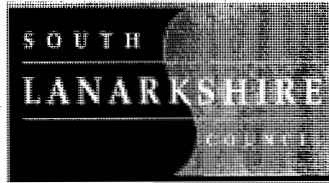


H223

Union Street/Watstone Road, Stonehouse
Desk Study Report



UNION STREET/WATSTONE ROAD, STONEHOUSE

DESK STUDY REPORT

02 MAY 2006

Director of Housing & Technical Resources,
Council Offices,
Almada Street,
Hamilton

Design Services,
Housing & Technical Resources,
Atholl House,
East Kilbride

Union Street/Watstone Road, Stonehouse
Desk Study Report

Project: Union Street/Watstone Road, Stonehouse

Report Type: Desk Study

Project Ref: ERD006369/019A

Issue No. 1	Name	Signature	Date	Position
Prepared by:			02-05-06	Graduate Engineer
Checked by:			02-05-06	Geotechnical Engineer
Approved by:			02-05-06	Principal Engineer

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1. Introduction

On instruction from Enterprise Resources of South Lanarkshire Council, Design Services were commissioned to undertake a geotechnical and environmental desk study of a site at Union Street/Watstone Road, Stonehouse, the location of which is shown on the attached plan.

The objective of the desk study was to:

- examine the site history,
- review available information,
- develop a preliminary understanding of the ground, groundwater conditions and the impact of any potential contamination on and adjacent to the site,
- make recommendations on the scope of site investigation works and other further studies required.

2. Sources of Information

The following sources of information were utilized in the preparation of the desk study report.

- Historical Ordnance Survey maps,
- Geological maps,
- Previous Investigations,
- Hydrogeological Map of Scotland.

3. Limitations

This report has been prepared for the sole use of Enterprise Resources of South Lanarkshire Council. No other warranty expressed or implied is made as to the professional advice provided in this report. The report may not be relied upon by any other party without the prior and express written agreement of Design Services of South Lanarkshire Council.

The comments given in this report and any opinions expressed are based on the information available at the time. It should be noted that there may be conditions pertaining to the site which have not been disclosed by the desk study and which could not therefore be taken into account in this report.

4. Site Location and Description

The site is located on the south-east side of Stonehouse between Union Street and Watstone Road. The approximate National Grid Reference of the site is 275826 646428. The site is polygonal bounded to the north by residential housing; to the north-east by Watstone Road; to the east by the Watstone Burn and to the west by Spital Road. The site is currently used as agricultural land. Overall the slope of the ground is from north to south-east. The two fields

within the northern part of the site form a shallow valley the axis of which trends gently west to east towards the Watstone Burn. Areas of scrub and grass have become established to the east of the residential areas at Union Street and Reid Grove and debris such as wood, metal, plastic etc are noted. A site location plan is provided in Appendix 1.

5. Site Walkover Survey

A site walkover survey was carried out on 24 April 2006 and observations made regarding site topography, ground conditions, vegetation cover etc within and immediately adjacent to the site. The results of the survey are contained in Appendix 2.

6. Site History

Copies of the historical County Series maps for the relevant epochs, from the first edition circa 1858 to 1991 were examined and copies of these obtained. Extracts of these can be found in Appendix 3. It should be borne in mind that the lack of noted industrial use during the epochs considered does not necessarily mean that industrial activity has not been carried out during the relevant period. The possibility that industrial activity could have commenced and subsequently terminated between the epochs cannot and should not be precluded. A summary of the changing land use is provided below.

- Epoch 1 1863 – 1864 (10560): The site would appear to be used as agricultural land. The village of Stonehouse is located to the north west of the site. Four wells are annotated between Angle Street and the northern boundary. There is a gas works and gasometer located around 150metres south of Stonehouse on the west side of Union Street. A brick and tile works is located immediately to the south of the gas works. There is a ford where Spital Road crosses Watstone Burn in the north eastern corner of the site.
- Epoch 2 1895-1898: No significant change. A surface drain is shown rising from the centre of the northern two fields and running eastwards to Watstone Burn. An area of possible excavation is annotated in fields 740 and 741 located in the western portion of the site. Five new wells and a pump are annotated between Angle Street and the northern boundary.
- Epoch 2 1898 – 1899 (10560): No significant change.
- Epoch 3 1910 – 1913: The possible area of excavation is annotated as a Clay Pit and has expanded to the east and south and a tramway has been built between the clay pit and brick and tile works. The wells and pump are no longer annotated between Angle Street and the northern boundary. A glasshouse has been built on the northern boundary to the south of Boghall Street.
- Epoch 3 1911 – 1915 (10560): No significant change.

- Epoch 4 1935 – 1942: A second glasshouse has been built beside the existing glasshouse to the south of Boghall Street. The brick and tile works are no longer shown. The clay pit is now disused, covered in rough pasture and spoil deposited thereon. Six semi-detached houses have been built on the eastern side of Union Street.
- Epoch A 1953 – 1991: A works has been built between Angle Street and the northern boundary. The clay pit has been leveled and returned to agricultural land. A football pitch and pavilion have been built on the site of the brick and tile works. Issues are annotated within the north-eastern corner of the site.
- Epoch B 1953 – 1991: The housing to the north of the site on Boghall Street has been demolished apart from the hall located on the corner of Boghall Street and Angle Street. Two houses have been constructed on the western end of Boghall Street. The gas works has been replaced with an electrical sub station.
- 1991 – Present: (see walkover survey plan). No significant change in land use and would still appear to be used as agricultural land. A new development of housing has been built to the south of Boghall Street on Reid Grove.

7. Ground Conditions

7.1 Drift Geology

The environmental geology maps published by the British Geological Survey disclose that clay and silt, in the order of 10-25 metres thick, underlie the eastern and southern sections of the site with a small area located to the north of the former clay pit with the clay pit area annotated as made ground, in the order of 20 metres thick. Sand and gravel in the order of 10 to 25 metres thick underlies the centre of the site. The north of the site and areas on the eastern and southern boundary are underlain by Till (boulder clay), consisting of silty or sandy deposits with some stones or boulders, in the order of 5-10 metres thick.

7.2 Solid Geology

The strata underlying the site belong to the Lower and Middle Coal Measures which are a cyclic sequence of sandstones, siltstones, mudstones, numerous thick coal seams and seatclays. The coal seams have been extensively worked. The site is also bisected by a main fault line which trends north to south-east through the eastern part of the site down-throwing the strata to the east. A small outlier of strata belonging to the Passage Group which in the main comprises of sandstones, coarse grained and pebbly in parts, some seatclays and thin impersistent coal seams of very variable thickness, underlies the area near the southern boundary beside the Watstone Burn. A small fault, which trends north-east to south-west through the southern part of the site, down-throwing the strata to the west, intersects the main fault line near the southern boundary of the site.

8. Mining and Mining Instability

The mining information map, published by the British Geological Survey indicates an area of known or suspected shallow mining generally within 30 metres of surface located within the northern and eastern sections of the site. There is also an area of known or suspected mining generally more than 30 metres below the surface within and along the northern boundary. It should however be pointed out that the 30 metre depth rule is arbitrary only and should not be taken to infer that un-collapsed workings at shallow and or greater depth will not give rise to subsidence at some point in time.

9. Hydrology, Hydrogeology and Controlled Waters

The nearest water feature is the Watstone Burn located on the eastern boundary of the site. The Cander Water flows south to north, some 700 metre to the east. The hydrogeological map of Scotland indicates that the site is underlain by a locally important aquifer which flow in fissures and discontinuities. Yields from boreholes are low and water quality poor.

10. Environmental Considerations

Sources of potential contamination were considered in terms of Tables 2.3 and 2.4 of Contaminated Land Report (CLR) 8, 'Potential Contaminants for the Assessment of Contaminated Land' and 'Guidance for the Safe Development of Housing on Land Affected by Contamination', (R & D Publication 66).

10.1 Contamination

The site does not appear from the historical maps to have been put to a use contained in the above publications. The previous use as agricultural land, former extraction work at the Clay Pit and its subsequent infilling could potentially lead to contaminants being present.

Potential sources of contamination are likely to be the made ground associated with the former Clay Pit. Possible pathways could be by way of inhalation of dust arising from made ground; ingestion of soil/made ground or direct contact with made ground. Possible receptors could be site occupiers, site investigation personnel, construction workers, surface waters and or services. Accordingly, as part of this desk study, consideration has been given to a simplified initial conceptual site model with respect to potential contamination as shown in Table 1.

Whilst at this juncture there is evidence to suspect a source-pathway-receptor pollutant link, this is not to say that such a suspicion will be confirmed or for that matter that other potential pollutant linkages may be identified during any subsequent ground investigation.

Table 1 Initial Conceptual Site Model

Contaminant source: Made Ground	Pathway	Receptor
?	Dermal contact & inhalation of dust/fumes from contaminated soil/dust/made ground.	Human health
x	Migration through made ground into surface or ground water.	Water environment
?	Vegetation on site growing in contaminated soil/made ground.	Flora & Fauna
?	Contact with contaminated/made ground.	Building services
?	Carbon dioxide/methane present within within the soil/entering confined spaces.	Human health/Flora & Fauna

Key: y - pollutant linkage likely ? – pollutant linkage possible x – pollutant linkage unlikely

Consequently, the possibility that a source-pathway-receptor pollutant link from the site due to the potential presence of made ground cannot at this stage be ruled out; the risk of such a possibility at this point in time is considered to be LOW.

11. Previous Investigations

Examination of the British Geological Survey GeoIndex Report database disclosed the presence of numerous boreholes within and immediately adjacent to the site. It has not been ascertained at this stage as to whether or not the journals of these boreholes are available for public examination.

11.1 Site Investigation Report by South Lanarkshire Council, H112, dated November 1997, Tile Works Sports Ground, Union Street, Stonehouse for South Lanarkshire Development Partnership.

Eight soils boreholes, two rotary bores and eight trial pits were sunk in connection with this report relating to this site. The report states that the site has variable soil conditions and could be considered in three areas. A copy of the relevant borehole plan is provided in Appendix 6.

Former Clay Pit Area - The sequence of strata encountered in the boreholes and trial pits generally consisted of made ground, reworked clay with traces of brick blaes, sandstone gravel and peat. This material is of variable strength and compressibility. The sulphate and pH testing showed no elevated levels.

Former Tile Works Area - The sequence of strata encountered in the boreholes and trial pits generally consisted of a thin layer of topsoil overlying soft/firm silty clay from 0.1metres below ground level (mbgl) to 2.2mbgl underlain by silty sand and gravel to depths of 2.7mbgl.

Areas Adjacent to Housing – The sequence of strata encountered in the boreholes and trial pits generally consisted of a layer of clayey fill with traces of topsoil and rubble from ground level to 0.9mbgl. This overlies silty clay to a depth of 2.0mbgl and boulder clay from 2.0mbgl to 5.0mbgl. A layer of medium dense sandy gravel was encountered from 4.0mbgl to 4.6mbgl. The silty soils are of low strengths with values of cohesion varying from 10-23kN/m² while a value of 43kN/m² was obtained in the till. The sulphate and pH testing showed no elevated levels.

A further two trial pits were dug to the fields immediately south of the site. In trial pit 7, topsoil was encountered to a depth of 0.5mbgl, with a layer of silty clay from 0.5mbgl to 2.0mbgl. This was overlain by a layer of clayey sand and gravel, with boulder clay encountered at the base from depths of 2.0mbgl to 2.5mbgl. The silty clay was assessed as soft and the boulder clay was assessed as very stiff.

In trial pit 8, topsoil was encountered to a depth of 0.4mbgl, with a layer of silty clay from 0.4mbgl to 1.2mbgl. This was overlain by a layer of silty sand and gravel from 1.2mbgl to 1.9mbgl, with a layer of silt to 3.1mbgl and silty sand and gravel at 3.7mbgl. The clays and silts were assessed as soft or soft/firm.

Two rotary cored bores were sunk on site. Rotary borehole 1 encountered rockhead at 14.0mbgl with a layer of moderately strong to strong, moderately weathered sandstone to 16.70mbgl. Sequentially this is underlain by a moderately weak slightly weathered mudstone to 17.70mbgl; moderately weathered silty mudstone, moderately weak to weak, to 20.30mbgl; moderately weak slightly weathered mudstone to 21.47mbgl; coal, fresh, thinly laminated, fusainous with bright laminae to 21.80mbgl; moderately weak to moderately strong, poorly bedded seat siltstone to a 22.05mbgl and poorly bedded, slightly to moderately weathered, weak to very weak seat mudstone to 23.30mbgl where the borehole was terminated.

Rotary borehole 2 encountered rockhead at 28.30mbgl with a layer of moderately grey sandy mudstone to 28.50mbgl. Sequentially this is underlain by a poorly bedded, slightly to moderately weathered siltstone, moderately strong to 29.25mbgl; slightly weathered, strong sandstone to 30.30mbgl; alternating bands of moderately strong sandstone and dark siltstones to 31.45mbgl; slightly weathered siltstone, moderately weak, to 33.90mbgl; weak to moderately weak mudstone to 34.30mbgl; coal, fresh, bright with dull and fusainous laminae to 35.10mbgl; poorly bedded seat mudstone, moderately weak to 35.80mbgl and moderately strong fresh siltstone to a depth of 37.50mbgl where the borehole was terminated.

12. Services

Although the accuracy is not guaranteed extracts from the relevant plans are contained in Appendix 5 for reference and information. Any proposal to develop this site will require to take cognizance of the presence or otherwise of service utilities with regard to the proposed layout.

13. Discussion

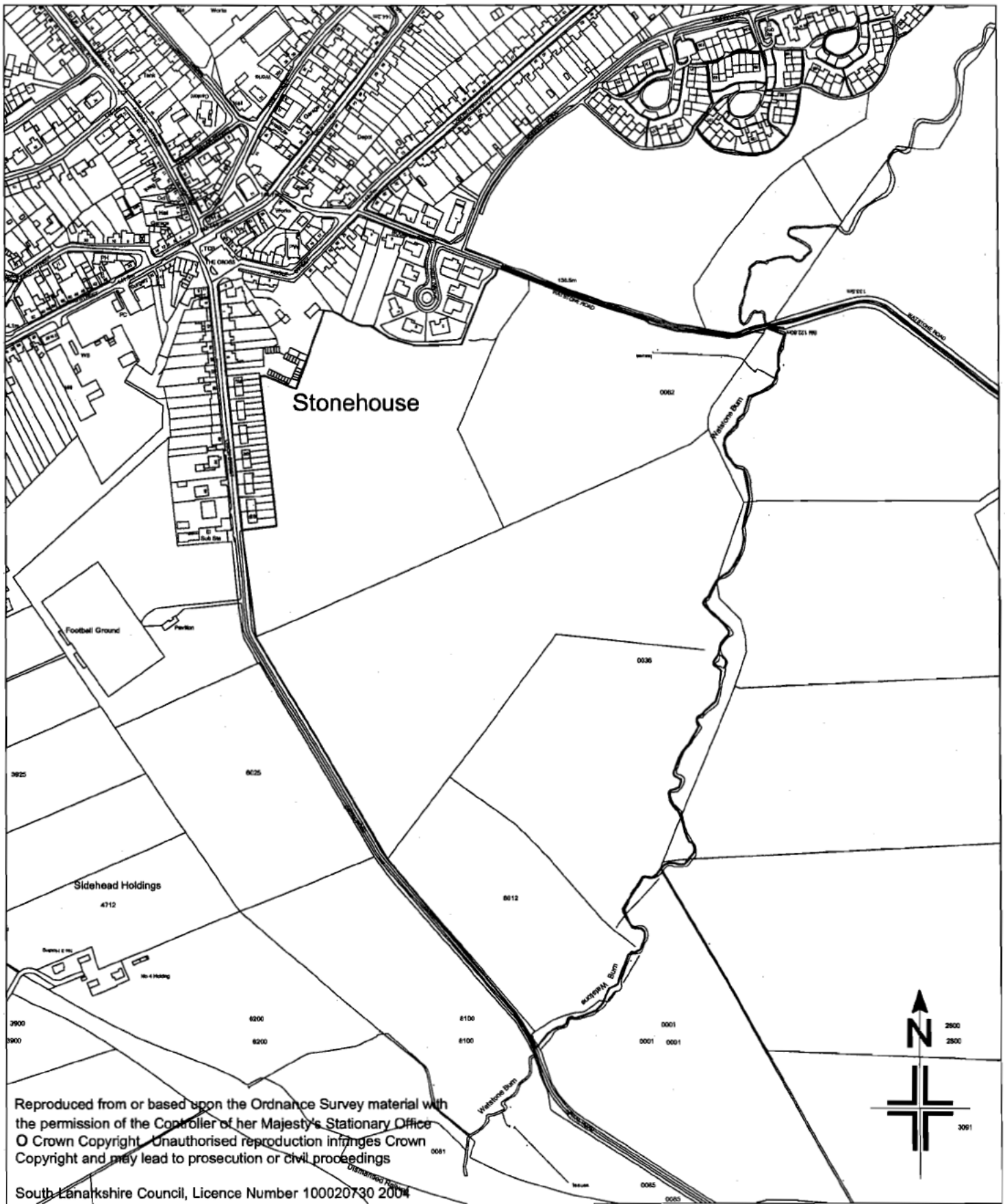
The site walkover survey and examination of available information has revealed that the site has always been in agricultural use except for that area utilized as a clay pit. Superficial deposits are anticipated to be in the order of 5 to 25 metres thick and comprise of localized areas of sand and gravel, clay and silt, and glacial till. Shallow and deep mining is suspected below and or immediately adjacent to the northern and eastern parts of the site and as such mining stability could be an issue. The former Clay Pit area forms a surface excavation the boundaries and depth of which are not fully known; the nature of the backfill (made ground) is also unknown.

14. Conclusions and Recommendations

Any proposal to develop this site will require a detailed ground investigation. The main aspects that need to be considered as part of any ground investigation are as follows:

- The depth, nature and geotechnical properties of the superficial deposits within the site.
- The degree and extent of any potential contamination of the site, in particular the former Clay Pit area now infilled with made ground. In general a non-targeted contamination approach would suffice with local focus on the former surface excavation.
- The presence of methane and or carbon dioxide within the soils. Provision should be made for standpipes and or a gas spike survey.
- A mining report from the Coal Authority should be obtained. Depending upon the content of the report it may be necessary to obtain the relevant abandonment mine plans of the area should they exist, to assist in estimating potential mining stability. Rotary cored boreholes should be sunk to an appropriate depth to determine the depth to and state and condition of any underlying mine workings.
- Contact should be made with the British Geological Survey with the view to obtaining the journals of those relevant boreholes sunk either within or immediately adjacent to the site.

Appendix 1 – Site Location Plan




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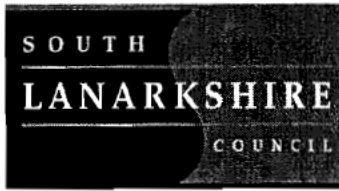
South Lanarkshire Council, Licence Number 100020730 2004

Rev.	Date	By	Chkd.	App.

DO NOT SCALE FROM DRAWING, ALL SIZES MUST BE CHECKED ON SITE- CONTRACTOR MUST REPORT ANY DISCREPANCIES TO CONTRACT ADMINISTRATOR

Project Title. UNION STREET WATSTONE ROAD STONEHOUSE		Drawing Title. LOCATION PLAN		 Housing & Technical Resources DESIGN, Aitholl House, East Kilbride, G74 1LU Tel (01355) 806000 Fax (01355) 806955	
Project Code. ERD006369/019	Drawing No. GL (00) 01	SLPN.	Rev.	Scale. 1:5000	Drawn. AR Date. APR/06
				Approved	<input checked="" type="checkbox"/>
				Checked	<input checked="" type="checkbox"/>

Appendix 2 – Walkover Survey & and Survey Record



WALKOVER SURVEY RECORD

Project: UNION STREET/WATSTONE ROAD	Project no: ER0006369/019
Site Location: STONEHOUSE	Site Area: 245,000m ² Date: 24/04/06
Site NGR NS 75 830. 46470	Weather conditions: Overcast, dry
Start time: 4:00pm	Finish time: 4:30pm
Inspected by: [REDACTED]	Walkover carried out from boundary of site

Current land use description:

Agricultural land

Surrounding land use:

Agricultural land, residential area to north-west of site

Visible contamination	Y	N	Location:	Description:
Ground staining:		✓		
Water discolouration:		✓		
Oils:		✓		
Drums:		✓		
Tanks:		✓		
Refuse:	✓		See plan	
Other:		✓		

Buildings/Structures:	Y	N	Location:	Description:
Remnant buildings, structures, foundations:		✓		
Demolition debris, spoil mounds, etc:		✓		
Disused tanks above/below ground:		✓		

Public Utilities:	Y	N	Location:	Description:
Telegraph poles:	✓		See plan	
Electricity pylons:		✓		
Manholes:		✓		
Electricity sub stations:		✓		

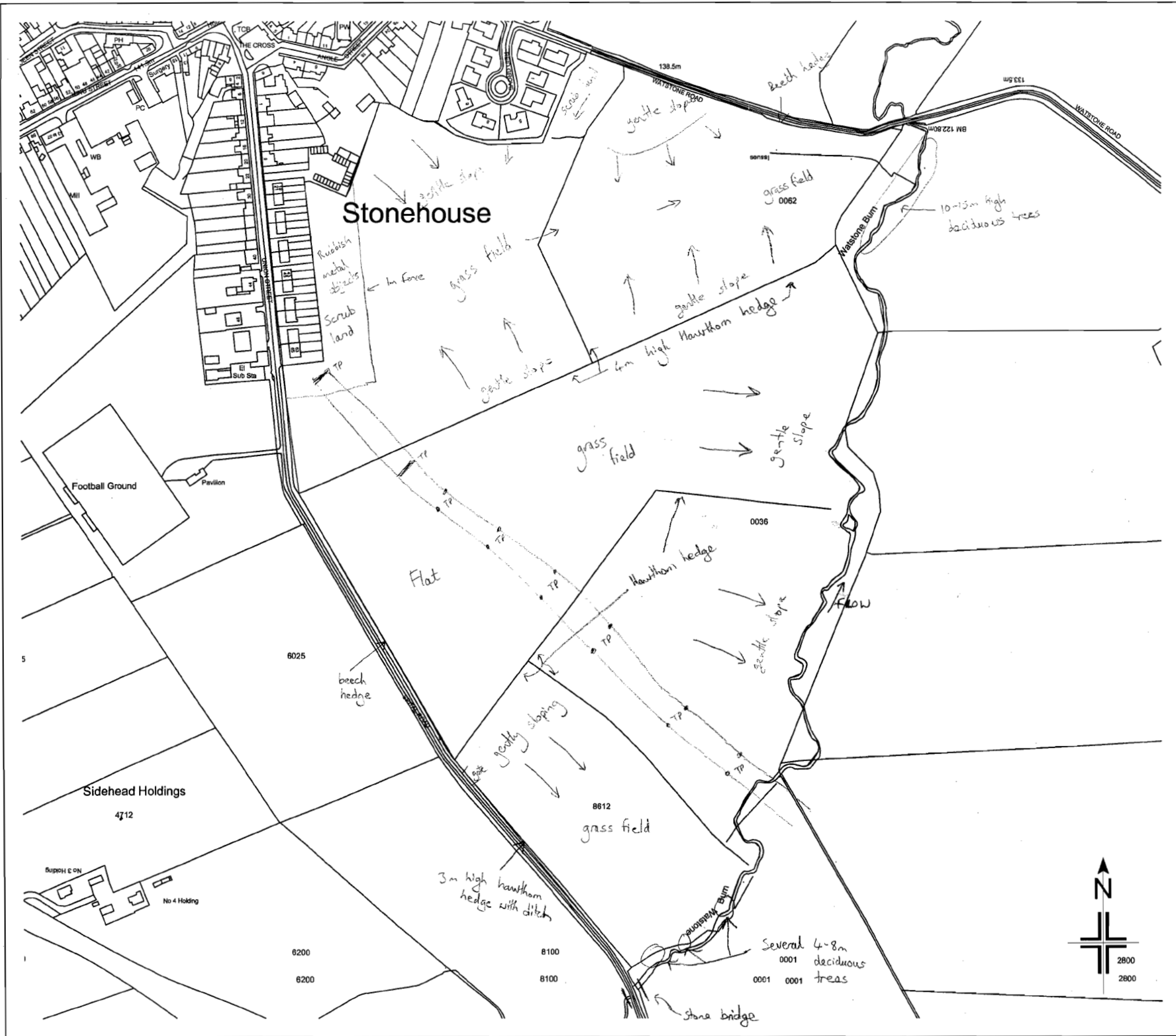
Ground Disturbance:	Y	N	Location:	Description:
Slope instability:		✓		
Retaining walls:		✓		
Subsidence:		✓		
Mine shafts/adits:		✓		
Waterlogging:		✓		

Vegetation:	Y	N	Location:	Description:
Trees/scrub:	✓		See plan	
Grassland:	✓		See plan	
Woodland:		✓		

Drainage/Groundwater	Y	N	Location:	Description:
Drains/sewers:		✓		
ditch:	✓		See plan	
Stream:	✓		See plan	
River:		✓		
Springs/issues:		✓		
Wells:		✓		
Wetlands:		✓		

General Comments:





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Rev.	Date	By	Chkd.	App.

SOUTH LANARKSHIRE COUNCIL	Housing & Technical Resources
	Design, Atholl House, East Kilbride, G74 1LU
	Tel.(01355) 806000 Fax(01355) 806955

Project Title
**UNION STREET
 WATSTONE ROAD
 STONEHOUSE**

Drawing Title
WALKOVER SURVEY PLAN

SLPN.
STONEHOUSE

Project Code.
ERD006369/019

Drawing No.
GL (00) 02

Scale.
1 : 3000

Checked	<input type="checkbox"/>
Approved	<input type="checkbox"/>
Drawn	<input type="checkbox"/>
Date.	APR/06

Appendix 3 Land Use Extracts

Note:

Digitised/scanned versions of the historical maps were examined. Whilst the scale is given as 1:5000, as printed, there may be a marginal error in scale due to the digitization/scanning process.

Union Street/Watstone Road

Stonehouse

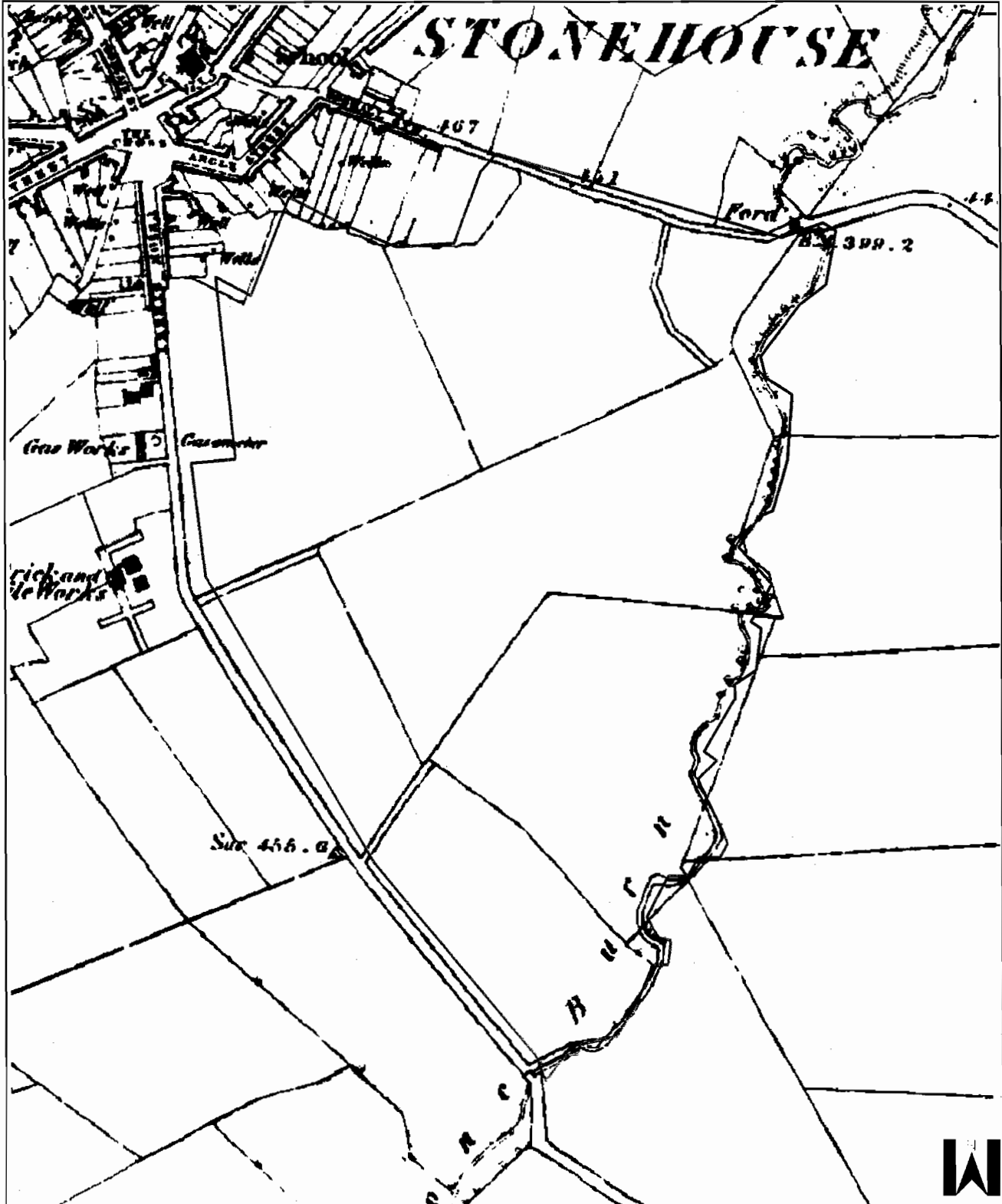
Land Use Extract Epoch 1 1863-1864

Scale: 1: 5000 GL (00) 03

Date: 25 Apr 2006



Housing and Technical Resources



For information only

For information only

Union Street/Watstone Road

Stonehouse

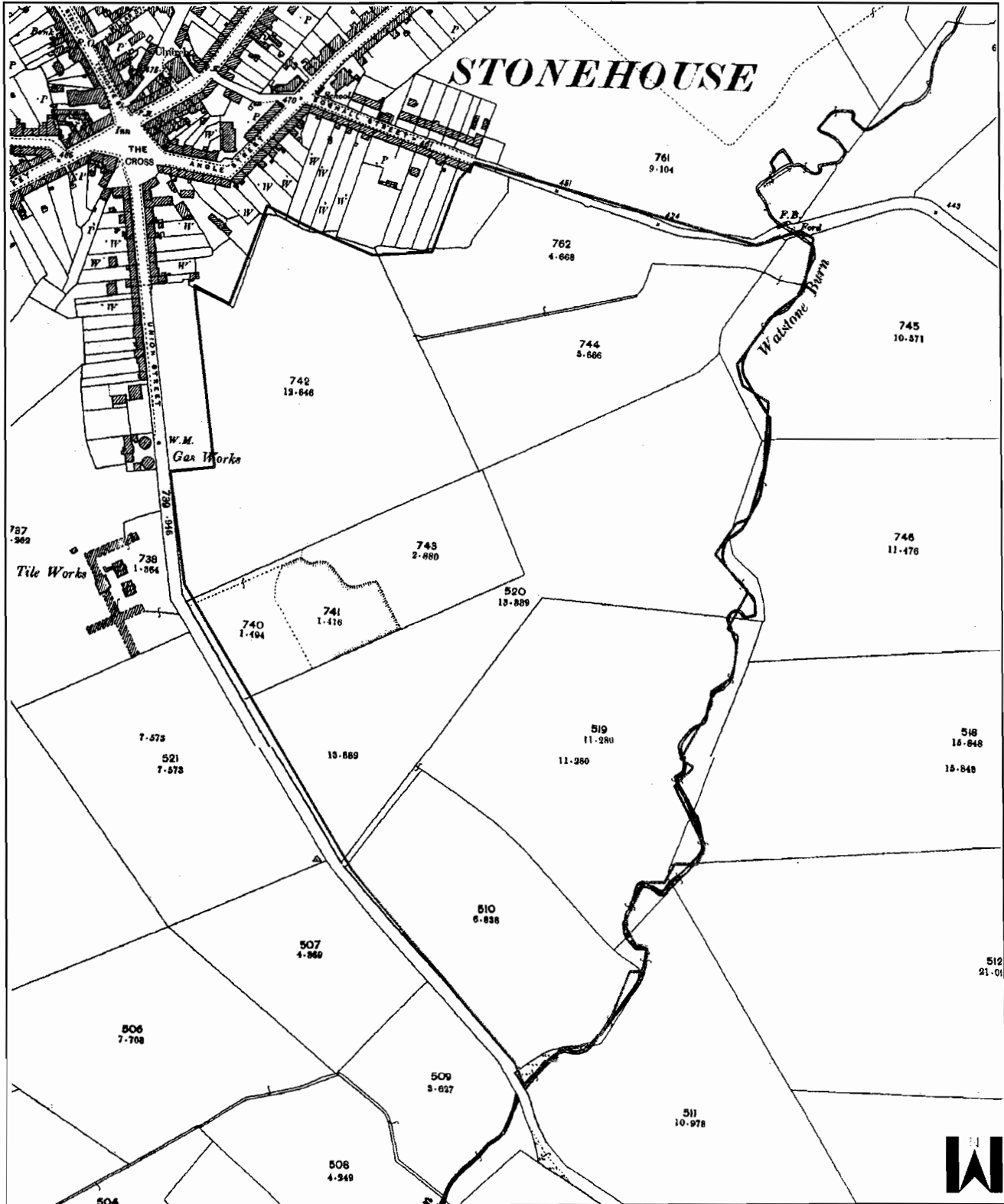
Land Use Extract Epoch 2 1895 - 1898

Scale: 1: 5000 GL (00) 04

Date: 25 Apr 2006



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Union Street/Watstone Road

Stonehouse

Land Use Extract Epoch 2 1898 - 1899

Scale: 1: 5000 GL (00) 05

Date: 25 Apr 2006



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Union Street/Watstone Road

Stonehouse

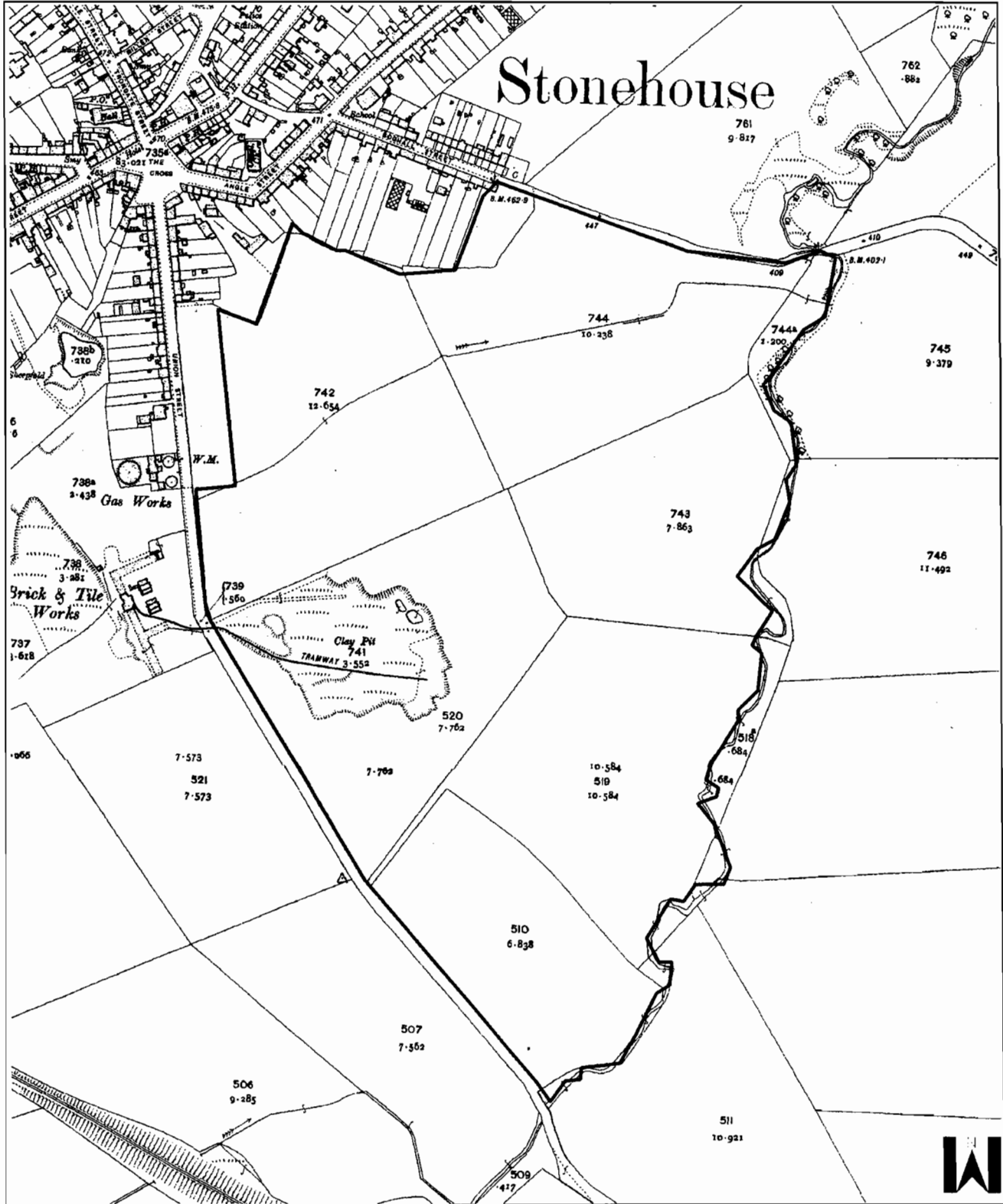
Land Use Extract Epoch 3 1910 -1913

Scale: 1: 5000 GL (00) 06

Date: 25 Apr 2006



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Union Street/Watstone Road

Stonehouse

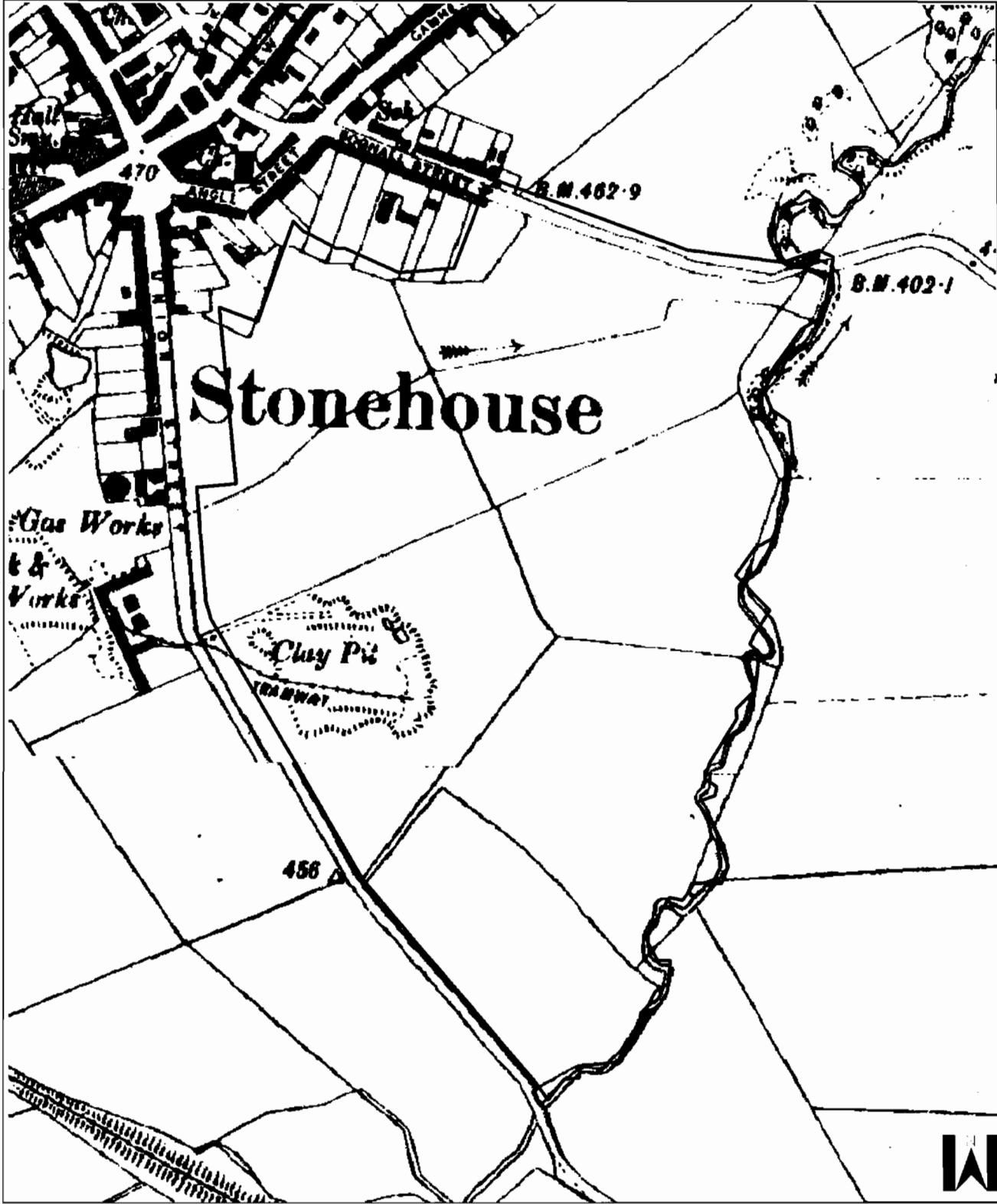
Land Use Extract Epoch 3 1911 - 1915

Scale: 1: 5000 GL (00) 07

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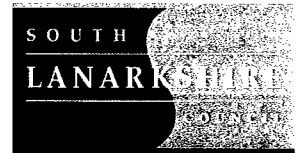
Union Street/Watstone Road

Stonehouse

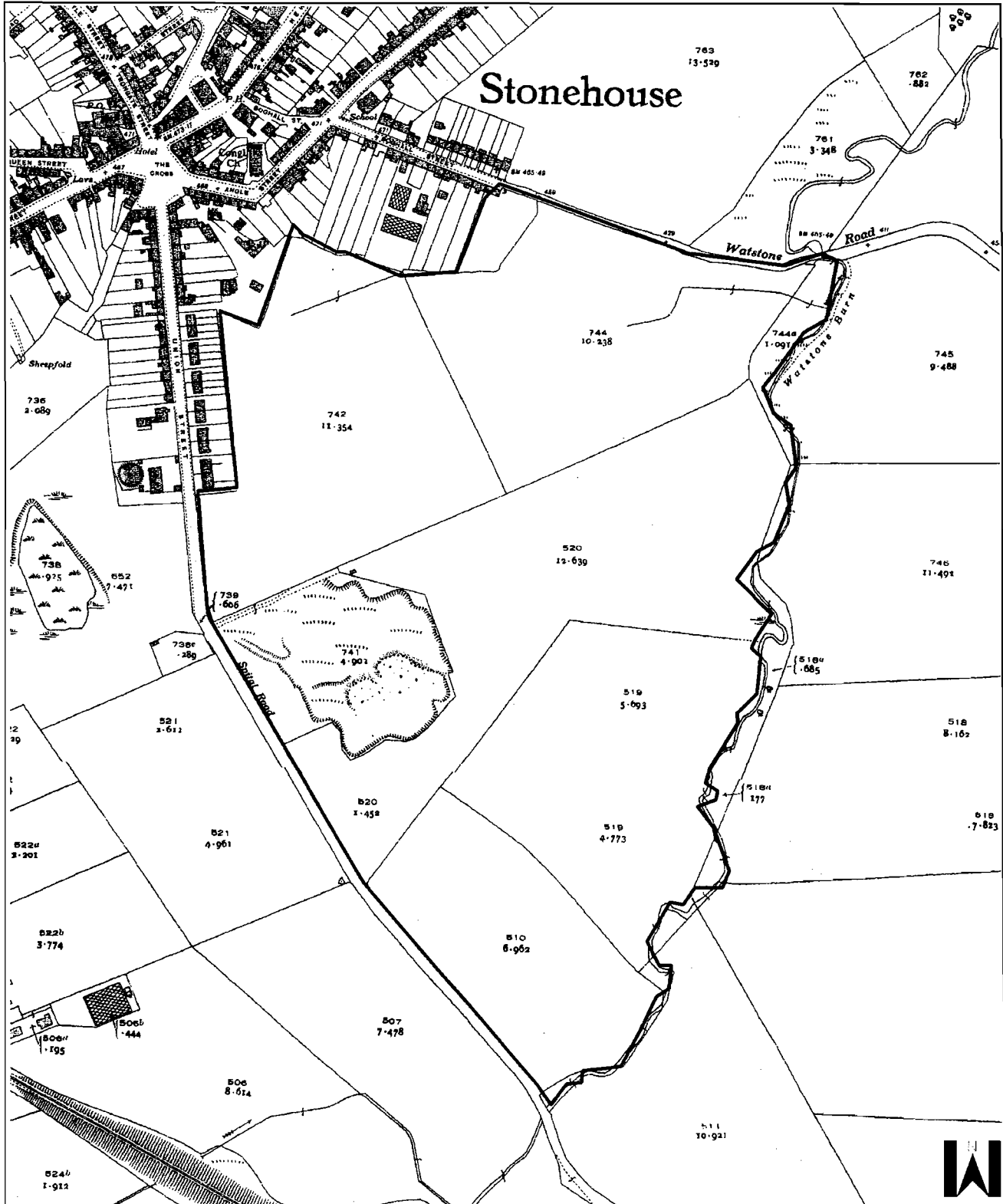
Land Use Extract Epoch 4 1935 - 1942

Scale: 1: 5000 GL (00) 08

Date: 25 Apr 2006



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Union Street/Watstone Road

Stonehouse

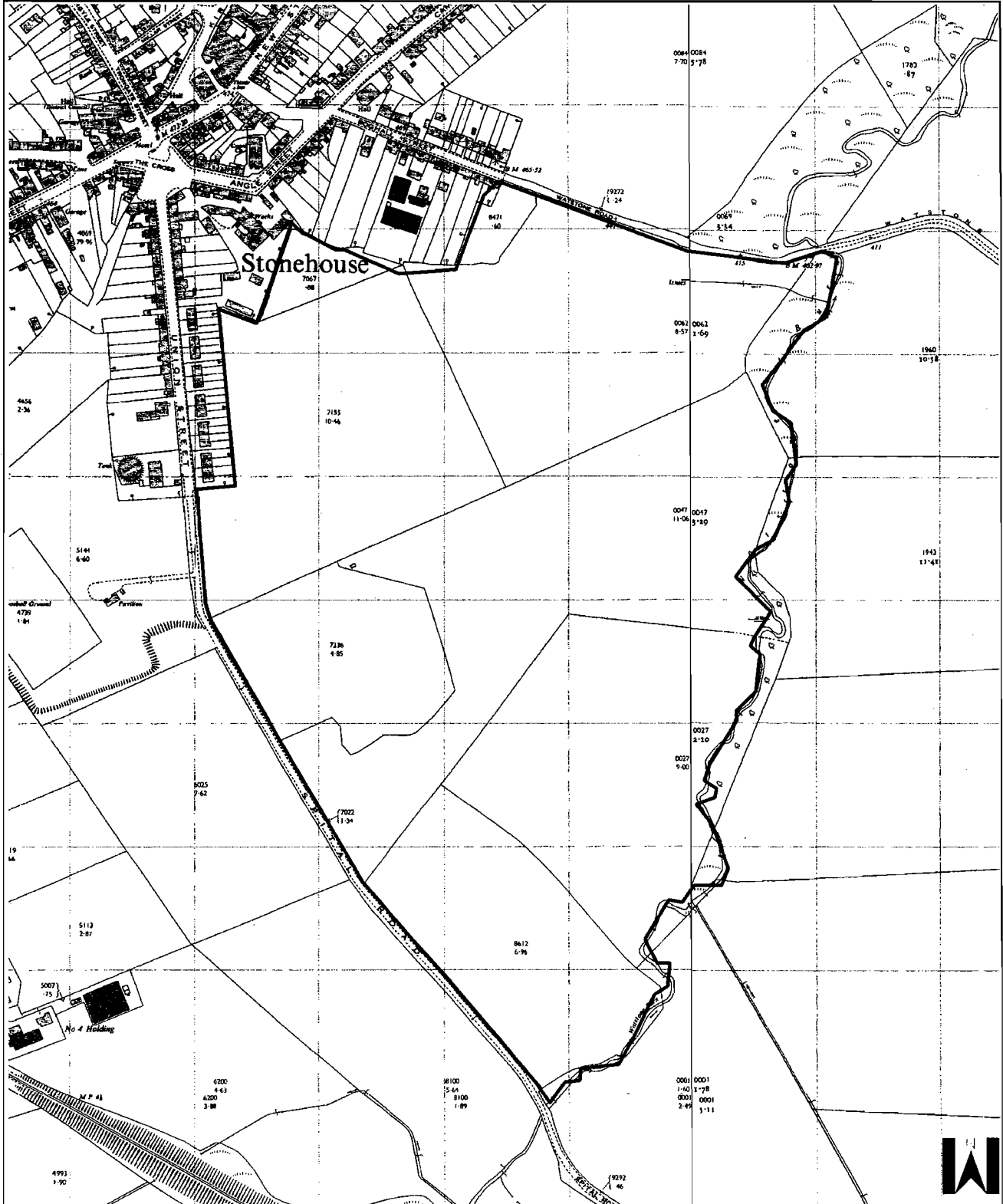
Land Use Extract Epoch A 1953 - 1991

Scale: 1: 5000 GL (00) 09

Date: 25 Apr 2006



Housing and Technical Resources



For information only

For information only

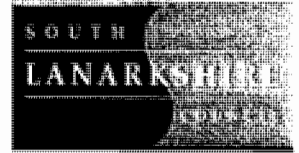
Union Street/Watstone Road

Stonehouse

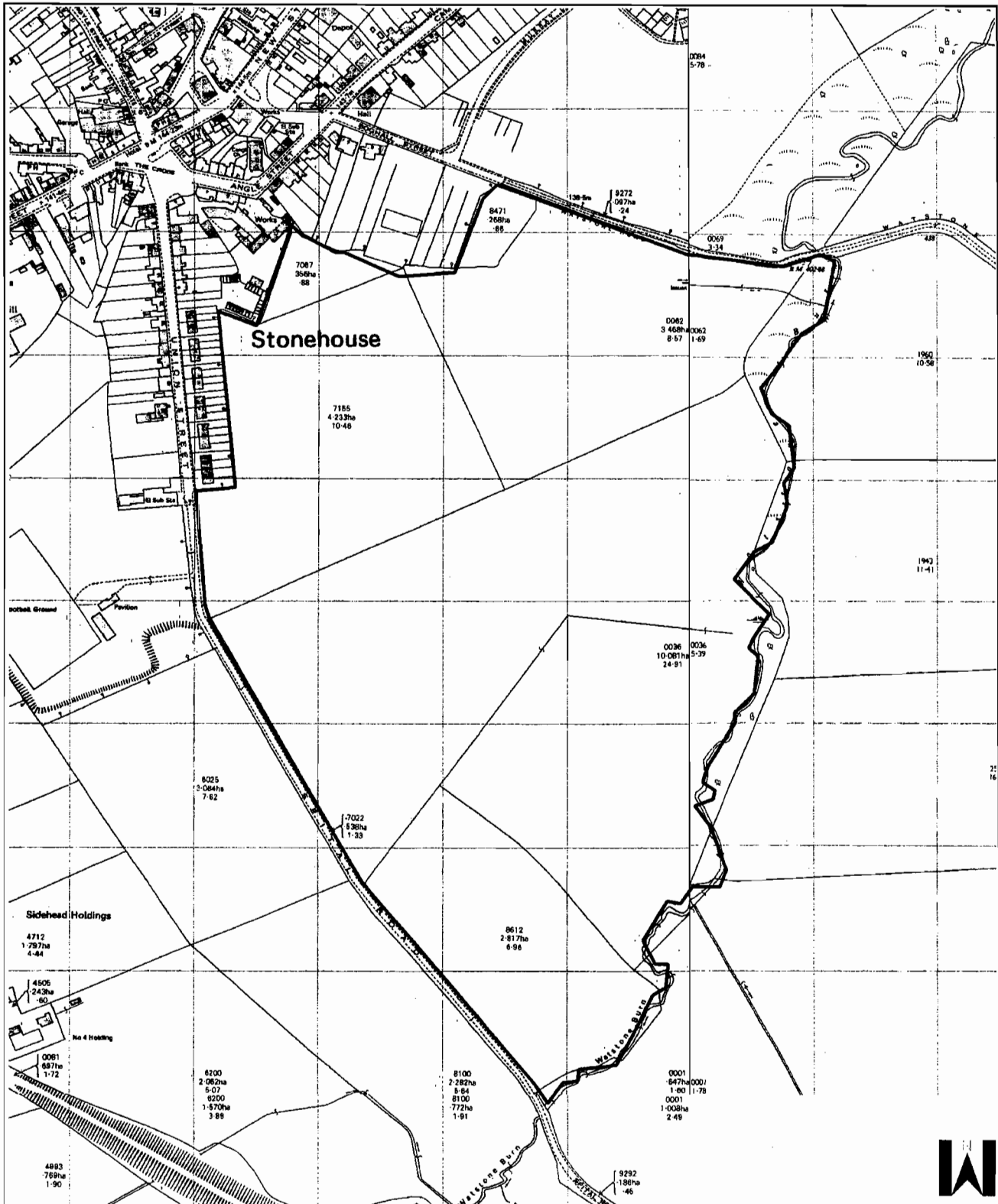
Land Use Extract Epoch B 1953 - 1991

Scale: 1: 5000 GL (00) 10

Date: 25 Apr 2006



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Appendix 4 – References

- 1 Geological Maps:
 - (i) NS74NE Superficial deposits, Drift thickness, Rockhead Contour, Solid Geology and Mining Information. Scale: 1:10,000.
- 2 Historical Maps – Lanarkshire Parish XXIV 6 and XXIV 10, 1:2500.
- 3 Hydrogeological Map of Scotland. Scale:1:625,000.
4. Department for Environment, Food and Rural Affairs and the Environment Agency, CLR 8, Potential Contaminants for the Assessment of Land.
5. Environment Agency and NHBC, Guidance for the Safe Development of Housing on Land Affected by Contamination.

Appendix 5 - Services



SCALE: Not to scale

USER ID: russelcar

DATE: 02/05/2006

EXTRACT DATE: 10/03/2006

MAP REF: NS7546

CENTRE: 275885, 646455

LP MAINS

HP MAINS

IP MAINS

LHP MAINS

NHP MAINS

NHP MAINS

NHP MAINS

NHP MAINS

NHP MAINS

NHP MAINS

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Valve

Depth of Cover

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Diameter Change

Material Change

This plan shows those pipes owned by National Grid Gas plc or the relevant Gas Distribution Network in their roles as Licensed Gas Transporters (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Grid Gas plc, the relevant Gas Distribution Network, or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

MAPS Viewer Version 5.0.11.0

Local Machine

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PowerSystems
On behalf of SP Distribution Ltd & SP Transmission Ltd

Information about apparatus given on this drawing is indicative only as the original depths and lines of cables and pipes may have been changed by persons unknown. Normally electricity cables are laid in trenches between 450mm and 1m deep, and gas pipes are laid in trenches between 375mm and 1m deep but cellars or structures such as bridges may prevent cables and pipes being laid at these standard depths. Also, the depth may be above or below the standard due to regrading of the surface or other work after the cables or pipes are laid. Where known, non-standard depths are indicated. Any interference with, or damage to, apparatus may result in serious accident. Health and Safety Executive booklet HS(G) 47 provides information on the avoidance of danger from underground services. Authorities and contractors will be held liable both for the full cost of repairs to apparatus and all claims made against by third parties as a result of interference or damage. Further advice may be obtained by contacting the above office

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SCALE :- 1:5000

Date :-
2 May 2006

Produced by :-

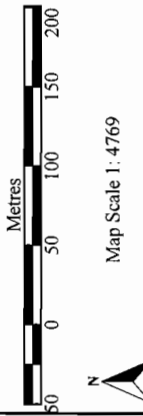
Produced for :-

X Coordinate :- 275826
Y Coordinate :- 646428



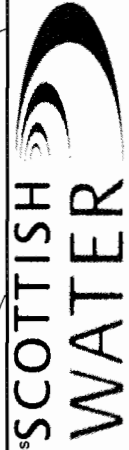
Project Information:
 Project Name: East
 Start Date: 01/11/2003
 End Date: 30/01/2004

Plot Information:
 Date of Plot:
 Tuesday, May 02, 2006
 15:11:01



Map Scale 1: 4769

- Legend:**
- Abandoned
 - Fire
 - Washout
 - CSO
 - Distribution
 - Foul
 - Surface
 - Abandoned
 - Trunk main
 - Combined
 - Waste Water
 - Water

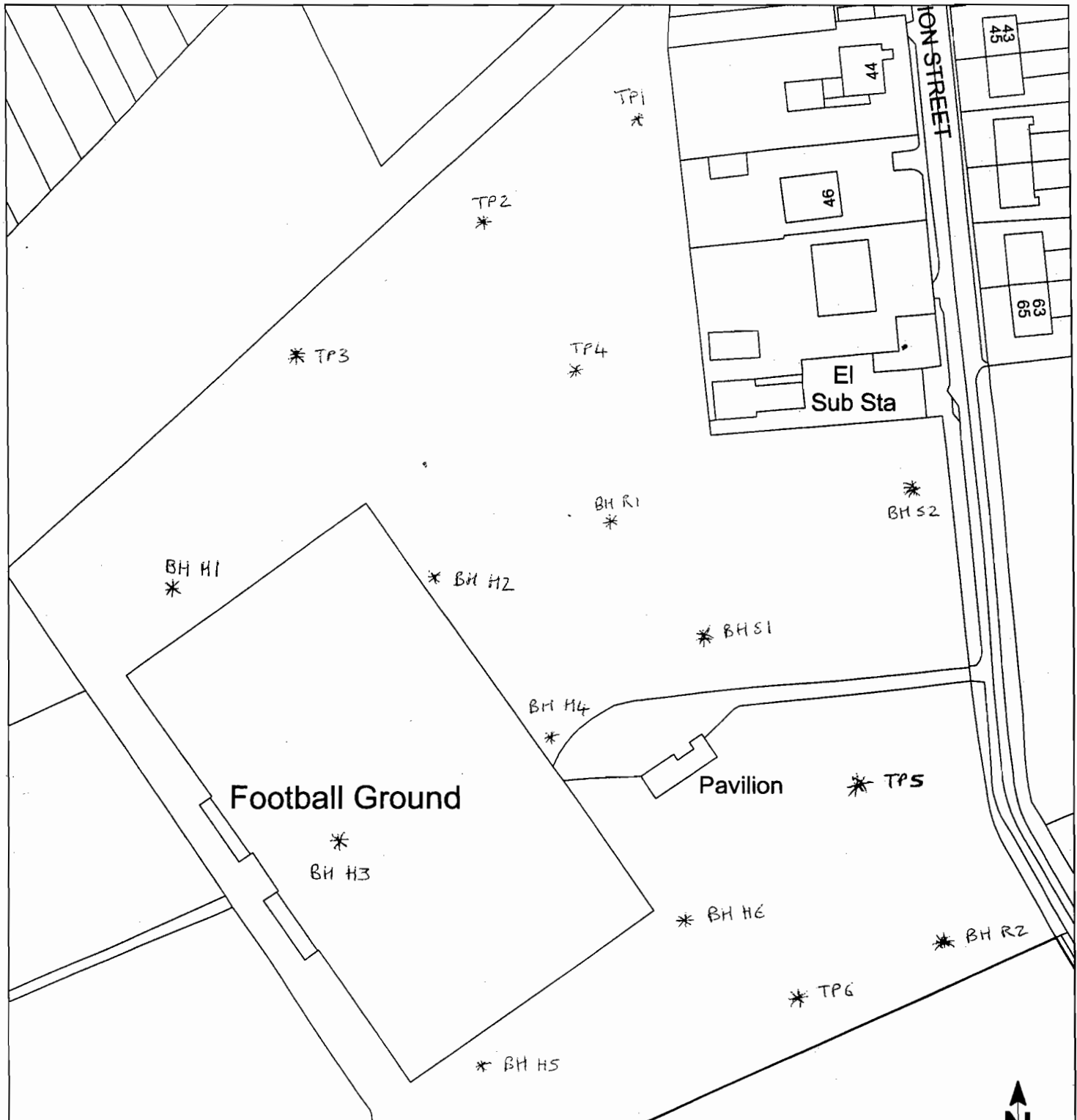


The representation of physical assets and the boundaries of areas in which Scottish Water and others have an interest does not necessarily imply their true position. For further details contact the appropriate Regional Operating Centre.

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Appendix 6 – Plan Extract from Site Investigation Report by South Lanarkshire Council, H112, dated November 1997, Tile Works Sports Ground, Union Street, Stonehouse for South Lanarkshire Development Partnership.

Copies of the formal Site Investigation can be obtained on request to Design Services.



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Rev. Date By Chkd. App.

DO NOT SCALE FROM DRAWING, ALL SIZES MUST BE CHECKED ON SITE- CONTRACTOR MUST REPORT ANY DISCREPANCIES TO CONTRACT ADMINISTRATOR

Project Title.
**SIDEHEAD HOLDINGS
 STONEHOUSE**

Drawing Title.
SITE INVESTIGATION



Housing & Technical Resources
 DESIGN, Atholl House,
 East Kilbride, G74 1LU
 Tel (01355) 806000
 Fax (01355) 806955

Project Code.
HAD3042/SI/1

Drawing No.
GL (00) 01

SLPN.

Rev.

Scale.
1 : 1250

Drawn.

Approved

Date.
APR/06

Checked