29) was recorded adjacent to C27. It measured 0.6m (north–south) x 0.46m (east–west). A section was excavated through this feature and it was found to be 0.11m deep. The break of slope at the top was quite gentle, the western side was steeply sloped and the southern side was gently sloped. The base was slightly concave. The fill (C30) comprised mid-brown silty clay with occasional flecks of charcoal and angular stones. A third feature (C31) was located 0.28m to the east of pit C29. It was sub-rectangular in plan and measured 0.5m (NNE–SSW) x 0.21m (ENE–WSW). This feature was not sectioned however the upper fill (C32) comprised mid-brown silty clay with occasional charcoal fleck inclusions.

Soil samples were taken from pit C25 for the purpose of Carbon 14 dating.

Other features

An east–west oriented linear feature was recorded 20m from the south end of Trench 6. It was 0.9m wide x 0.2m deep (Figure 2). It had gradually sloping sides and a flat base. The fill comprised grey clay with partly rotted grass and was deemed to be a modern feature. Nothing of archaeological significance was identified at any of the locations of potential highlighted in the geophysical survey. These anomalies were most likely caused by anomalies in the underlying geology.

3.2.5 Test Area 5

Test Area 5 (Figure 3; Plates 21–25) was located at the southern end of the scheme and comprised low level pasture field. The geophysical survey in this area suggested the presence of a series of possible ditches, a curving ditch, an enclosing ditch, kiln and pits.

A total of 17 trenches, totalling 1253 linear metres were excavated in this area. In general the stratigraphy consisted of 0.4m of topsoil overlying the natural subsoil was generally orangey brown silty clay with bands of grey sandy gravel. The majority of this field was in crop at the time of testing.

One site of archaeological significance was recorded in this area.

Townland	Gormagh
Site name	Gormagh 1
NGR	233377/229197
Site Type	Metallurgical pit

Description

A sub-circular pit (C33) was recorded in Trench 5 (Figure 3; Plate 24). It measured 1m x 1.2m and a quarter section through the pit revealed it to be 0.32m deep. The sides of the pit were very steep and broke into a flat base. It contained three distinct fills. The basal fill (C34) comprised large white sandstones that were lining the pit and a 0.1m deep layer of grey ashy sand. Above this was a layer of black charcoal rich silt (C35) which contained a large amount of slag. The uppermost fill (C36) comprised mid-brown silt and was 0.05m deep. It was situated at the north end of the pit. This is likely to be a metallurgical pit or furnace.

A second pit (C37) was located at the north-west end of Trench 13. It measured *c.* 0.25m diameter while an excavated section through the pit revealed it to be 0.09m deep. The sides of the cut were gently sloping and broke into a narrow, flat base. The fill (C38) comprised greyish black silty clay with frequent charcoal fleck inclusions. Additional trenches were excavated either side of this pit and no further features were identified. It was concluded that this feature was of little archaeological significance. No further work is proposed for this feature.

Additional features

A north-west–south-east oriented ditch (C39) was recorded in Trenches 3, 4 and 5 (Figure 3). A small section was excavated across this ditch in Trench 5. It was 0.7m deep with steeply sloped sides that broke into a shallow concave base. It was filled by (C40) a brown clay silt with frequent stone inclusions. This ditch equates to the line of a large tree-lined field boundary depicted on the first edition map of 1840. It is therefore interpreted as a post-medieval/modern, former field boundary.

While the geophysical survey indicated an anomaly close to where pit C33 was recorded, nothing of archaeological significance was recorded at the locations of any of the other anomalies highlighted by the geophysical survey. It would appear that the responses were caused by geological anomalies.

3.2.6 Test Area 6

Test Area 6 (Figure 3; Plates 26–28) was located to the south of Test Area 5 in a low level tillage/pasture field. The geophysical survey identified possible ringditches and areas of burning in this area.

A total of nine trenches, totalling 1116 linear metres were excavated in this area. In general the stratigraphy consisted of 0.15m of topsoil overlying gravel and rock. No sites of archaeological significance were recorded in this area.

3.2.7 Test Area 7

Test Area 7 (Figure 3; Plates 29 and 30) was located immediately south of Test Area 6 in a low level pasture field. The geophysical survey identified a possible penannular ditch, linear ditches and possible pits in this area.

A total of nine trenches, totalling 185 linear metres were excavated in this area. In general the stratigraphy consisted of 0.25m of topsoil overlying natural subsoil which comprised get marl/clay and orange sandy clays. No sites of archaeological significance were recorded in this area.

3.3 Discussion

Testing of Test Areas 1–7 revealed four archaeological sites, these are as follows:

Site Name	Test Area	Description
Ballybought 1	1	Burnt mound and linear ditches
Ballybought/Balleek Beg 1	3	Kiln, ditches and pits
Balleek Beg 1	4	Pits
Gormagh 1	5	Metallurgical pit/furnace

Ballybought 1

Ballybought 1 is a burnt mound site (also commonly referred to as *fulacht fiadh*) and is one of the most common field monuments found in the Irish landscape. The last published survey (Power *et al*. 1997), carried out over a decade ago, recorded over 7,000 burnt mound sites and in excess of 1,000 sites have been excavated in recent years through development led archaeological investigations. In spite of this no clear understanding of the precise function of these sites has been forthcoming. Burnt mound sites are typically located in areas where there is a readily available water source, often in proximity to a river or stream or in places with a high water table. In the field burnt mounds may be identified as charcoal-rich mounds or spreads of heat shattered stones, however, in many cases the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless even disturbed spreads of burnt mound material often preserves the underlying associated features, such as troughs, pits and gullies, intact.

Ó Néill (2003–2004, 82) has aptly identified these sites as the apparatus and by-product of pyrolithic technology. This technology involved the heating or boiling of water by placing fire-heated stones into troughs of water. Small shallow round-bottomed pits, generally referred to as pot boiler pits or roasting pits, are often associated with burnt mound sites. The purpose of these pits remains unclear. Occasionally large pits are also identified and may have acted as wells or cisterns. Linear gullies may extend across the site, often linked to troughs and pits, and demonstrate a concern with onsite water management. Post and stakeholes are often found on burnt mound sites and these may represent the remains of small structures or wind breakers.

Burnt mound sites are principally Bronze Age monuments and reach their pinnacle of use in the middle/late Bronze Age (Brindley *et al*. 1989−90; Corlett 1997). Earlier sites, such as Enniscoffey Co. Westmeath (Grogan *et al*. 2007, 96), have been dated to the Neolithic and later sites, such as Peter Street, Co. Waterford (Walsh 1990, 47), have been dated to the medieval period. Thus although burnt mound sites generally form a component of the Bronze Age landscape, the use of pyrolithic technology has a long history in Ireland.

Although there is a general consensus that burnt mound sites are the result of pyrolithic technology for the heating or boiling of water, the precise function of these sites has, to date, not been agreed upon. Several theories have been proposed but no single theory has received unanimous support. The most enduring theory is that burnt mounds sites were used as cooking sites. O'Kelly (1954) and Lawless (1990) have demonstrated how joints of meat could be efficiently cooked in trough of boiling water. The use of burnt mound sites for bathing or as saunas has been suggested as an alternative function (Lucas 1965, Barfield and Hodder 1987, O' Drisceoil 1988). This proposal is largely influenced by references in the early Irish literature to sites of a similar character and is very difficult to prove, or disprove. Others, such as Jeffrey

(1991), argue that they may have been centres of textile production for the fulling or dyeing of cloth. More recent demonstrations by Quinn and Moore (2007) have shown that troughs could have been used for brewing, however, this theory has been criticised by leading Irish environmentalists due to the absence of cereal remains from most burnt mound sites (McClatchie *et al*. 2007).

Although there were no positively identified troughs at Ballybought 1 the presence of heat fractured stone and charcoal-rich clay here is the characteristic evidence of the by-product of burnt mound sites. It is not intended to obtain Carbon 14 dates for this burnt mound at this (testing) stage as it is widely accepted that the majority of burnt mounds date to the Bronze Age.

Ballybought/Balleek Beg 1

This site comprised a kiln, ditches and a group of two small pits. This test area was identified in the EIS as an area of potential (AAP 11) – a possible ringfort (Roughan and O'Donovan 2011). Although no evidence of a ringfort was identified at this location the presence of a possible 'figure-of-eight' kiln is evidence of possible early medieval cereal processing in this area. Samples were taken from this kiln for the purpose of Carbon 14 dating to confirm this interpretation. Cereal-drying kilns were used for a variety of purposes, but were mostly related to the drying of cereals and other crops, and in Ireland the two basic purposes for which they were constructed seem to have been to dry grain and to harden it prior to grinding (O'Sullivan and Downey 2005, 32). The Irish 'corn-drying kilns' are frequently keyhole or dumb-bell shaped (*ibid. 33*). The basic kiln would comprise four main structural components: a *bowl*; *flue*; *stoke-hole*; and *drying platform* (*ibid.*). A fire would have been set at the *stoke hole* (which was either a natural depression or cut) at the mouth of the *flue*. This would be where the fire was burned to effect the drying (*ibid.*). The *flue* extends from the *bowl/drying platform*. The *drying platform* overlay the *bowl* and typically consisted of heavy timber supports overlain with wattles, carrying a layer of straw and/or straw mat, through which the heat was able to pass through from below to the grain/cereal (*ibid.*).

The two ditches identified (C11 and C22) are likely to represent linear field ditches. These are undated at present however a large metal bucket handle was recovered from ditch C11 suggesting that it is likely to be post-medieval in date. Animal bone was also recovered from this ditch and it is hoped to use this bone to date ditch C11.

The two isolated pits C18 and C20 are also undated at present. Pit C20 was sectioned during testing and found to contain charcoal-rich clay, while a possible metal object was noted protruding slight from the section. It is not intended to obtain Carbon 14 dates for these two pits.

Balleek Beg 1

This site comprised 2 groups of pits at opposite ends of the test area. These pits contained varying quantities of charcoal. It is not possible to suggest a function or date for these pits however they have been tentatively interpreted as groups of isolated prehistoric pits. Samples were taken from pit C25 for the purpose of Carbon 14 dating.

Gormagh 1

This site comprised one isolated pit containing metallurgical waste (C33) which, although did not have clear evidence of *in situ* burning in the excavated section, has been interpreted as a metallurgical furnace. Samples were taken form this pit for the purpose of Carbon 14 dating. It is usual for metalworking features to be positioned far

from domestic settlement due to risk of contamination/fire etc (see below) so it is possible that this is an isolated feature.

Furnaces, used for the smelting of ores into an iron bloom prior to the smithing stages, survive in the archaeological record as small shallow heat-scorched pits, usually oval or hemispherical in shape, containing fills of iron slag, charcoal and, in many cases, oxidised clay. Dense blocks of slag commonly form at the bottom of the furnace which have been termed plano-convex or 'furnace-bottoms' (Scott 1990, 155–6). Much of the technology associated with the primary stages of iron production such as charcoal production kilns, furnaces and smithing hearths, during the bloom smithing process, were located close to natural resources such as wood and bogland. This is not surprising because oak was the preferred fuel for charcoal production as it is denser and burns for longer than softer woods (Raftery 1994, 148; Tylecote 1962), while bog ore was more readily available and required less work to extract compared to mining and was also a regularly renewable resource (Mytum 1992, 230). The primary stages of ironworking generally took place away from dwellings due to the dangers associated with the production, such as the risk of fire and the toxic nature of the process. The results from recent excavations, such as along the M4 (Carlin *et al* 2008) and the M7/M8 (Kenny 2007) testify to this as the majority of furnaces were located in marginal places, availing of the limited drier and sloping ground, close to bog and woodland and away from settlements. However, furnaces do occur within enclosed early medieval settlements in some instances, such as Killickaweeny, Co. Kildare (Walsh 2008), and it appears that iron smelting was practised sometimes within enclosures, possibly in controlled safe environments away from the dwellings.

A second isolated pit was also identified (C37) however this was fully investigated during the testing phase and no further work is proposed.

3.4 Significance of Findings

The following significance criteria have been taken from Appendix 2 of the *Guidelines for the Assessment of Archaeological Impact of National Road Schemes 2006*. They are not presented in any ranking order and can be used to evaluate the significance of an archaeological site, monument or complex. They should not, however, be regarded as definitive, rather it is an indicator which contributes to a wider judgment based on the individual circumstances of each feature.

Existing Status

The level of protection associated with a monument or complex is an important consideration.

Condition/Preservation

The survival of a monument's archaeological potential both above and below ground is an important consideration and should be assessed in relation to its present condition and surviving features. Well-preserved sites should be highlighted, this assessment can only be based on a field inspection.

Documentation/Historical Significance

The significance of a monument may be enhanced by the existence of records of previous investigations or contemporary documentation supported by written evidence or historic maps. Sites with a definite historical association or an example of a notable event or person should be highlighted.

Group Value
The value of a single monument may be greatly enhanced by its association with related contemporary monuments or with monuments from different periods indicating an extended time presence in any specific area. In some cases it may be preferable to protect the complete group, including associated and adjacent land, rather than to protect isolated monuments within that group.

Rarity
The rarity of some monument types can be a central factor affecting response strategies for development, whatever the condition of the individual feature.

Visibility in the Landscape
It is important to recognise sites that have a limited distribution. Monuments that are highly visible in the landscape have a heightened physical presence. The inter-visibility between monuments may also be explored in this category.

Fragility/Vulnerability
It is important to assess the level of threat to archaeological monuments from erosion, natural degradation, agricultural activity, land clearance, neglect, careless treatment or development.

Amenity Value
The nature of the archaeological evidence cannot always be specified precisely but it may still be possible to document reasons to justify the significance of the feature. This category relates to the probability of monuments producing material of archaeological significance as a result of future investigative work. Regard should be taken of the existing and potential amenity value of a monument.

3.4.1 Ballybought 1

Existing Status
This site has no statutory protection.

Condition/Preservation
The site has no upstanding remains. The features that do survive represent the remains of a mound which has been truncated and leveled by agricultural activity.

Documentation/Historical Significance
There is no historical or documentary evidence of this site.

Group Value
This is likely to be an isolated feature. There are no previously identified sites in the immediate area of similar date or form.

Rarity
Ballybought 1 is a burnt mound which is one of the most common field monuments in the Irish landscape.

Visibility in the Landscape
This site currently has no surface expression and was not visible in the current landscape.

Fragility/Vulnerability
If the road scheme is to progress along the proposed route then this site is significantly vulnerable as it would be removed as part of the scheme.

Amenity Value
Excavation and post-excavation analysis of the site is unlikely to contribute significant new information on the function and date of burnt mound sites in Ireland.

Conclusion
Based on the above criteria Ballybought 1 could be considered to be of local significance only.

3.4.2 Ballybought/Balleek 1

Existing Status
This site has no statutory protection.

Condition/Preservation
The site has no upstanding remains. The features that do survive represent the remains of a kiln, ditches and pits which have been truncated and leveled by agricultural activity.

Documentation/Historical Significance
There is no historical or documentary evidence of this site.

Group Value
The kiln, if dated to the early medieval period, may be part of a wider early medieval landscape which includes nearby ringforts OF009-008 and OF009-007 and most notably Durrow OF009-005, 006.

The pits and ditches are undated at present so their group value cannot be determined.

Rarity
The kiln at Ballybought/Balleek 1 is a common feature in the Irish landscape. The ditches and pits are undated at present. It is likely that the ditches are post-medieval but possible that the pits are prehistoric.

Visibility in the Landscape
This site currently has no surface expression and was not visible in the current landscape.

Fragility/Vulnerability
If the road scheme is to progress along the proposed route then this site is significantly vulnerable as it would be removed as part of the scheme.

Amenity Value
Excavation and post-excavation analysis of the site is unlikely to contribute significant new information on the function and date of kilns sites in Ireland.

Conclusion
Based on the above criteria Ballybought/Balleek 1 could be considered to be of local significance only.

3.4.3 Balleek 1

Existing Status
This site has no statutory protection.

Condition/Preservation
The site has no upstanding remains. The features that do survive represent the remains of pits which have been truncated and leveled by agricultural activity.

Documentation/Historical Significance
There is no historical or documentary evidence of this site.

Group Value
The pits are undated at present so their group value cannot be determined.

Rarity
Isolated pits are common features in the Irish landscape.

Visibility in the Landscape
This site currently has no surface expression and was not visible in the current landscape.

Fragility/Vulnerability
If the road scheme is to progress along the proposed route then this site is significantly vulnerable as it would be removed as part of the scheme.

Amenity Value
Excavation and post-excavation analysis of the site is unlikely to contribute significant new information.

Conclusion
Based on the above criteria Balleek 1 could be considered to be of local significance only.

3.4.4 Gormagh 1

Existing Status
This site has no statutory protection.

Condition/Preservation
The site has no upstanding remains. The feature that does survive represents the remains of a metalworking pit.

Documentation/Historical Significance
There is no historical or documentary evidence of this site.

Group Value
The metalworking pit/furnace, if dated to the early medieval period, may be part of a wider early medieval landscape which includes most notably Durrow OF009-005, 006.

Rarity
The metalworking pit at Gormagh 1 is a relatively rare feature in the Irish landscape.

Visibility in the Landscape
This site currently has no surface expression and was not visible in the current landscape.

Fragility/Vulnerability
If the road scheme is to progress along the proposed route then this site is significantly vulnerable as it would be removed as part of the scheme.

Amenity Value
Excavation and post-excavation analysis of the site is unlikely to contribute significant new information on the function and date of metalworking features in Ireland unless it dates to the Iron Age.

Conclusion
Based on the above criteria Gormagh 1 could be considered to be of local significance only.

4 IMPACT STATEMENT

Sites Ballybought 1, Ballybought/Balleek 1, Balleek 1 and Gormagh 1, which were identified by advance testing, will be adversely impacted upon by the proposed development, if it is to proceed as planned, as they lie within the lands made available for the construction of the road scheme. In this instance construction works on site will result in the removal of these sites.

5 MITIGATION MEASURES

If the road scheme is to proceed as planned then it is recommended that Ballybought 1, Ballybought/Balleek 1, Balleek 1 and Gormagh 1 are fully preserved by record in advance of construction.

6 PROPOSAL FOR FURTHER WORK

It is proposed to obtain four Carbon 14 dates for the sites identified during the Stage (i) testing. These are as follows.

Site Name	Context #	Sample #	Sample type	Feature Type	Area
Ballybought/Balleek 1	C12	1	Animal bone	Ditch C11	Area 3
Ballybought/Balleek 1	C17	3	Carbonised seed	Kiln C13	Area 3
Balleek 1	C26	6	Charcoal	Pit C25	Area 4
Gormagh 1	C35	10	Hazelnut shell	Metallurgical waste pit C33	Area 5

Timeframe for delivery

Site Name	Context # / sample	Timeframe for delivery
Ballybought/Balleek 1	C12 Sample 1	1–4 weeks from 9 June 2011
Ballybought/Balleek 1	C17 Sample 3	1–4 weeks from 9 June 2011
Balleek 1	C26 Sample 6	3–5 weeks from 9 June 2011
Gormagh 1	C35 Sample 10	3–5 weeks from 9 June 2011

The dating results of the various features will be included in an addendum to this report which will be submitted to the NMI and the Department of Arts, Heritage and Gaeltacht Affairs.

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APPENDIX 1 ARCHIVE INDEX

Appendix 1.1 Context Index

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
C1	N/A	N/A	N/A	N/A	Topsoil	Generally a mid-brown sandy clay	None
C2	N/A	N/A	N/A	N/A	Subsoil	Varied: gravels and clays	N/A
C3	N/A	N/A	1.55	0.36	Ditch	Linear ditch	N/A
C4	C4	N/A	1.55	0.36	Ditch fill	Mid-grey clayey silt	None
C5	N/A	N/A	0.9	0.3	Ditch	Linear ditch	N/A
C6	C5	N/A	0.9	0.3	Ditch fill	Light grey clay silt	None
C7	N/A	1.4	1.1	0.18	Burnt mound material	Heat fractured stone and charcoal-rich clay	None
C8	N/A	1.3	0.7	0.12	Burnt mound material	Heat fractured stone and charcoal-rich clay	None
C9	N/A	N/A	1.3	0.16	Drain	Curvilinear drain	N/A
C10	C9	N/A	1.3	0.16	Drain fill	Mid-brown silt with stones	None
C11	N/A	N/A	1.6	0.55	Linear ditch	Gentle sides flat base	N/A
C12	C11	N/A	1.6	0.55	Ditch fill	Brown sandy silt with stones	Metal bucket handle
C13	N/A	3	2	0.25 min	Kiln	Figure-of-eight shaped	N/A
C14	C13	N/A	N/A	0.06	Upper fill	Mid-brown clay silt with charcoal and burnt stone	None
C15	C13	N/A	N/A	0.06	Middle fill	Grey/yellow sandy silt	None
C16	C13	N/A	N/A	0.06	Middle fill	Charcoal-rich clay silt	None
C17	C13	N/A	N/A	0.07	Upper fill	Dark grey silty clay	None
C18	N/A	0.8	0.4	N/A	Pit	Sub-oval pit	N/A
C19	C18	0.8	0.4	N/A	Pit fill	Pit fill	None
C20	N/A	0.4	0.4	0.16	Pit	Circular pit, vertical sides, flat base	N/A
C21	C20	0.4	0.4	0.16	Pit fill	Pit fill. Charcoal-rich dark grey silt.	None but possible metal artifact remains *in situ*
C22	N/A	N/A	1.6	0.37	Linear ditch	Gentle sides flat base	N/A
C23	C22	N/A	1.6	0.1	Ditch fill	Orange brown silty clay	None
C24	C22	N/A	1.6	0.27	Ditch fill	Orange brown silty clay	None
C25	N/A	0.5	0.4	0.16	Pit	Steep sides, flat base	N/A
C26	C25	0.5	0.4	0.16	Pit fill	Dark grey silty clay	None
C27	N/A	1.7	1.7	0.17	Pit	Large pit, vertical sides, flat base	N/A

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
C28	C27	1.7	1.7	0.17	Pit fill	Dark brown clay silt	None
C29	N/A	0.6	0.46	0.11	Pit	Pit, gentle sides, concave base	N/A
C30	C29	0.6	0.46	0.11	Pit fill	Mid-brown silty clay	None
C31	N/A	0.5	0.21	N/A	Pit	Sub-rectangular pit	N/A
C32	C31	0.5	0.21	N/A	Pit fill	Mid-brown silty clay	None
C33	N/A	1	1.2	0.32	Metallurgical pit	Circular in plan, steep sides, flat base	N/A
C34	C33	1	1.2	0.1	Base fill	Sandstone and grey ashy sand	Slag
C35	C33	1	1.2	0.17	Middle fill	Black charcoal-rich silt	None
C36	C33	1	1.2	0.05	Upper fill	Mid-brown silt	None
C37	N/A	0.25	0.25	0.09	Pit	Gentle sloping sides, flat base	N/A
C38	C37	0.25	0.25	0.09	Pit fill	Grey/black silt with charcoal	None
C39	N/A	N/A	5	0.7	Ditch	Linear field boundary	N/A
C40	C39	N/A	5	0.7	Ditch fill	Brown clay silt	None

Appendix 1.2 Catalogue of Artefacts

Registration Number	Context	Item No.	Simple Name	Full Name	Material	No. of Parts	Description
11E87:12:1	C12	1	Bucket handle	Metal bucket handle	Iron?	1	Curvilinear bucket handle

Appendix 1.3 Catalogue of Ecofacts

Site Name	Context #	Sample #	Sample type	Feature Type	Area	Potential for Datable Material	Comments	Volume/weight
Ballybought/Balleek 1	C12	1	Animal bone	Ditch	Area 3	Medium	Animal bone- washed	186g
Ballybought/Balleek 1	C23	2	Soil	Ditch	Area 3	Low	Un-processed	2.5 litres
Ballybought/Balleek 1	C17	3	Charcoal and bone	Kiln	Area 3	High	Processed	0.8g
Ballybought/Balleek 1	C15, C16, C17	4	Charcoal and bone	Kiln	Area 3	High	Processed	11g
Ballybought/Balleek 1	C21	5	Soil	Pit	Area 3	High	Un processed	2 litres
Balleek 1	C26	6	Charcoal	Pit	Area 4	Medium	Processed	>10g
Balleek 1	C28	7	Soil	Pit	Area 4	Medium	Un processed	2.5 litres
Gormagh 1	C35	8	Charcoal	Metallurgical waste pit	Area 5	High	Processed	37.6g

Site Name	Context #	Sample #	Sample type	Feature Type	Area	Potential for Datable Material	Comments	Volume/weight
Gormagh 1	C35	9	Slag	Metallurgical waste pit	Area 5	N/A	Processed	2315.8g
Gormagh 1	C35	10	Hazelnut shell	Metallurgical waste pit	Area 5	High	Processed	0.2g
Gormagh 1	C38	11	Soil	Pit	Area 5	Medium	Un processed	0.5 litres

Detail of Area 1

Trench 1

Ballybought 1

Trench 5

Trench 2

Ditch C3

Ditch C5

C8

C7

Field boundary

Drain C9

Trench 3

Ditch C3

Ditch C5

Ditch C3

233332, 221712

233324, 231719

62.24

62.05

62.19

62.63

62.68

62.13

102.40

Scale

0m 10m

LEGEND

Burnt Mound Deposits

Area 1
267 linear metres
excavated

Area 2
550 linear metres
Excavated

T1 T2 T3 T4

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15

TD

UND

CF

88

86.4

86.8

85.6

85.3

83.5

82.9

81.1

0m 50m 100m 150m

1/2500 @ A3

Proposed N52

To Tullamore

To Tyrrellspass

Existing N52

N

Key to Symbols

Archaeology testing to be carried out

- Greenfield Area
- Excavated Test Trenches
- Excavated Section
- Access Route
- Electricity Power Lines

Geophysical Key

- Archaeology
- Possible Archaeology
- Positive Magnetic Enhancement
- Ferrous Repsonse
- Cultivation Furrows
- Townland Boundary
- County Boundary
- Developement Boundary

Area Number	Area in Hectares
Area 1	0.3780
Area 2	0.8084
Area 3	1.5244
Area 4	0.5333
Area 5	1.8608
Area 6	1.6737
Area 7	0.2784

Title: N52 Tullamore to Kilbeggan Link Test Areas 1 and 2

Project: Archaeological Consultancy Services Contract
Proposed Test Trenching

Client: Offaly County Council

Scale: 1:2500 @A3 | Job No: J2639

Date: 27/04/2011 | Figure No: 1

Produced by: K Goucher

IAC Irish Archaeological Consultancy

Detail of Area 3 North field (1)

Trench 14
Irregular pit (Modern)
Trench 1
Trench 13
Trench 12
Trench 10
233232, 231117
233224, 231112
Scale 0m 10m

Detail of Area 3 North field (2)

Trench 2
Ditch C22
233200, 231093
233195, 231091
Scale 0m 10m

Detail of Area 3 South field (1)

Trench 23
Trench 17
Ditch C11
Trench 19
Kiln C13
Trench 18
233185, 231058
233185, 231047
233181, 231075
233178, 231070
Scale 0m 10m

Detail of Area 3 South field (2)

Trench 17
C20
C18
Trench 18
233172, 231015
233169, 231016
Scale 0m 10m

Detail of Area 4

Trench 7
C25
233127, 230856
233122, 230854
Scale 0m 10m

Area 2
550 linear metres
Excavated

Area 3
1,073 linear metres
excavated

Area 4
327 linear metres
excavated

0m 50m 100m 150m
1/2500 @ A3

To Tyrrellspass
Proposed N52
To Tullamore
Existing N52

Detail of Area 4

Trench 1
C29
C31
C27
233157, 230937
233149, 230931
Scale 0m 10m

Detail of Area 4

Trench 6
Trench 7
Linear feature (Modern)
233133, 230831
233125, 230831
Scale 0m 10m

Key to Symbols

Archaeology testing to be carried out

- Greenfield Area
- Excavated Test Trenches
- Excavated Section
- Access Route
- Electricity Power Lines

Geophysical Key

- Archaeology
- Possible Archaeology
- Positive Magnetic Enhancement
- Ferrous Repsonse
- Cultivation Furrows
- Townland Boundary
- County Boundary
- Developement Boundary

Area Number	Area in Hectares
Area 1	0.3780
Area 2	0.8084
Area 3	1.5244
Area 4	0.5333
Area 5	1.8608
Area 6	1.6737
Area 7	0.2784

Title: N52 Tullamore to Kilbeggan Link Test Areas 3 and 4

Project: Archaeological Consultancy Services Contract
Proposed Test Trenching

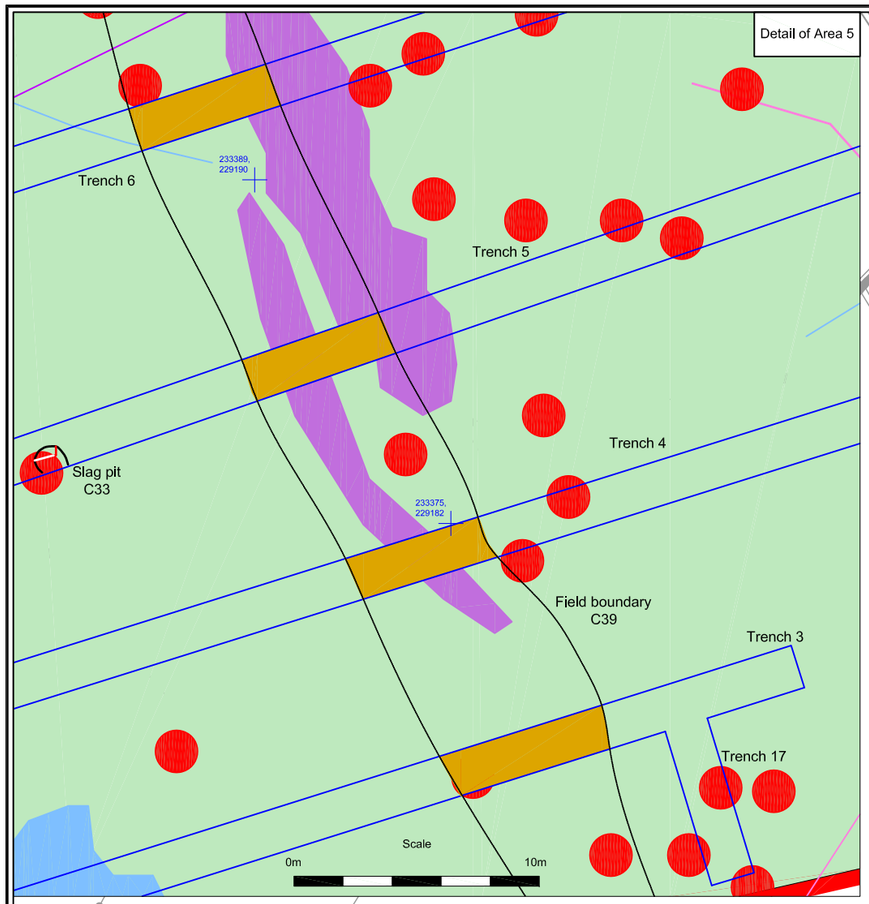
Client: Offaly County Council

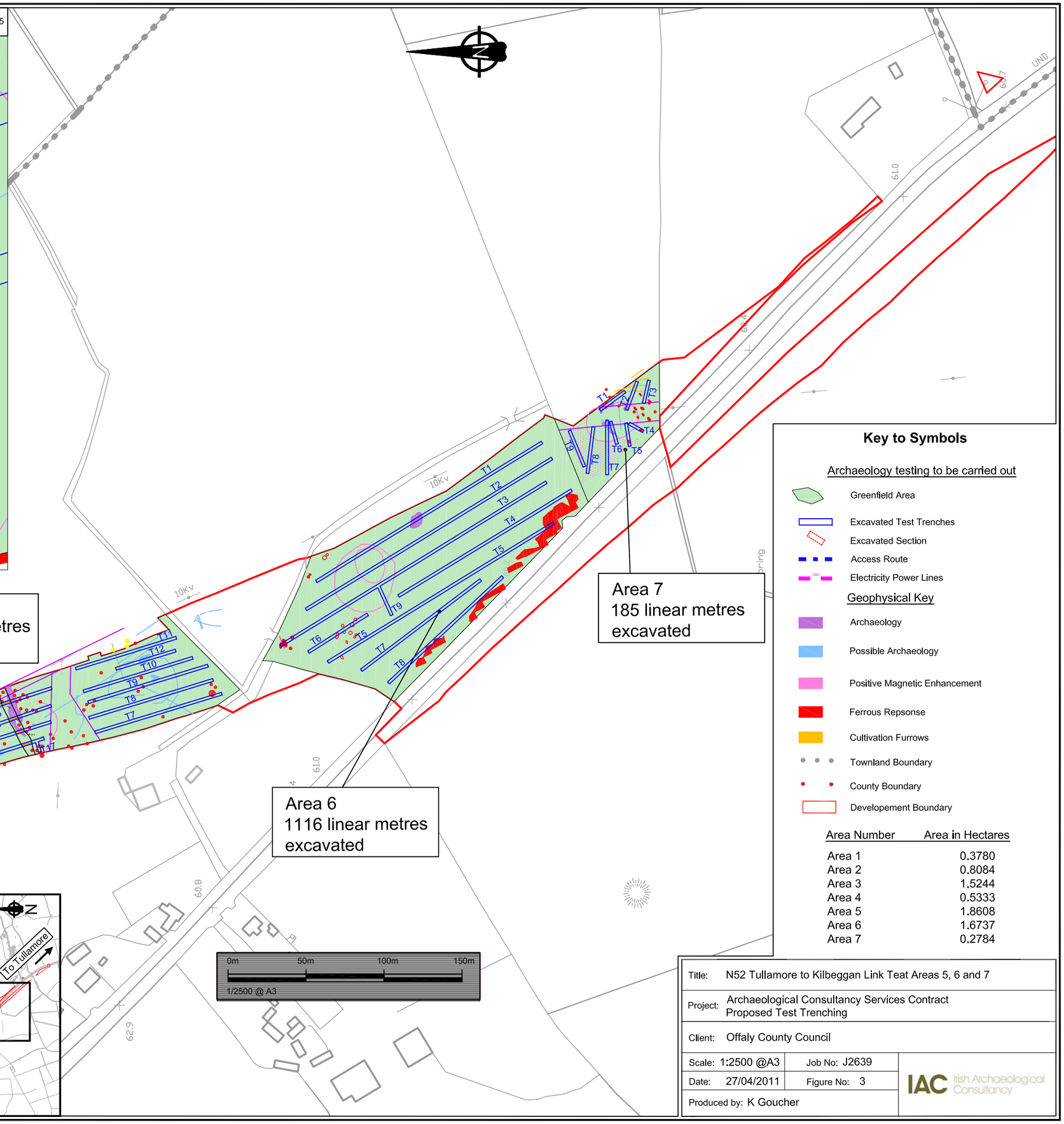
Scale: 1:2500 @A3 | Job No: J2639

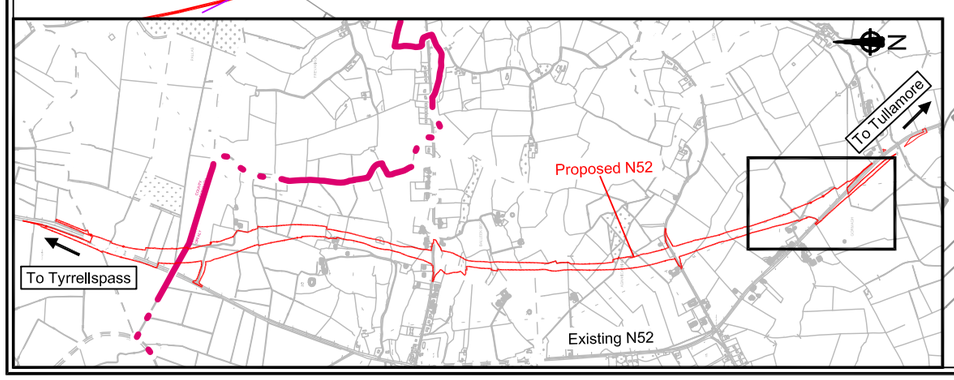
Date: 27/04/2011 | Figure No: 2

Produced by: K Goucher

IAC Irish Archaeological Consultancy







Key to Symbols

Archaeology testing to be carried out

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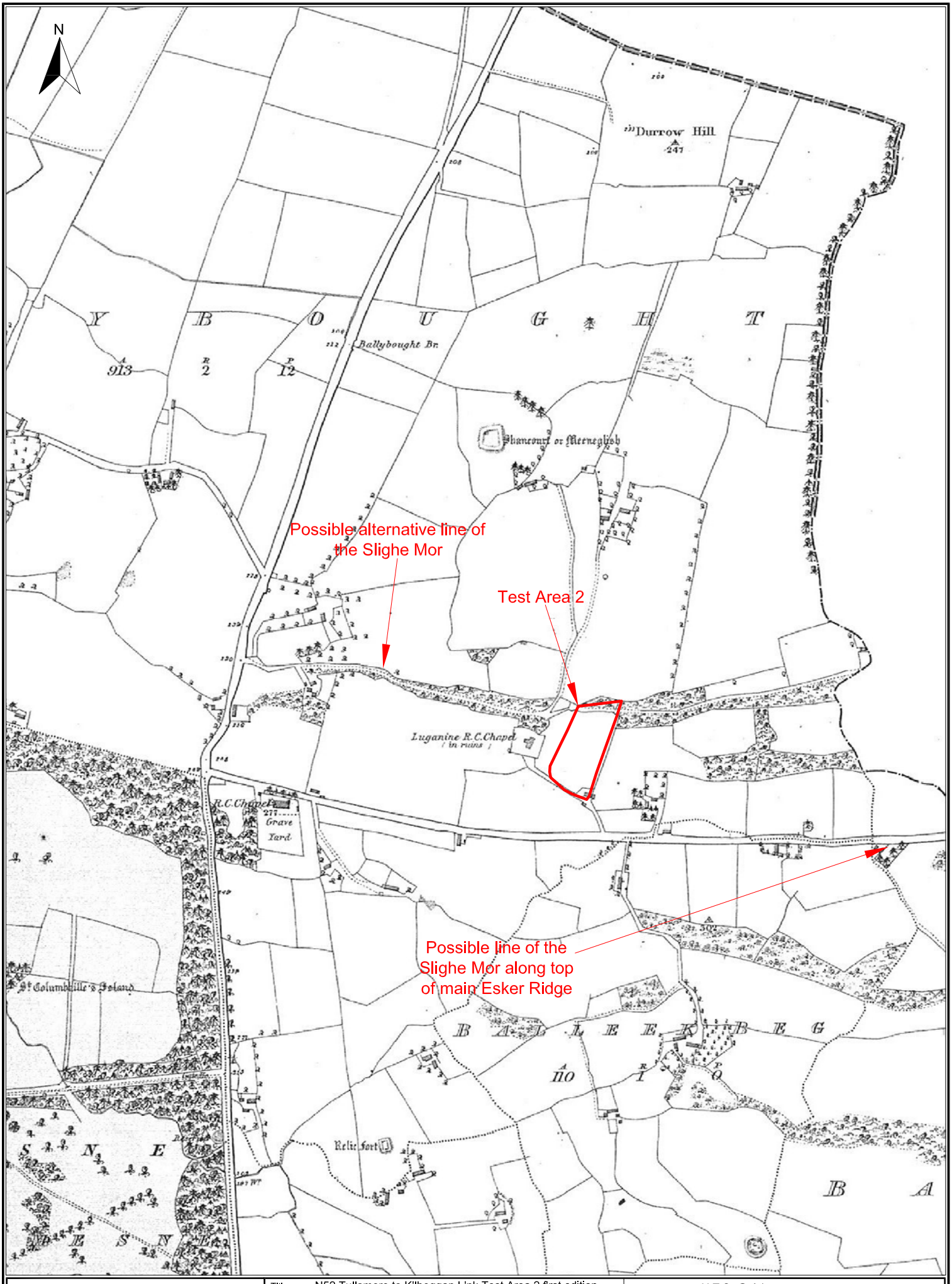
Area 7	0.2784

Title:	N52 Tullamore to Kilbeggan Link Teat Areas 5, 6 and 7		
Project:	Archaeological Consultancy Services Contract Proposed Test Trenching		
Client:	Offaly County Council		
Scale:	1:2500 @A3	Job No:	J2639
Date:	27/04/2011	Figure No:	3
Produced by:	K Goucher		

IAC Irish Archaeological Consultancy



IAC Irish Archaeological Consultancy

Title:	N52 Tullamore to Kilbeggan Link Test Area 2 first edition mapping
Project:	Archaeological Consultancy Services Contract Proposed Test Trenching
Client:	Offaly County Council

Scale:	N.T.S. @ A4
Date:	30/05/11
Produced by:	G Kearney
Job No:	J2639
Figure No:	4

Plate 1: Test Area 1, during testing, facing north

Plate 2: Test Area 1, Trench 5, showing drain C9, and burnt mound deposits C7 and C8

Plate 3: Test Area 1, Trench 2 and 5, burnt mound deposit C8, facing south

Plate 4: Test Area 1, Trench 3, Ditch C3, facing west

Plate 5: Test Area 2, during testing, facing south-east

Plate 6: Test Area 2, Trench 8, facing north

Plate 7: Test Area 2, Trench 2, facing south, showing gravel ridge/track in foreground

Plate 8: Test Area 2, Trench 5, facing west

Plate 9: Test Area 3, southern field, pre trenching, facing west

Plate 10: Test Area 3, southern field, Trench 15, facing north

Plate 11: Test Area 3, southern field, Trench 17, ditch C11, facing east

Plate 12: Test Area 3, southern field, Trench 19, kiln C13, facing north

Plate 13: Test Area 3, southern field, Trench 19, section through kiln C13, facing north

Plate 14: Test Area 3, southern field, Trench 17, section through pit C20, facing north

Plate 15: Test Area 3, southern field, Trench 17, pits C18 (left) and C20 (right), facing north

Plate 16: Test Area 3, northern field, Trench 10, facing east

Plate 17: Test Area 3, northern field, Trench 2, ditch C22, facing west

Plate 18: Test Area 4, Trench 3, facing north

Plate 19: Test Area 4, Trench 7, pit C25, facing south

Plate 20: Test Area 4, Trench 1, pit C27, facing north

Plate 21: Test Area 5, facing north

Plate 22: Test Area 5, facing south

Plate 23: Test Area 5, Trench 12, facing north

Plate 24: Test Area 5, Trench 5, pit C33, facing west

Plate 25: Test Area 5, Trench 2, facing south

Plate 26: Test Area 6, prior to testing, facing north

Plate 27: Test Area 6, Trench 1, facing south

Plate 28: Test Area 6, Trench 6, facing south

Plate 29: Test Area 7, prior to testing, facing east

Plate 30: Test Area 7, Trench 9, facing west

Project Name:
N52 Tullamore Kilbeggan Link Scheme

Licence Reference No:
11E087

Townland Names:
Ballybought, Balleek Beg, Gormagh, Co. Offaly

Site Names:
Ballybought/Balleek Beg 1
Balleek Beg 1
Gormagh 1

Nat. Grid Ref.
233184/231130 to 233158/230984
233142/230948 to 233130/230805
233377/229197

Chainage:
N/A

Consultant:
Irish Archaeological Consultancy Ltd.

Excavation Director:
David Bayley

Report Authors:
David Bayley & Fintan Walsh

Status of Report:
Addendum to Stage (i) Report

Date of Issue
03 August 2011

Irish Archaeological Consultancy

1 Introduction

1.1 General

The following addendum report describes the results of radiocarbon dating of samples retrieved from sites identified during recent Stage (i) archaeological testing along the route of the N52 Tullamore to Kilbeggan Link Scheme, Co. Offaly. The testing was carried out by David Bayley of IAC Ltd. under excavation licence number 11E087 as issued by the Department of Arts, Heritage and Gaeltacht Affairs in consultation with the National Museum of Ireland. The work was undertaken on behalf of Offaly County Council and the National Roads Authority and it took place between the 4 and 11 May 2011.

A total of 4771 linear metres were excavated within the seven areas to be tested (Areas 1–7). Four archaeological sites were discovered during the course of the works. These sites comprised: a truncated burnt mound (Ballybought 1: Area 1); a kiln, isolated pits and linear ditches (Ballybought/ Balleek Beg 1: Area 3); two groups of pits (Balleek Beg 1: Area 4); and a metalworking pit (Gormagh 1: Area 5).

1.2 Radiocarbon Dating Results

A total of four dates were sought from samples taken during initial Stage (i) testing as stipulated in the service requirements of the contract.

1.2.1 Ballybought/Balleek Beg 1 (Area 3)

Two samples, one from kiln C13 and one from ditch C11, were submitted from Area 3: Ballybought/ Balleek Beg 1 (Figure 2[1]). A fragment of animal bone from fill of ditch C11 returned a 2 Sigma calibrated result of AD 779–966 (QUB, UBA 18063) dating it to the early medieval period (Appendix 1). This early date differs substantially from an initial supposition that this ditch was a post-medieval linear field ditch. However the ditch itself, although early medieval in date, is unlikely to represent an enclosure ditch or ringfort ditch.

The 2 sigma result for fill of kiln C13 is AD 1298–1408 (QUB, UBA 18062) dating it to the medieval period.

Context	Sample No	Material	Species id/ Weight	Lab	Lab Code	Date Type	Calibrated date ranges	Measured radiocarbon age (BP)	13C/12C Ratio ‰
C17, Fill of Kiln C13	3	Seed	Cereal Grain, 0.01g	QUB	UBA 18062	AMS (Std)	AD1310–1398 (1 Sigma), AD1298–1408 (2 Sigma)	599±26 BP	-26.8
C12, Fill of Ditch C11	1	Animal Bone	Cow Mandible Bone, 21g	QUB	UBA 18063	AMS (Std)	AD783–942 (1 Sigma), AD779–966 (2 Sigma)	1161±26 BP	-21.2

1.2.2 Balleek Beg 1 (Area 4)

This site comprised 2 groups of pits at opposite ends of the test area (Figure 2). These pits contained varying quantities of charcoal. It was not possible to suggest a function or date for these pits however a prehistoric date has been confirmed for one of the pits (pit C25). A sample of hazel charcoal from this pit returned a 2 Sigma radiocarbon date of 3771–3651 BC (QUB, UBA 18060) dating it to the early Neolithic period (Appendix 1).

[1] Figures referenced in this addendum report equate to the figures submitted as part of the Stage (i) testing report.

Context	Sample No	Material	Species id/ Weight	Lab	Lab Code	Date Type	Calibrated date ranges	Measured radiocarbon age (BP)	13C/12C Ratio ‰
C26, fill of pit C25	6	Charcoal	Hazel, 0.1g	QUB	UBA 18060	AMS (Std)	3756–3655BC (1 Sigma), 3771–3651BC (2 Sigma)	4930±30 BP	-24.3

1.2.3 Gormagh 1 (Area 5)

This site (Figure 3) comprised one isolated pit containing metallurgical waste (C33) which, although did not have clear evidence of *in situ* burning in the excavated section, has been interpreted as a metallurgical furnace. A sample of hazelnut shell retrieved from fill C35 has returned a 2 Sigma date of 177–3 BC (QUB, UBA 18061) dating this to the Iron Age (Appendix 1).

Context	Sample No	Material	Species id/ Weight	Lab	Lab Code	Date Type	Calibrated date ranges	Measured radiocarbon age (BP)	13C/12C Ratio ‰
C35, Fill of Pit C33	10	Seed	Hazelnut Shell, 0.2g	QUB	UBA 18061	AMS (Std)	154–48BC (1 Sigma), 177–3BC (2 Sigma)	2076±27 BP	-20.8

APPENDIX 1: RADIOCARBON CERTIFICATES

Colette Rynhart
Irish Archaeological Consultancy Ltd
120b Greenpark Road
Bray
Co. Wiklow, Ireland
Rep. of Ireland
VAT No. IE8288812U

^{14}CHRONO Centre
Queens University Belfast
42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-18060
Date of Measurement:	2011-07-05
Site:	11E87 N52 Tullamore-Kilbeggan
Sample ID:	C26 S6 Hazel
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	IAC

^{14}C Date: 4930±30 BP

AMS δ^{13}C: -24.3

Information about radiocarbon calibration

```
RADIOCARBON CALIBRATION PROGRAM*
CALIB REV6.0.0
Copyright 1986-2010 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv
```

```
C26 S6 Haz
UBA-18060
Radiocarbon Age BP    4930 +/-   30
Calibration data set: intcal09.14c                  # Reimer et al. 2009
  % area enclosed       cal AD age ranges             relative area under
                                                    probability distribution
  68.3 (1 sigma)      cal BC 3756- 3754                     0.019
                             3749- 3744                     0.049
                             3713- 3655                     0.932
  95.4 (2 sigma)      cal BC 3771- 3651                     1.000
```

```
 References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell,
C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, PM Grootes,
TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer,
FG McCormac, SW Manning, RW Reimer, DA Richards, JR Southon, S Talamo,
CSM Turney, J van der Plicht, CE Weyhenmeyer (2009) Radiocarbon 51:1111-1150.

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE:  Cal ages and ranges are rounded to the nearest year which
       may be too precise in many instances.  Users are advised to
       round results to the nearest 10 yr for samples with standard
       deviation in the radiocarbon age greater than 50 yr.
```

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Co. Wiklow, Ireland
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VAT No. IE8288812U

^{14}CHRONO Centre
Queens University Belfast
42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-18061
Date of Measurement:	2011-07-05
Site:	11E87 N52 Tullamore-Kilbeggan
Sample ID:	C35 S10 Hazelnut Shell
Material Dated:	charred seed or nutshell
Pretreatment:	Acid Only
Submitted by:	IAC

^{14}C Date: 2076±27 BP

AMS δ^{13}C: -20.8

Information about radiocarbon calibration

```
            RADIOCARBON CALIBRATION PROGRAM*
                      CALIB REV6.0.0
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*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
         Annotated results (text) - -
         Export file - cl4res.csv
```

```
C35 S10 Ha
UBA-18061
Radiocarbon Age BP    2076 +/-   27
Calibration data set: intcal09.14c                # Reimer et al. 2009
  % area enclosed       cal AD age ranges           relative area under
                                                  probability distribution
  68.3 (1 sigma)      cal BC 154- 136                     0.187
                             114- 48                      0.813
  95.4 (2 sigma)      cal BC 177- 38                      0.981
                              28- 23                     0.007
                              10- 3                      0.012
```

```
 References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell,
C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, PM Grootes,
TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer,
FG McCormac, SW Manning, RW Reimer, DA Richards, JR Southon, S Talamo,
CSM Turney, J van der Plicht, CE Weyhenmeyer (2009) Radiocarbon 51:1111-1150.

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^{14}CHRONO Centre
Queens University
Belfast
42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-18062
Date of Measurement:	2011-06-23
Site:	11E87 N52 Tullamore-Kilbeggan
Sample ID:	C17 S3 Cereal Grain
Material Dated:	charred seed or nutshell
Pretreatment:	Acid Only
Submitted by:	IAC

^{14}C Date: 599±26 BP

AMS δ^{13}C: -26.8

Information about radiocarbon calibration

```
            RADIOCARBON CALIBRATION PROGRAM*
                      CALIB REV6.0.0
        Copyright 1986-2010 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
          Annotated results (text) - -
          Export file - cl4res.csv
```

```
C17 S3 Cer
UBA-18062
Radiocarbon Age BP    599 +/-   26
Calibration data set: intcal09.14c              # Reimer et al. 2009
  % area enclosed       cal AD age ranges           relative area under
                                                 probability distribution
  68.3 (1 sigma)      cal AD 1310- 1333                  0.404
                             1336- 1360                  0.410
                             1386- 1398                  0.186
  95.4 (2 sigma)      cal AD 1298- 1371                  0.750
                             1379- 1408                  0.250
```

```
 References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell,
C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, PM Grootes,
TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer,
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42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-18063
Date of Measurement:	2011-07-05
Site:	11E87 N52 Tullamore-Kilbeggan
Sample ID:	C12 S1 Cow Mandible
Material Dated:	bone, antler or tooth root
Pretreatment:	Collagen
Submitted by:	IAC

^{14}C Date: 1161±26 BP

AMS δ^{13}C: -21.2

Information about radiocarbon calibration

```
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                      CALIB REV6.0.0
        Copyright 1986-2010 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
         Annotated results (text) - -
         Export file - cl4res.csv
```

```
C12 S1 Cow
UBA-18063
Radiocarbon Age BP    1161 +/-    26
Calibration data set: intcal09.14c                  # Reimer et al. 2009
  % area enclosed       cal AD age ranges             relative area under
                                                    probability distribution
  68.3 (1 sigma)      cal AD 783- 788                       0.051

                             813- 844                       0.285
                             857- 897                       0.466
                             922- 942                       0.198
  95.4 (2 sigma)      cal AD 779- 794                       0.075
                             797- 901                       0.675
                             916- 966                       0.250
```

```
 References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell,
C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, PM Grootes,
TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer,
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```

Detail of Area 3 North field (1)

Trench 14
Irregular pit (Modern)
Trench 1
Trench 13
Trench 12
Trench 10
233232, 231117
233224, 231112
Scale 0m 10m

Detail of Area 3 North field (2)

Trench 2
Ditch C22
233200, 231093
233195, 231091
Scale 0m 10m

Detail of Area 3 South field (1)

Trench 23
Trench 17
Ditch C11
Trench 19
Kiln C13
Trench 18
233185, 231058
233185, 231047
233181, 231075
233178, 231070
Scale 0m 10m

Detail of Area 3 South field (2)

Trench 17
C20
C18
Trench 18
233172, 231015
233169, 231016
Scale 0m 10m

Detail of Area 4

Trench 7
C25
233127, 230856
233122, 230854
Scale 0m 10m

Area 2
550 linear metres
Excavated

Area 3
1,073 linear metres
excavated

Area 4
327 linear metres
excavated

0m 50m 100m 150m
1/2500 @ A3

To Tyrrellspass
Proposed N52
To Tullamore
Existing N52

Detail of Area 4

Trench 1
C29
C31
C27
233157, 230937
233149, 230931
Scale 0m 10m

Detail of Area 4

Trench 6
Trench 7
Linear feature (Modern)
233133, 230831
233125, 230831
Scale 0m 10m

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Title: N52 Tullamore to Kilbeggan Link Test Areas 3 and 4

Project: Archaeological Consultancy Services Contract
Proposed Test Trenching

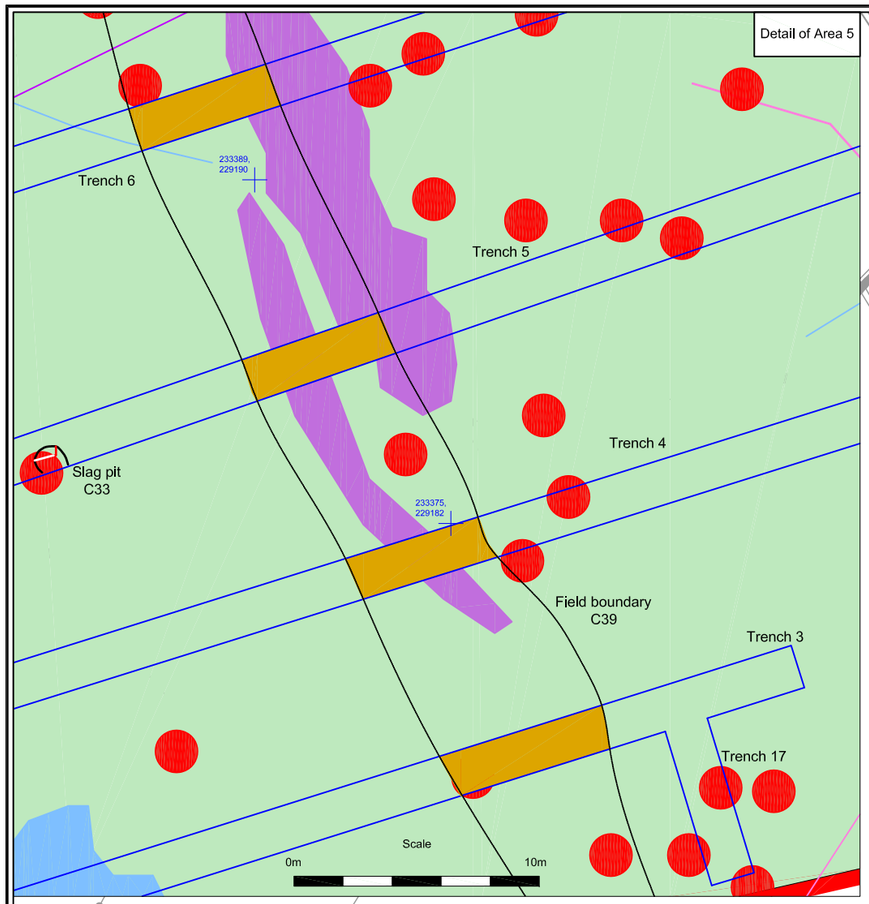
Client: Offaly County Council

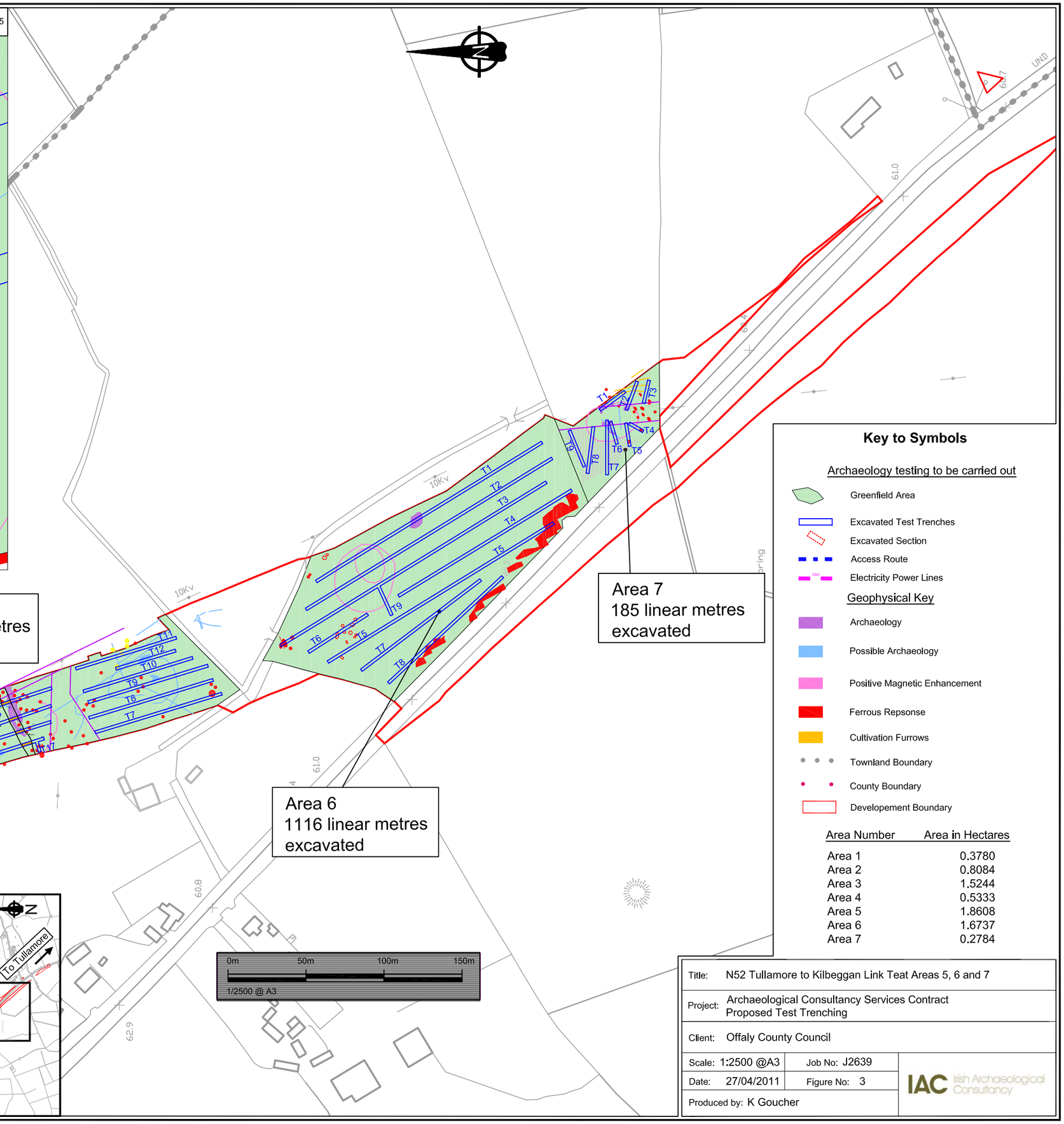
Scale: 1:2500 @A3 | Job No: J2639

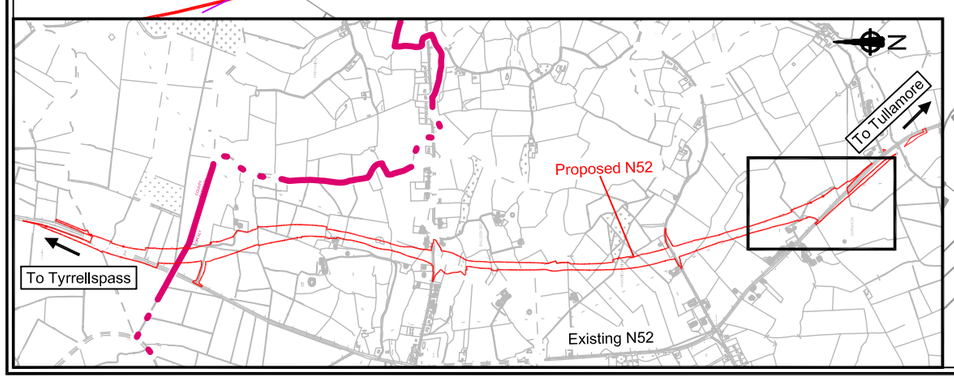
Date: 27/04/2011 | Figure No: 2

Produced by: K Goucher

IAC Irish Archaeological Consultancy







Key to Symbols

Archaeology testing to be carried out

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- Excavated Section
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Area 6	1.6737
Area 7	0.2784

Title:	N52 Tullamore to Kilbeggan Link Teat Areas 5, 6 and 7		
Project:	Archaeological Consultancy Services Contract Proposed Test Trenching		
Client:	Offaly County Council		
Scale:	1:2500 @A3	Job No:	J2639
Date:	27/04/2011	Figure No:	3
Produced by:	K Goucher		

IAC Irish Archaeological Consultancy