Moor Lane Service Station, Harton, South Shields

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PHASE ONE ENVIRONMENTAL DESK STUDY REPORT (PRELIMINARY RISK ASSESSMENT)



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Contents

1 INTRODUCTION 3
1.1 The Purpose of This Assessment 3
1.2 The Scope of This Assessment 3
1.3 Previous Reports Relating to the Site 4
1.4 Proposed Development Plans 4
2 DESK STUDY INFORMATION 5
2.1 Site Description, Location and Setting 5
2.2 Geology, Hydrogeology and Hydrology 7
2.3 Site History 8
2.4 Additional Information 11
3 PRELIMINARY RISK ASSESSMENT 12
3.1 Review of Potential Contaminants Sources 12
3.2 Conceptual Site Model 12
4 CONCLUSIONS AND RECOMMENDATIONS 14

List of Attachments

Attachment One: Notice to Interested Parties
Attachment Two: Historical Maps
Attachment Three: Petroleum Officer Report

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1 Introduction

1.1 The Purpose of This Assessment

We have been commissioned by SRJ Energy Limited to undertake a Phase One Environmental Report (also known as a Preliminary Risk Assessment) for Moor Lane Service Station and the adjacent (vacant) vehicle showroom / workshop, located off Moor Lane in South Shields, Tyne and Wear. The site comprises an operational retail filling station and a vacant vehicle showroom / workshop. We understand that our client proposes to redevelop the site for future use a retail filling station.

The purpose of this assessment was to develop an initial conceptual site model of the site and establish whether or not there are potentially unacceptable risks to sensitive receptors from potential contaminants that may be present in the soil and/or groundwater under the site. We have not carried out any intrusive investigation of the site and have made no measurements of actual contamination levels that may be present.

Our environmental assessment was undertaken in accordance with the guidelines presented in the Environment Agency (Published 2020, last updated 2023) 'Land Contamination Risk Management (LCRM)' documents and Environment Agency (2016) Guiding Principles for Land Contamination (GPLC).

Your attention is drawn to the Notice to Interested Parties included as Attachment One.

1.2 The Scope of This Assessment

Our assessment included:

- A review of geological, hydrogeological and hydrological information to establish environmental sensitivities at the site and in its vicinity;
- A review of environmental data from previous environmental works;
- We have contacted the site's Petroleum Officer in order to obtain details relating to the site's petroleum installation [although no response has been received at the time of reporting];
- A review of available historical information to determine the historical use of the site and its immediate surroundings;
- Preparation of a report, outlining findings and recommendations, including requirements for any further work.

The findings and opinions in this review are based upon information obtained from the sources outlined above. Information obtained from third parties has been accepted at face value; we believe this information to be reliable but do not guarantee its authenticity. Where practicable the information provided was confirmed from a secondary source such as the review of available municipal records.

As the site comprises a filling station and vehicle repair garage, we have not completed a site inspection as part of this Phase I review as we do not consider it would add to our conceptual understanding of potential contaminant sources associated with the site.

All the activities comprising this assessment were carried out in accordance with the procedures set out in our Quality Manual.

1.3 Previous Reports Relating to the Site

As part of our environmental assessment we have reviewed the reports listed in the following table.

Our Ref.	Report Title	Prepared By	Prepared on Behalf of	Date of Issue	Report Reference
Ref.1	Phase One Environmental Assessment (PFS area only)	Subadra Consulting Ltd	SRJ Energy Limited	November 2016	IN16489 CL 001
We have used information from this document, where relevant, in other sections of this report.					

Table One: Previous Environmental Reports Relating to the Site

1.4 Proposed Development Plans

Proposed Developments	We understand that our client proposes to redevelop the site by combining the existing filling station and vacant vehicle sales property for use as a larger retail filling station. The scheme comprises the removal of all above and below ground structures and construction of a new shop, canopy and replacement of all petroleum infrastructure. A site plan showing the proposed development plan is provided below.
Active Planning Applications	A planning application has been submitted to South Tyneside Council for the proposed development (ref. ST/0140/24/FUL). Whilst our previous desk study report (ref.1) was submitted in support of the application, it was limited to the filling station area, the Contaminated Land Officer has requested the report be updated to include the additional development area (i.e. vehicle showroom / workshop).

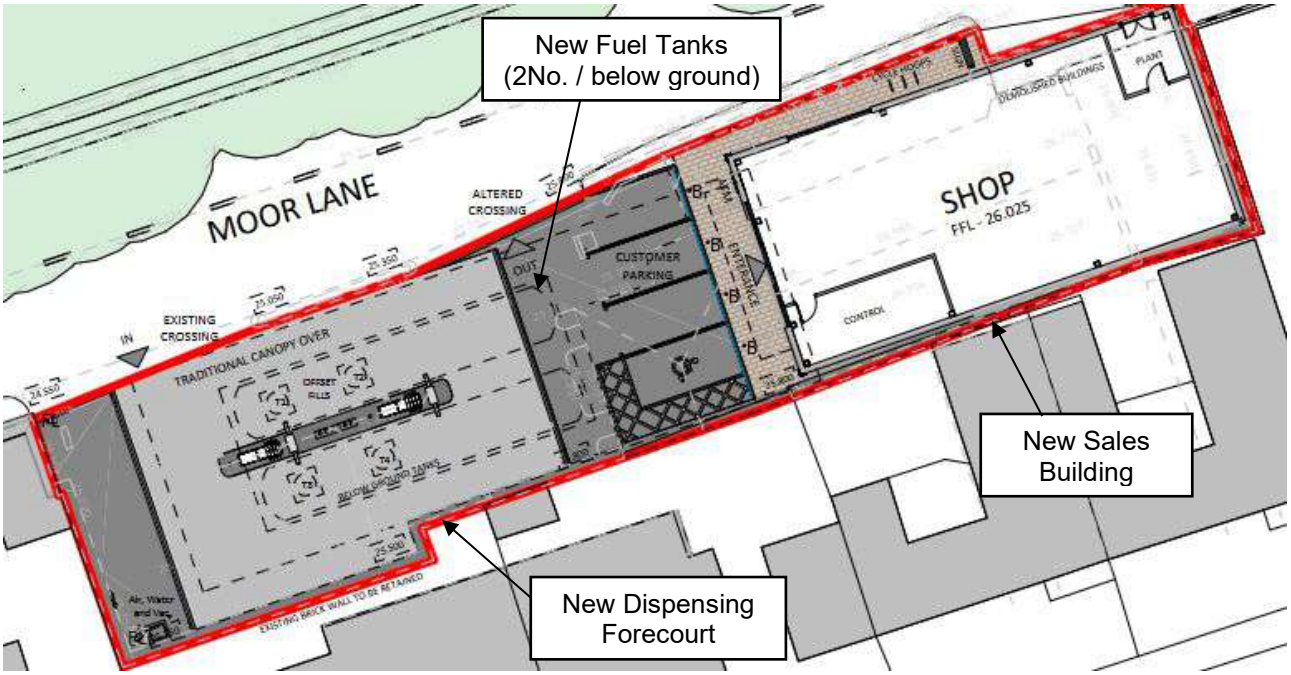


Table Two: Proposed Development Plans

2 Desk Study Information

2.1 Site Description, Location and Setting

Site Description	The site is an operational retail filling station comprising a single-storey shop building, a petroleum forecourt, with overhead canopy and a vehicle showroom / workshop buildings within the eastern portion of the site.		
Grid Reference	437570 564910	Location	The site is located in a mixed residential and commercial area of Harton in South Shields, Tyne and Wear.
Elevation	26m AOD		
Size (approx)	~0.07ha		

Table Three: Site Location and Setting

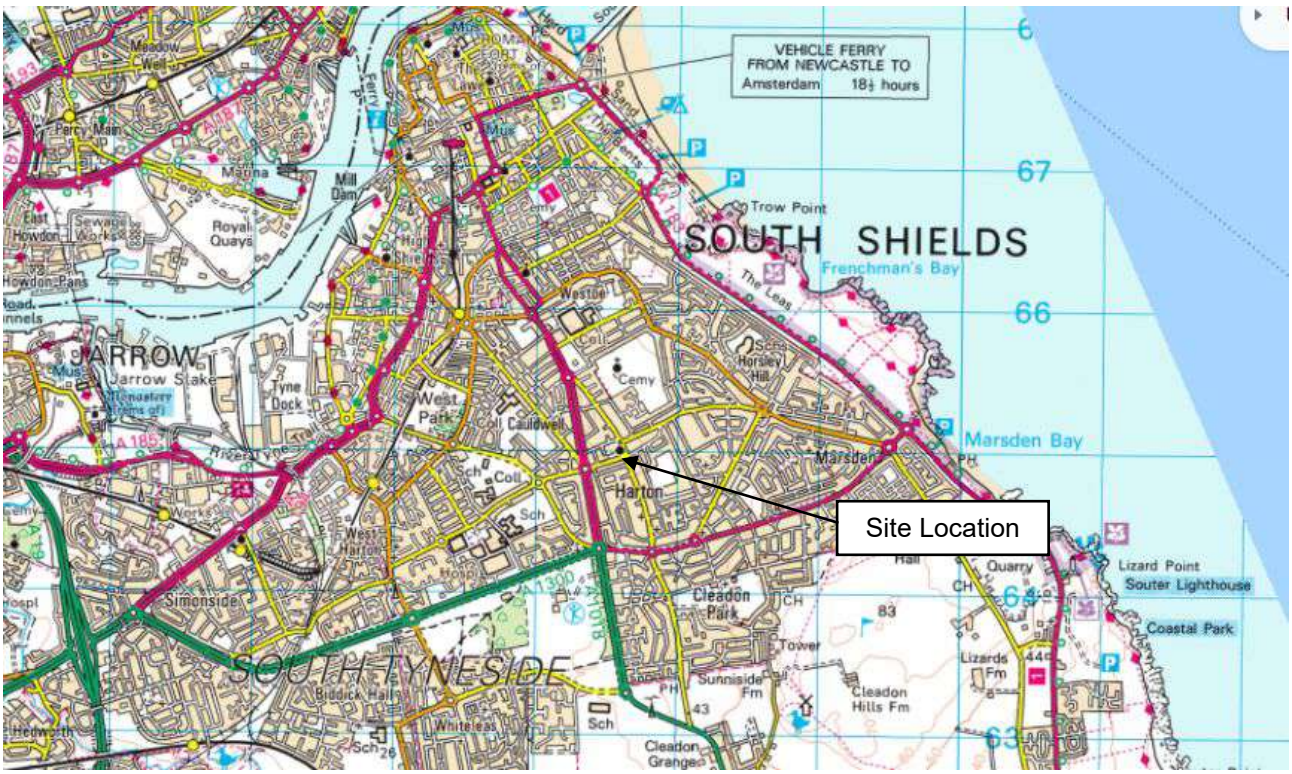


Figure One: Site Location Map



Figure Two: Aerial Photograph Showing Site Layout

Direction	Details
North	St Peter's Church and cemetery across Moor Lane (20m), beyond this, residential dwellings (130m).
East	Commercial buildings including a dry cleaners with residential properties on upper levels (20m). Beyond this more commercial buildings across Sunderland Road (50m).
South	Residential dwellings, situated on Moor Avenue (<5m). Beyond this, more residential dwellings (30m).
West	Residential dwellings, situated on Moor Avenue (<5m). Beyond this, more residential dwellings (20m).

Table Four: Surrounding Land Use

2.2 Geology, Hydrogeology and Hydrology

	Geological Unit	Description	Estimated Thickness	Data Source
Drift Geology	Devensian Till - Diamicton [present at site location and locally in all directions]	Brown sand with beds of brown silty clay or brown and grey brown gritty stony clay.	<5m	British Geological Survey
	Pelaw Clay Member [Shown directly to the west, likely to overlie the Till]	Red brown to dark brown silty clay containing well dispersed pebbles and cobbles and small, shaped calcareous concretions.	<5m	
Solid Geology	Yellow Sand Formation [likely to be present at site location, but absent to west]	Medium and fine-grained, cross-stratified, yellow sand or sandstone	>25m	
	Pennine Middle Coal Measures Formation [shown as being present beneath the Yellow Sand]	Interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams	>25m	
Previous Investigation Data	BGS borehole log NZ36NE1125 located 130 metres to the north describes the geology in this location as ~0.5m of Made Ground over clay to 1.7m over sand to 5m below ground level. No coal measures were detected in this borehole. BGS borehole log NZ36NE78 located 330m to the north describes the geology in this location as inter bedded mudstone with seams of coal and shale to 5m over inter bedded sandstone and mudstone layers with frequent coal seams to 33m below ground level.			

Table Five: Regional Geology

	Geological Unit	Environment Agency Aquifer Classification	Data Source
Drift Geology	Devensian Till- Diamicton	Secondary Aquifer (Undifferentiated)	Environment Agency
	Pelaw Clay Member	Unproductive Strata	
Solid Geology	Yellow Sand Formation	Principal Aquifer	
	Pennine Middle Coal Measures Formation	Secondary Aquifer (Class A)	
Previous Investigation Data	BGS borehole logs NZ36NE1125 and NZ36NE78 both did not record groundwater strikes to the base of the borehole at 33m below ground level.		British Geological Survey

Table Six: Regional Hydrogeology

	Description
Surface Water Features	None identified within 1km of the site

Table Seven: Regional Hydrology

Abstraction	Surface Water			Groundwater		
	Distance	Direction	Purpose	Distance	Direction	Purpose
Nearest Nearest Public Water Supply	None identified within 1km of the site			None identified within 1km of the site		
Drinking Water Safeguard Zone'	The site does not lie within a designated Drinking Water Safeguard Zone					
Source Protection Zone	The site does not lie within designated Source Protection Zone					

Data sourced from Environment Agency

Table Eight: Nearest Surface and Groundwater Abstractions

2.3 Site History

2.3.1 Review of Historical Ordnance Survey Maps

Date	Review of Map – Description of Land Use at Site and in the Immediate Surrounding Area	Potentially Contaminative Land-use	
		On-site	Off-site
1897 (1:2,500 scale)	The site is developed with three structures on site, likely to be residential. St Peter's church (with a grave yard) is present to the north and Harton Hall to the east. The Vigilante Inn and a school are located to the north east and west. A vicarage is shown to the south east.	None identified	Grave yard
1916 (1:2,500 scale)	The dwellings shown on the previous map in the eastern portion of the site have been replaced two other structures that are not labelled but are likely to be residential. The buildings in the immediate vicinity remain unchanged.		
1942 (1:2,500 scale)	Previous buildings have been demolished and five structures are now present, two in the current forecourt area and three in the current showroom location. The structures cover almost the entire site. Moor Lane is now shown. Immediately to the east, south and west, are residential dwellings. Harton Hall has been demolished and replaced with five buildings. The surrounding area has become densely populated with residential dwellings. The church and the vicarage remain.		

Continued on following page

Continued from previous page

1942 (1:2,500 scale)	All the previous buildings has been demolished and five structures are now present, two in the current forecourt area and three in the current vehicle showroom location. The structures cover almost the entire site outline. Moor Lane is now labelled as a road. Immediately to the east, south and west, residential dwellings have been erected. Harton Hall has been demolished and replaced with five new buildings. The area surrounding the site has become densely populated with residential dwellings. St Peter's Church and the vicarage remain.	None identified	Grave yard
1956 (1:1, 250 scale)	The building occupying the central portion of the site is now described as a garage.To the north west, the school has now changed to a church hall.	Contaminative activities associated with the garage/filling station e.g. Hydrocarbons, waste oil, mineral oil.	
1963-1974 1993	The central and western portions of the site have been developed with a single building labelled as a garage (presumably filling station). It is unknown whether this is just a retail filling station or whether a workshop is present (or both). The building in the eastern portion of the site is unchanged and in approximately the same layout as the present day. By 1993 there had been no changed to the filling station area of the site, and at this time this area of the site is not in the same layout as the present day.		
Copies of representative historical maps are included as Attachment Two			

Table Nine: Historical Maps Review

2.3.2 Review of Online Planning Records

Date	Application Number	Local Planning Authority – Planning Records (from South Tyneside Council website)	Evidence of Development
11/08/1981	ST/0803/81 //DM	Redevelopment of petrol station forecourt to provide 3 new pumps, overhead canopy, new shop fronts and installation of underground fuel storage	Application were both granted. No related documents or correspondence between the two parties is available to view to confirm the developments.
15-04-1994	ST/0279/94 //DM	Proposed redevelopment of existing petrol filling station	
20/11/2024	ST/0140/24 /FUL	Demolition of existing buildings and redevelopment to provide a new petrol filling station, comprising of canopy/forecourt, sales building, underground storage tanks, parking, etc	Application for the proposed development associated with this report

Table Ten: Planning Records

2.3.3 Information Provided by the Petroleum Officer

We have contacted the Petroleum Officer to provide information relating to the site history, the information provided is summarised in the table below and included as Attachment Three.

Redevelopment Plans	The information contains two redevelopment plans, dated 1994, that show the sales building at the eastern end of the site and the forecourt in the central area. The below ground fuel tank, denoted as being 15,000gallons (~63,000litres), split into four compartments, is located beneath the central forecourt area. There is a drainage interceptor located towards the western end of the site, in the site egress.
Below Ground Fuel Tanks	**Tank Number** / **Capacity (litres)** / **Contents** 1 / 6,900 / Petrol 2 / 15,200 / Diesel 3 / 13,300 / Diesel 4 / 31,500 / Petrol ➢ A file note indicates 'Tanks 3 & 4' (each with a capacity o 11,350litres) were decommissioned with concrete slurry in 1995. ➢ Records indicate significant settlement (100-150mm) of the below ground tank that was installed in 1995. Investigations confirmed that this was due to the compression of the foam bedding layer the tank had been placed on, rather than a 'global subsidence of the supporting slab beneath'. All of the associated fuel pipework had to be replaced.
Fuel Leaks / Spillages	➢ This is no information on file to suggest there have been any fuel leaks/spillages.

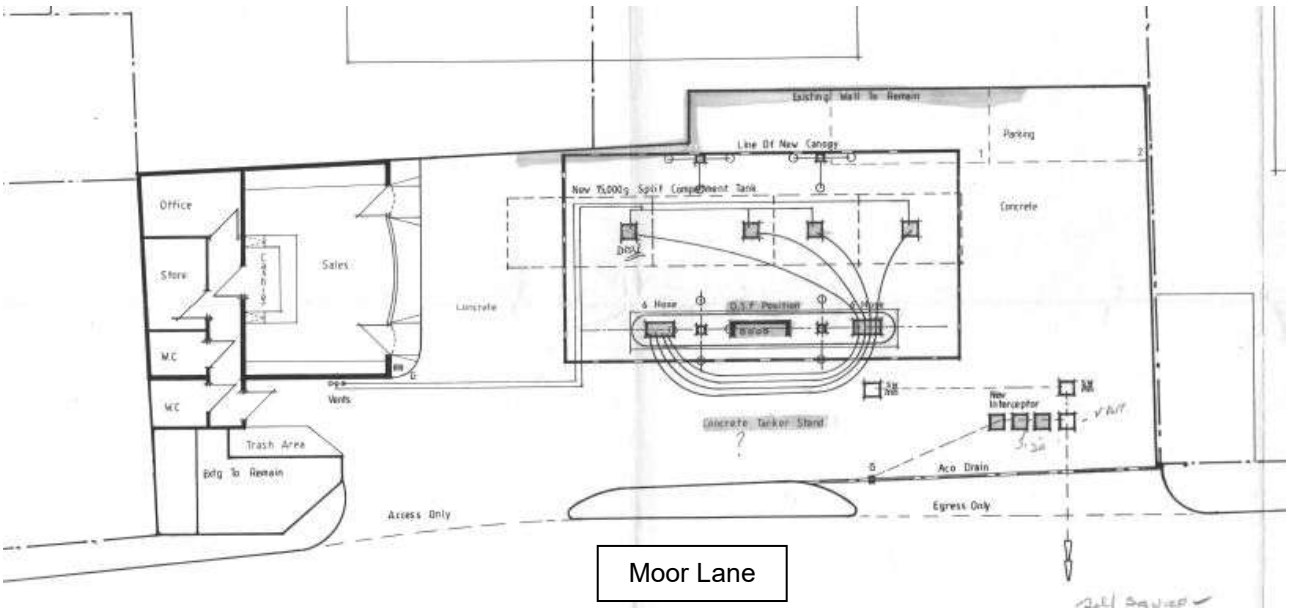


Table Eleven: Information Provided by Petroleum Officer

2.4 Additional Information

2.4.1 Preliminary Flood Risk Assessment

Flood Risk Zone	Flood Risk	Data Source
Zone 1	An area where flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1,000) chance of flooding occurring each year. The majority of England and Wales falls within this area. A flood risk review and drainage strategy has been submitted to support the current application for the sites redevelopment.	Environment Agency

Table Twelve: Preliminary Flood Risk Assessment

2.4.2 Landfill, Radon Gas and Coal Mining Risk

Risk	Description	Data Source
Radon Risk	The site is located in an area where the National Radiological Protection Board has determined that 1-3% of houses are affected by radon. This places the site in a medium risk area for radon. Current Building Regulations do not require any radon protective measures be included in the construction of new buildings or extensions.	Public Health England
Nearest Landfill	The Environment Agency records show that there are no current or past landfill sites within 250m of the site. The site is therefore unlikely to be at-risk of impact from elevated concentrations of hazardous ground gases that are commonly associated with landfill sites e.g. methane or carbon dioxide. Given the site has operated as a retail filling station for a number of years, there is potential for hydrocarbons to be present beneath the site and degrade to produce potentially hazardous ground-gases. As such, monitoring and/or assessment of ground-gases is required as part of any future investigation works.	Environment Agency
Risk of Coal Mining	The site is located considered to be in a development high risk area with respect to potential shallow coal mine workings. A site specific coal mining risk assessment is being undertaken as a separate phase of works.	Mining Remediation Authority

Table Thirteen: Landfill, Radon Gas and Coal Mining Risk

3 Preliminary Risk Assessment

3.1 Review of Potential Contaminants Sources

Based on our historical review we have identified the following potential contaminants of concern associated with the site's (and surrounding land) current and/or historical land use:

Land Use	Potential Contaminants of concern	Relevant Chemical Analysis
Made Ground	Possibly present directly beneath hardstanding - can contain a variety of potential contaminants.	Asbestos Metals Total Petroleum Hydrocarbons Volatile Organic Compounds (including benzene, toluene, ethyl-benzene and xylenes). Polycyclic Aromatic Hydrocarbons
'Garage' - including retail filling station and workshop	Hydrocarbons, including fuels (petrol and diesel), waste oil and mineral oil. Heavy metals	
Off-site sources of contamination - Cemetery	Necroleachate (including ammoniacal nitrogen), formaldehyde, metals, arsenic, as well as biological pathogens	Metals, Solvents, geo-chemical testing (nitrates, phosphates etc)

Table Fourteen: Potential Contaminants of Concern

3.2 Conceptual Site Model

We have used the information presented in the previous sections of this report to create an outline Conceptual Site Model for the site. We have reviewed potential contaminants and their receptors together with any possible pathways that may link them. The resulting pollutant linkages are summarised on the following page.

Contaminant	Pathway	Receptor	Viable Pollutant Linkage
The site has been in use as retail filling station since the 1960s and was used as a garage/workshop from the late 1950s. The fuel infrastructure and former vehicle workshop activities are considered the primary potential source of contamination. Made Ground may be present at the site and may also constitute a potential source of contamination.	Ingestion and dermal contact	Future site workers	No - site covered with hard standing; this will act as a barrier and mitigate risk of impact
	Permeation of contaminants, particularly hydrocarbons, into drinking water supply service pipes		Possible - subject to the concentrations of hydrocarbon compounds present in shallow soil and/or groundwater
	Volatilisation of hydrocarbons to indoor/outdoor air (either direct from soils or dissolved in groundwater)		Possible - subject to concentrations of any volatile contaminants in shallow soil and/or groundwater
	Off-site migration of hydrocarbons: volatilisation to indoor/outdoor air (vapours from on-site soils or via lateral migration of dissolved compounds)	Residential and commercial properties adjacent to the site	Possible - subject to concentration of hydrocarbons present in relation to the site boundary
	Downward migration of contaminants to groundwater	Devensian Till (Secondary Aquifer)	Possible - subject to the presence of contamination in underlying groundwater.
		Pelaw Clay (Unproductive Strata)	No - not considered a viable receptor
		Yellow Sand (Principal Aquifer)	Unlikely - These deeper units are likely to be afforded protection from impact by the clayey nature of the above Pelaw Clay and Till (subject to composition)
		Middle Coal Measures (Secondary Aquifer)	
Off-site Source of Pollution: Cemetery	On-site migration of contaminants dissolved in groundwater	Future site workers and controlled water receptors	Possible - subject to the presence of contamination in underlying groundwater
Sources of Hazardous Ground-gas	Accumulation beneath and within future site buildings	Future site workers	Possible - subject to concentrations of ground-gases in shallow soils.

Table Fifteen: Conceptual Site Model

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4 Conclusions and Recommendations

We make the following conclusions based on the results of our desk top review and preliminary assessment:

- The site has been in use as retail filling station since the 1960s and was used as a garage/workshop from the late 1950s. We have no records of the age of the current petroleum infrastructure. However, we understand from our historical review that a full redevelopment of the site, likely to include new fuel tanks, was undertaken in 1981 or 1994.
- The primary potential contaminants that we have identified are fuels/hydrocarbons, associated with the site's use as a retail filling station, and possible waste/mineral oils associated with past vehicle repair operations.
- The shallow soil underlying the site comprises Till (sand, clay and silt) up to 5m in thickness. Pelaw Clay Formation (clay) is also shown to be present locally and may extend onto the site. Bedrock geology is likely to comprise Yellow Sand Formation (sandstone - Principal Aquifer) overlying Pennine Middle Coal Measures (mudstone, siltstone and sandstone - Secondary Aquifer).
- Shallow groundwater is likely to be present within the Till (classified as a Secondary Aquifer) or resting on the surface of the Pelaw Clay. Groundwater is also likely to be present at greater depths (possibly >30m) within the Coal Measure and/or Yellow Sand Formation (classified as a Secondary and Principal aquifers, respectively).
- Based on the above information, we consider the site is located in an area of moderate environmental sensitivity, primarily associated with the Yellow Sand Formation / Principal Aquifer. Although, we consider the clayey nature of the shallow soils indicated (Till and Pelaw Clay) would likely protect this deeper unit from any shallow contaminants that may be present.
- Due to the site's extended use as a garage/filling station, there is the potential for shallow contamination to be present in soil and/or groundwater. The neighbouring cemetery is considered a potential off-site source of pollutants, including metals, formaldehyde, ammoniacal nitrogen etc

In conclusion, an intrusive borehole investigation (Phase II) would be required to verify if soil and/or groundwater beneath the site has been detrimentally impacted with potential contaminants of concern. This would allow for an assessment of any potential risks posed to the water environment and/or human health. Any future investigation report should also include monitoring of hazardous ground gases

Your attention is drawn to the Notice to Interested Parties included as Attachment One.

Table Sixteen: Conclusions and Recommendations

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ATTACHMENT ONE:
NOTICE TO INTERESTED PARTIES

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NOTICE TO INTERESTED PARTIES

The purpose of our work Is to provide general information on the environmental And/Or geotechnical conditions existing at the site And related to soil And/Or groundwater. The Client Or others specified the scope of the investigation And the validity of our conclusions Is limited by the scope of work specified. We are Not responsible for any such limitations Or omissions.

Where stated in this report, we have used information supplied by third parties. While we have evaluated As far As possible the validity Of this information, we cannot guarantee its accuracy In any way whatsoever.

No investigation technique Is capable Of completely identifying all Of the contaminants that might be present In the soil Or groundwater under a site. Where specified In our report, we have examined the ground by constructing a number Of boreholes And/Or trial pits. We recovered samples Of soil And/Or groundwater from available exposures.

The depth And spacing Of our Sampling locations were selected To ensure With a reasonable probability that they would be representative Of the actual conditions across the whole site. However, safety considerations relating To existing site infrastructure may have restricted our ability To investigate all potential contaminant sources. Specifically, we were unable To investigate the soil And groundwater condition immediately adjacent To the underground structures And/Or buried services. These limitations must be borne In mind When considering the conclusions reached In this report.

Soil Is intrinsically variable And the spread Of contaminants within the soil Is therefore subject To a degree Of non-uniformity. For these reasons no sampling technique can completely eliminate the possibility Of obtaining samples that are Not representative Of the actual conditions. Our sampling techniques are intended To reduce the possibility To an acceptable level, within the limits imposed by the scope of the investigation.

Groundwater levels And soil vapour levels that we report were accurate at the time of the investigation. Groundwater And soil vapour levels are variable. Long term monitoring may be required to ensure that the levels recorded during our investigation are representative of long term And possible 'worst case' conditions. In accepting our recommendations and/or conclusions the Client acknowledges that further, more detailed investigation would allow a more accurate assessment of site conditions to be made and that this would reduce any consequential risk to the Client.

Our investigation was carried out to assess the significance of contamination resulting from use of the site as identified in this report. Unless we have indicated otherwise, no assessment of the potential impact of any other previous uses has been made. No investigation was carried out to determine whether or not any deleterious or hazardous materials (such as asbestos) have been used in the construction of the buildings present on the site. Unless otherwise stated no investigation or assessment has been made of the presence or otherwise of invasive plant species including but not limited to Japanese Knotweed.

Unless specifically stated otherwise, we have not assessed the effect of any proposed future construction activities on existing structures on or near to the site. Nor, unless stated otherwise, have we assessed the likely effect of trees on existing or proposed structures on or near the site.

We do not accept any responsibility for the cost of remedial works or other costs incurred in whatever way whatsoever as a result of any omissions, errors or other shortcomings in this report unless we have been given reasonable opportunity to verify ourselves that such faults exist and we have been given a reasonable opportunity to carry out works to remedy such faults ourselves using the most practicable means available to us. We do not accept liability for any consequential losses incurred by you while either we or others carry out any remedial works we deem necessary.

This report has been prepared for the Client, as specified on the cover page of this report. In accepting our recommendations and/or conclusions the Client accepts that the terms of our appointment were as detailed in the Proposal, or Proposals, that we provided to the Client before being appointed and that these terms supersede any other terms and/or conditions set out in any contracts agreed between ourselves and the Client, regardless of when such terms and/or conditions were agreed to by us and/or signed by us.

Use of, and reliance on, this report by other third parties will be at such third parties own risk, and we do not accept any liability or responsibility to them.

Neither the whole nor any part of this report, or any reference to it, may be included in any published document circular or statement or published in any way without our prior written approval.

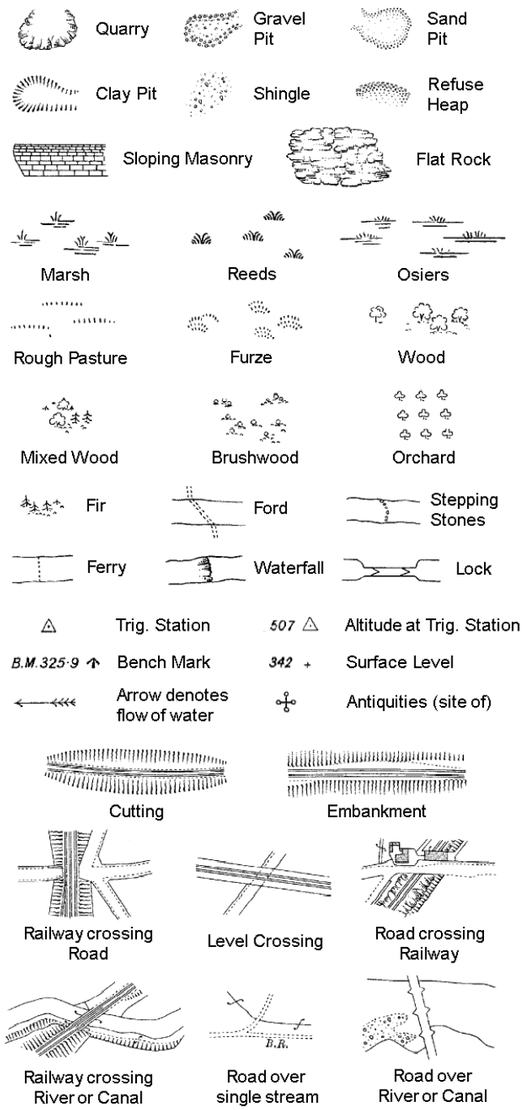
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ATTACHMENT TWO: HISTORICAL MAPS

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

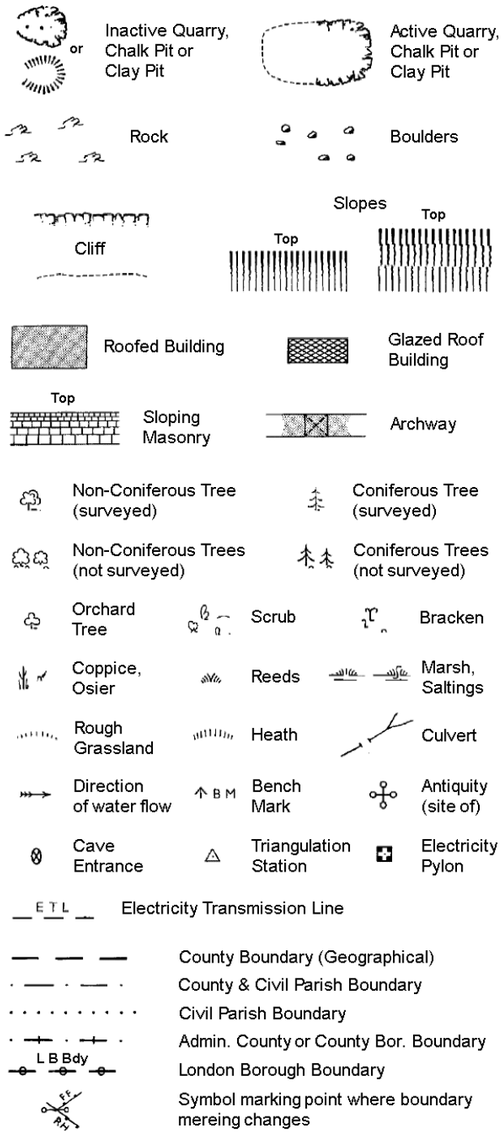
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

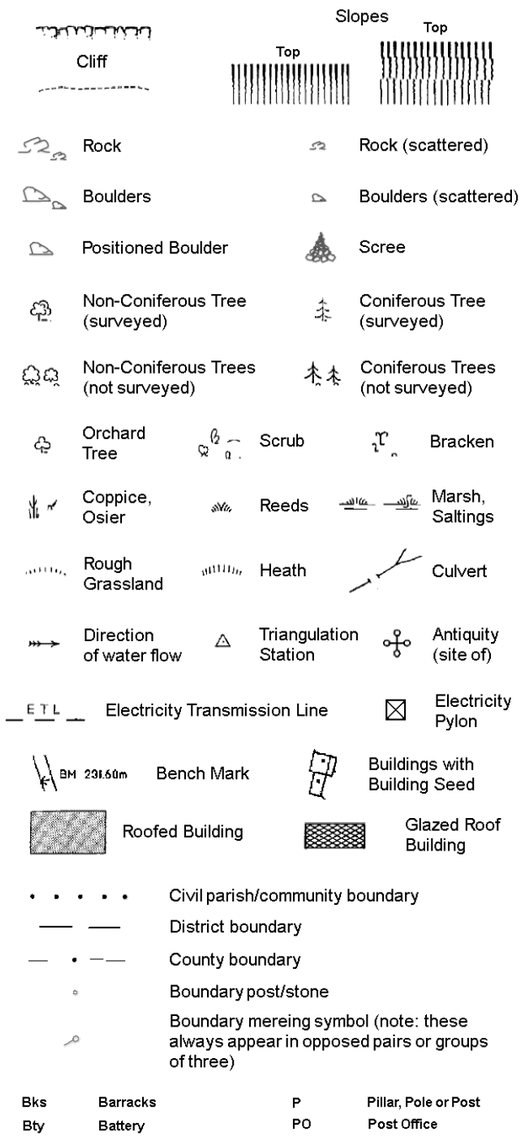
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

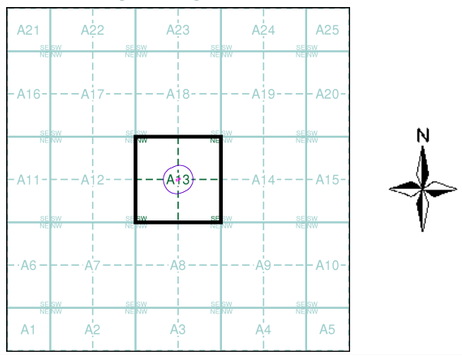
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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Northumberland	1:2,500	1861	2
Durham	1:2,500	1874	3
Durham	1:2,500	1897	4
Durham	1:2,500	1916	5
Durham	1:2,500	1942	6
Ordnance Survey Plan	1:1,250	1956	7
Ordnance Survey Plan	1:2,500	1956 - 1957	8
Ordnance Survey Plan	1:1,250	1963 - 1974	9
Ordnance Survey Plan	1:1,250	1968 - 1985	10
Ordnance Survey Plan	1:2,500	1970	11
Large-Scale National Grid Data	1:1,250	1993	12

Historical Map - Segment A13



Order Details

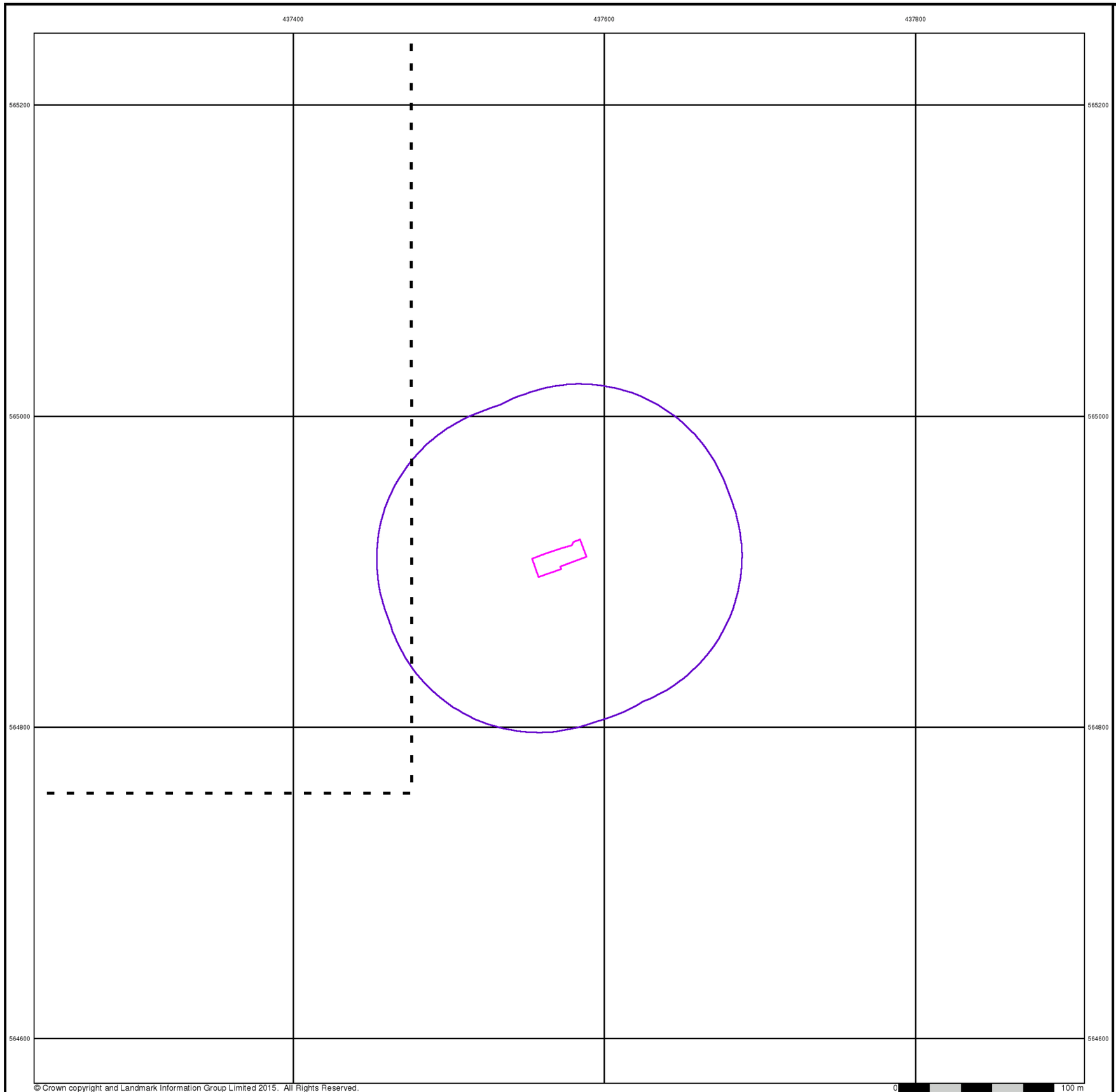
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Site Details

Village Car Centre, 10 Moor Lane, SOUTH SHIELDS, Tyne and Wear, NE34 6BZ

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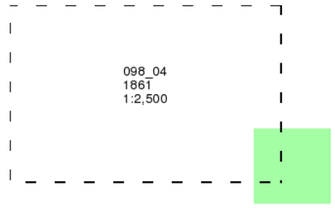
Northumberland

Published 1861

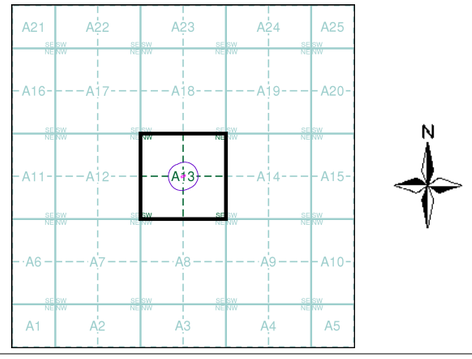
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

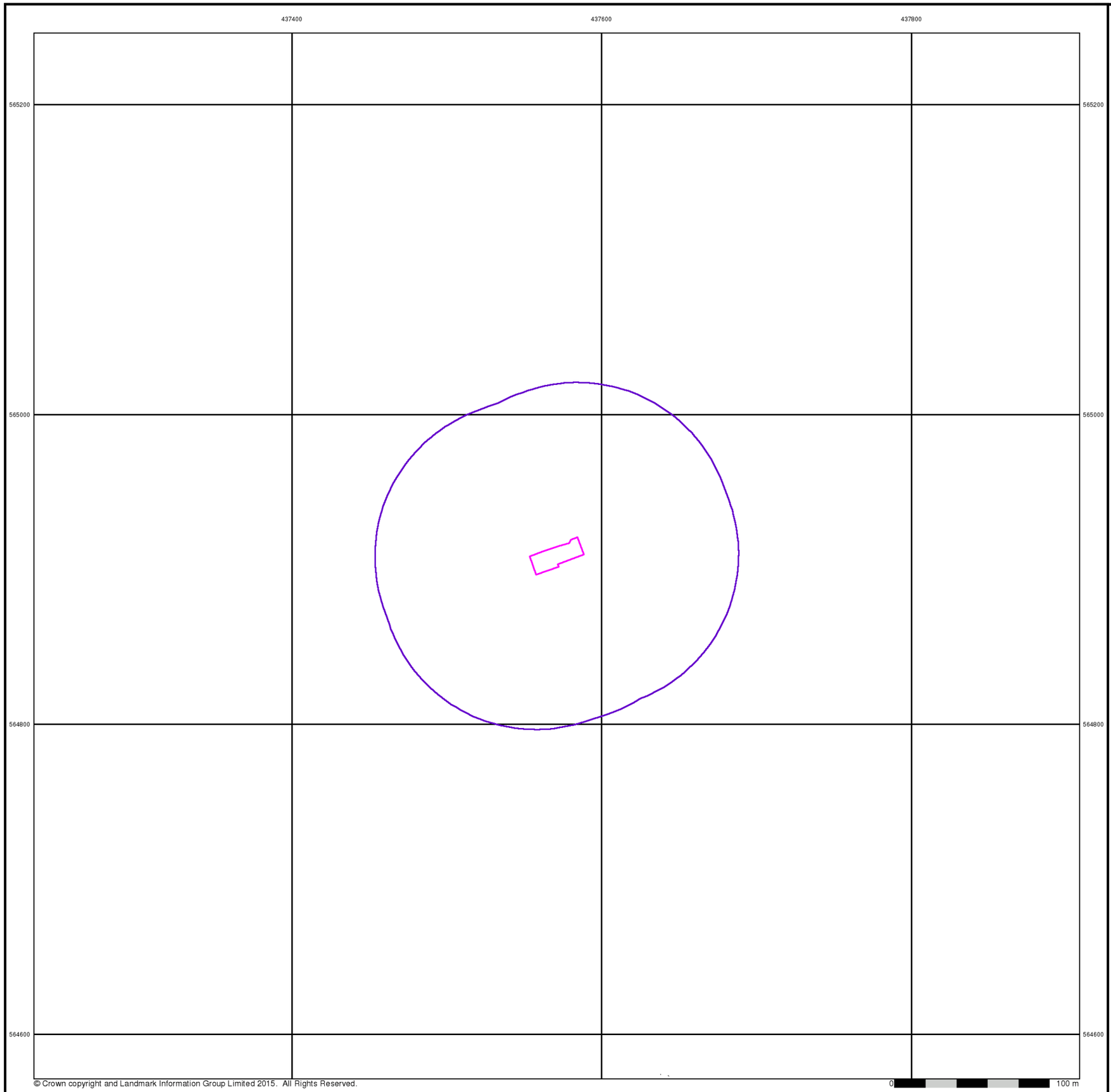
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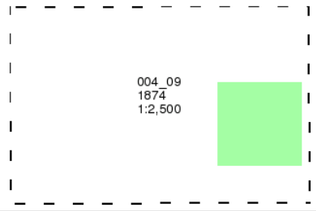
Durham

Published 1874

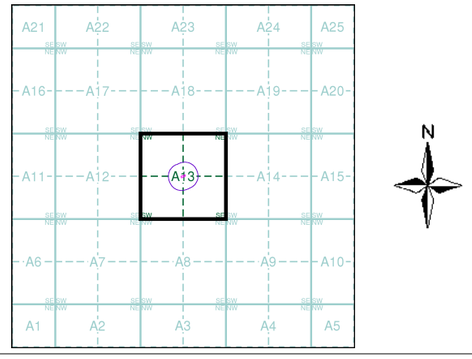
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Historical Map - Segment A13



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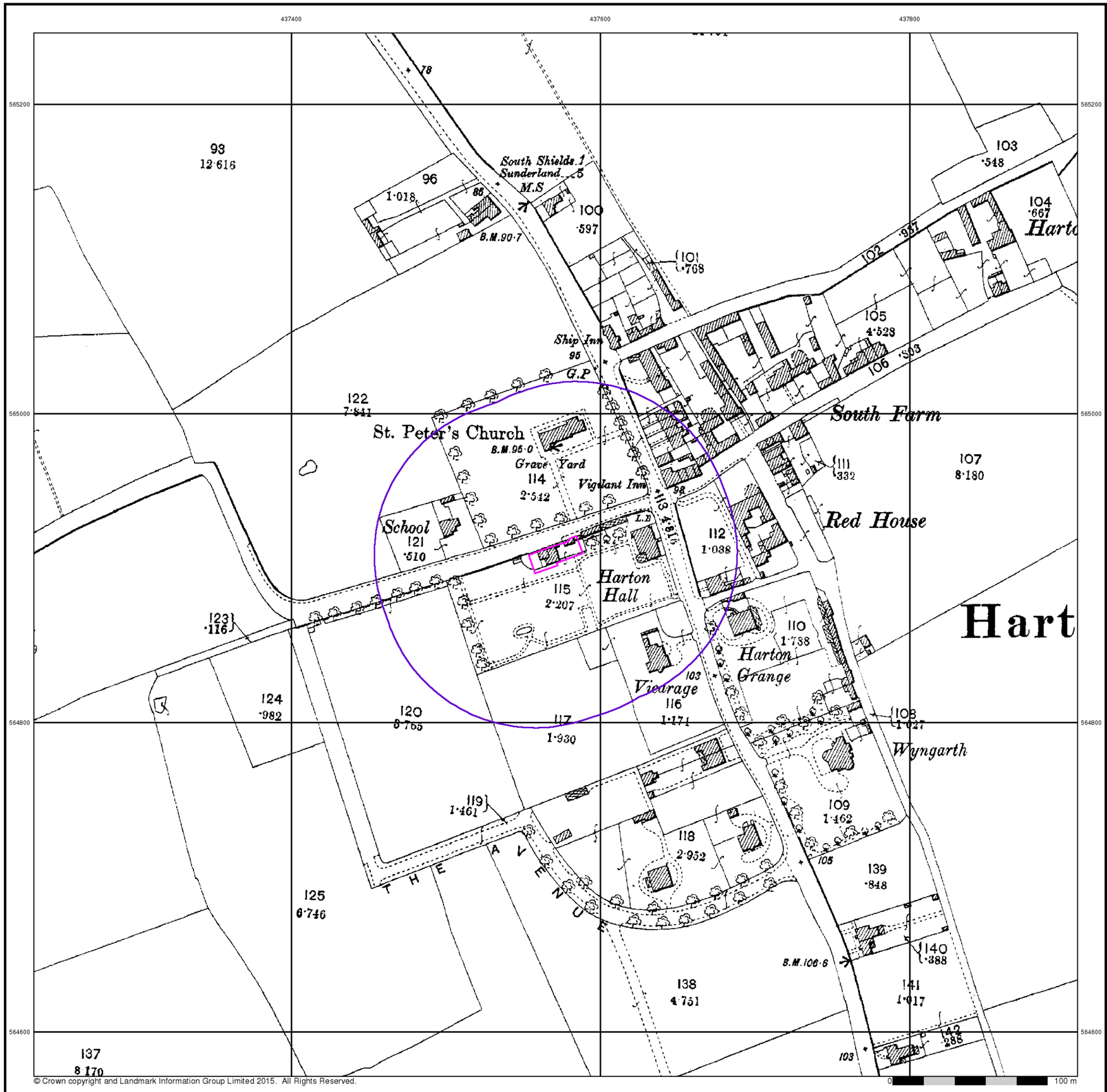
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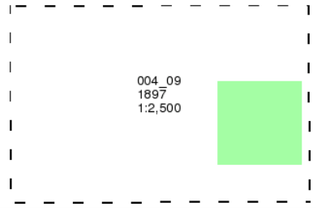
Durham

Published 1897

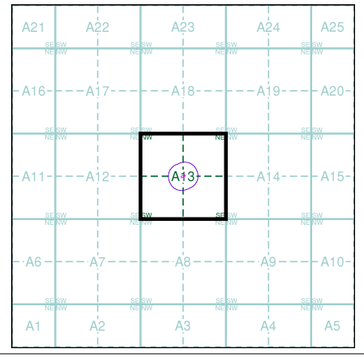
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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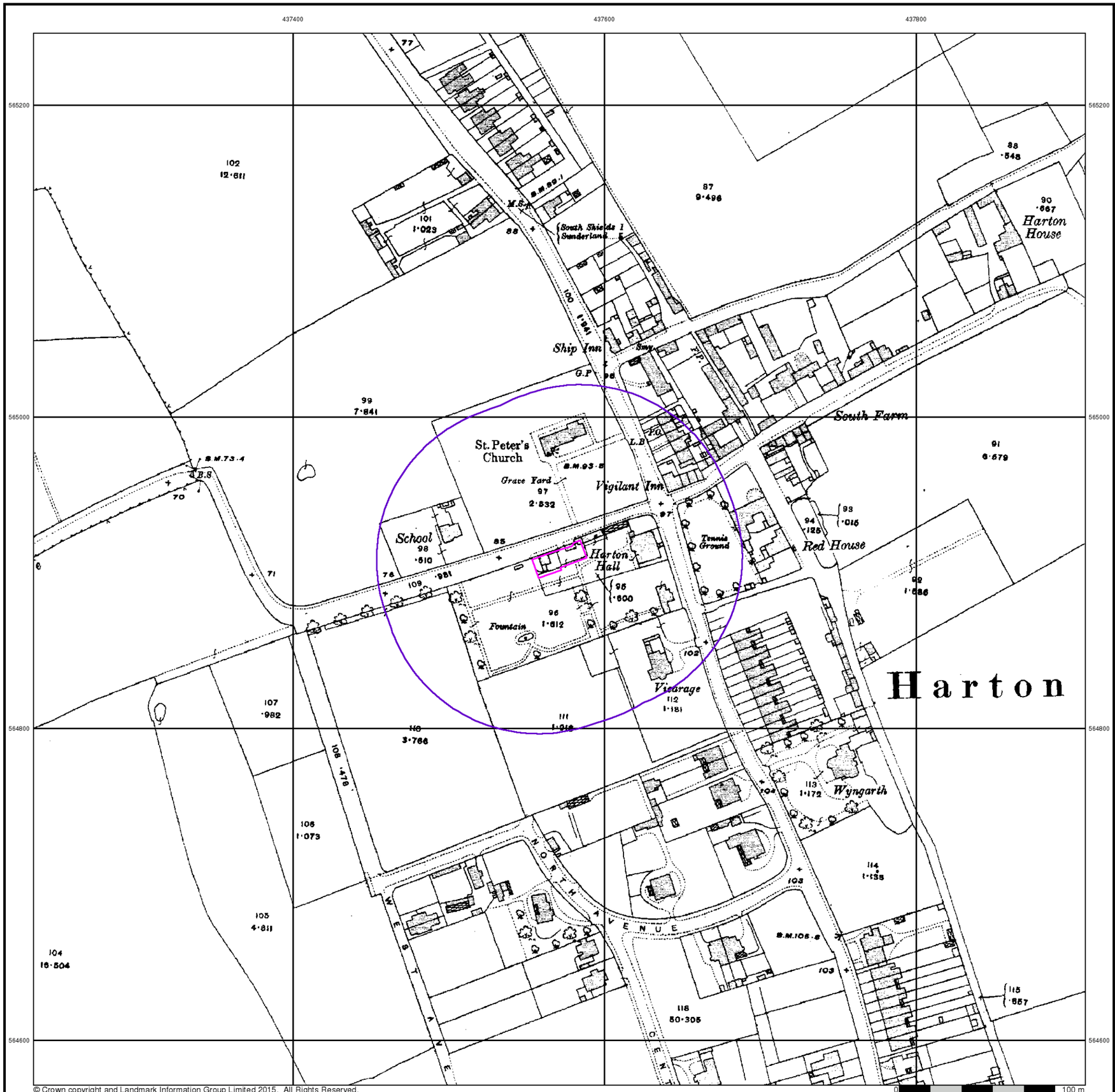
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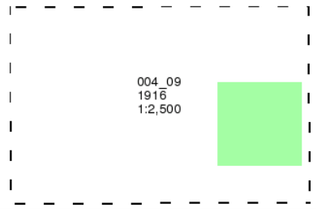
Durham

Published 1916

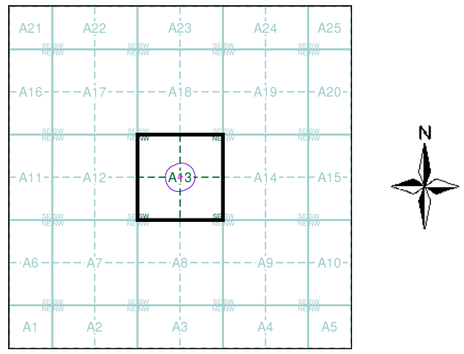
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Map Name(s) and Date(s)



Historical Map - Segment A13



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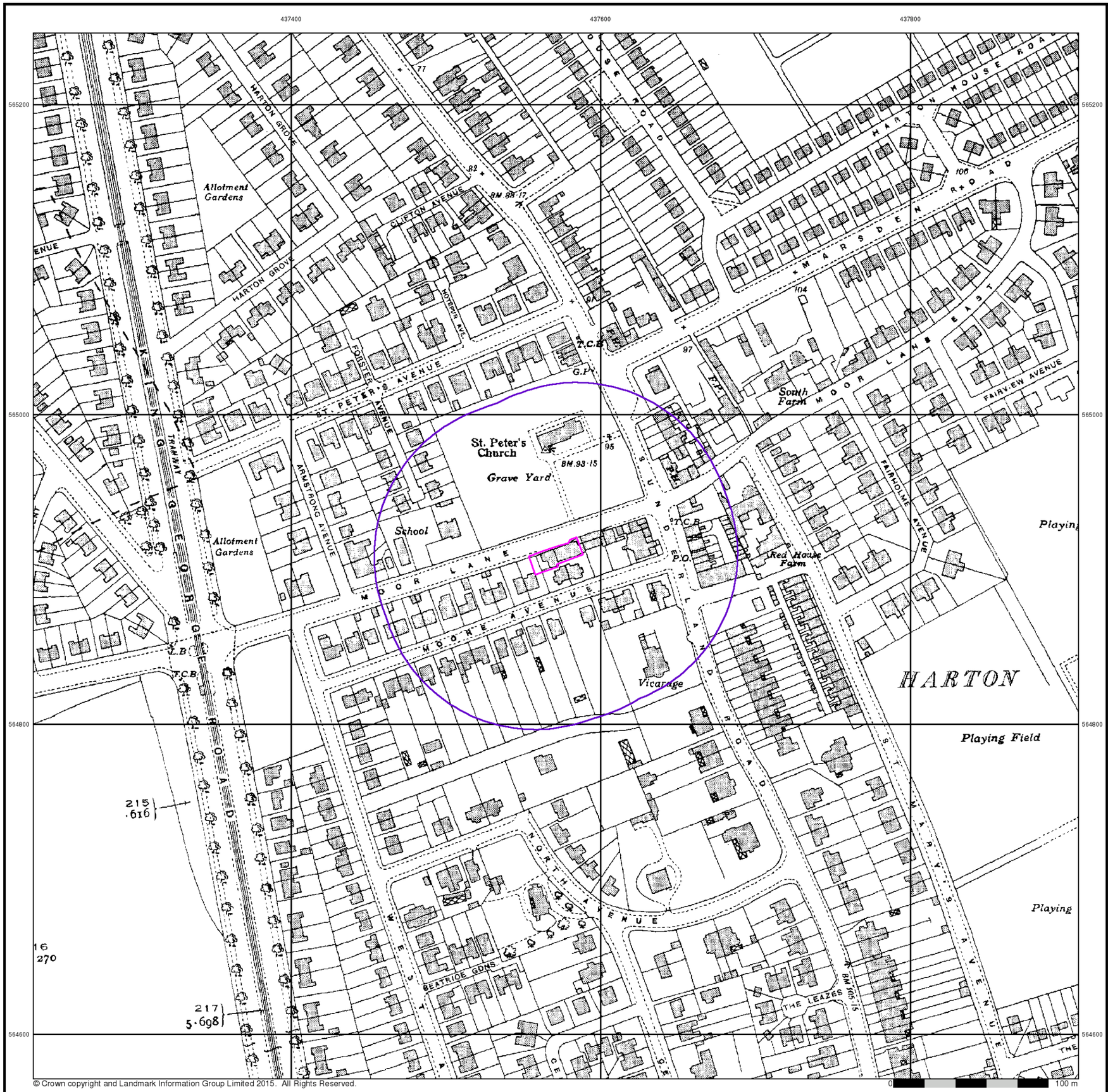
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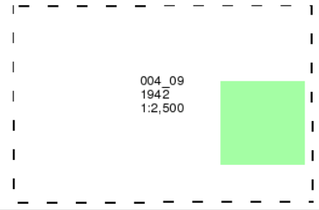
Durham

Published 1942

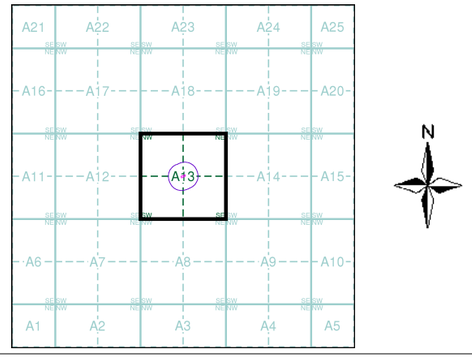
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Map Name(s) and Date(s)



Historical Map - Segment A13



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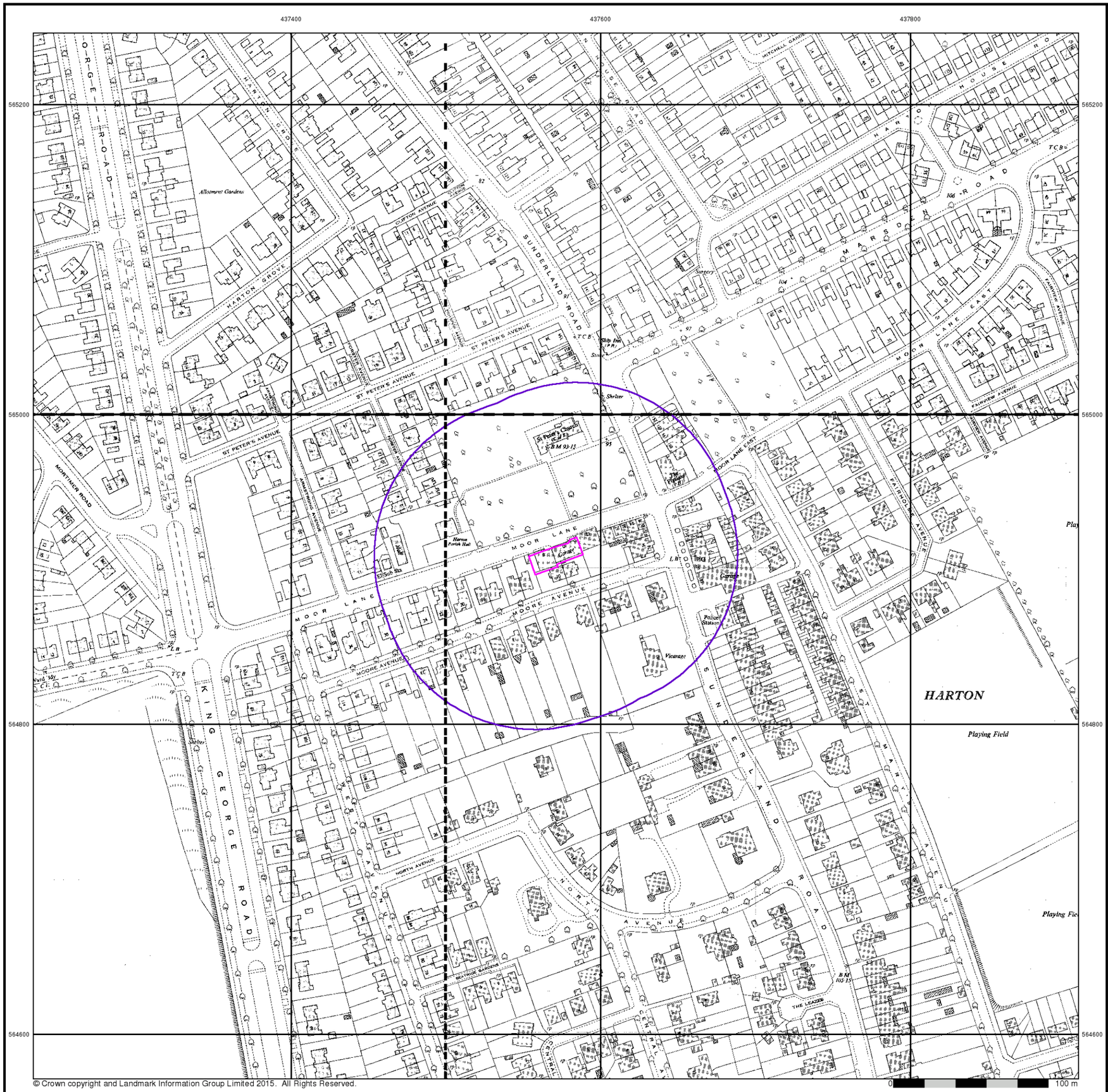
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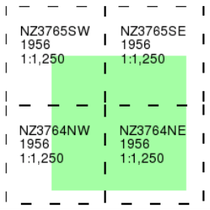
Ordnance Survey Plan

Published 1956

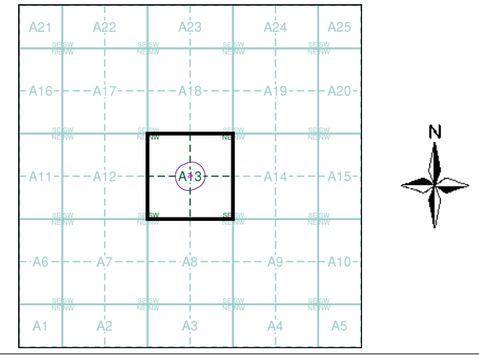
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	104561081_1_1
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Ordnance Survey Plan

Published 1956 - 1957

Source map scale - 1:2,500

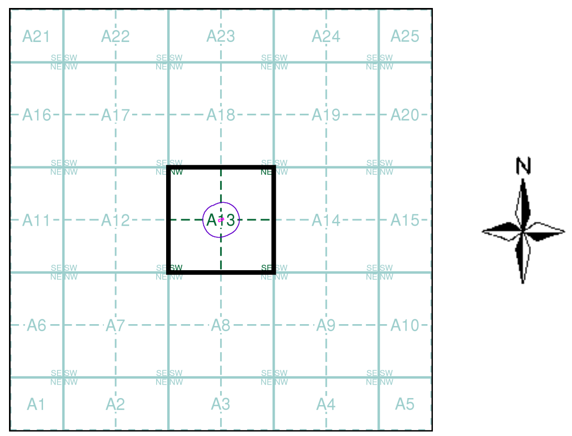
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Map Name(s) and Date(s)

NZ3765
1957
1:2,500

NZ3764
1956
1:2,500

Historical Map - Segment A13



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Site Details

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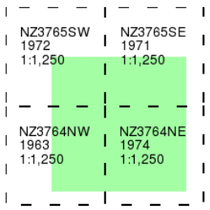
Ordnance Survey Plan

Published 1963 - 1974

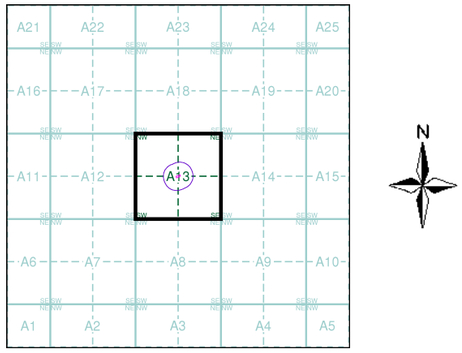
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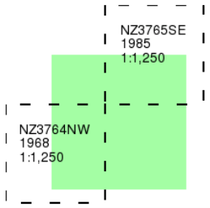
Ordnance Survey Plan

Published 1968 - 1985

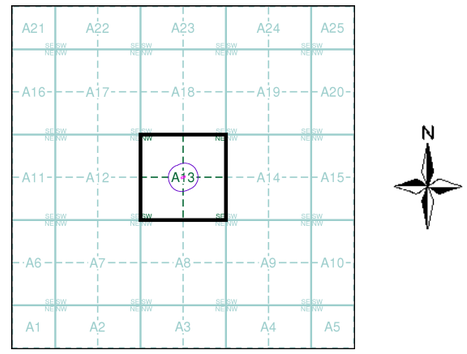
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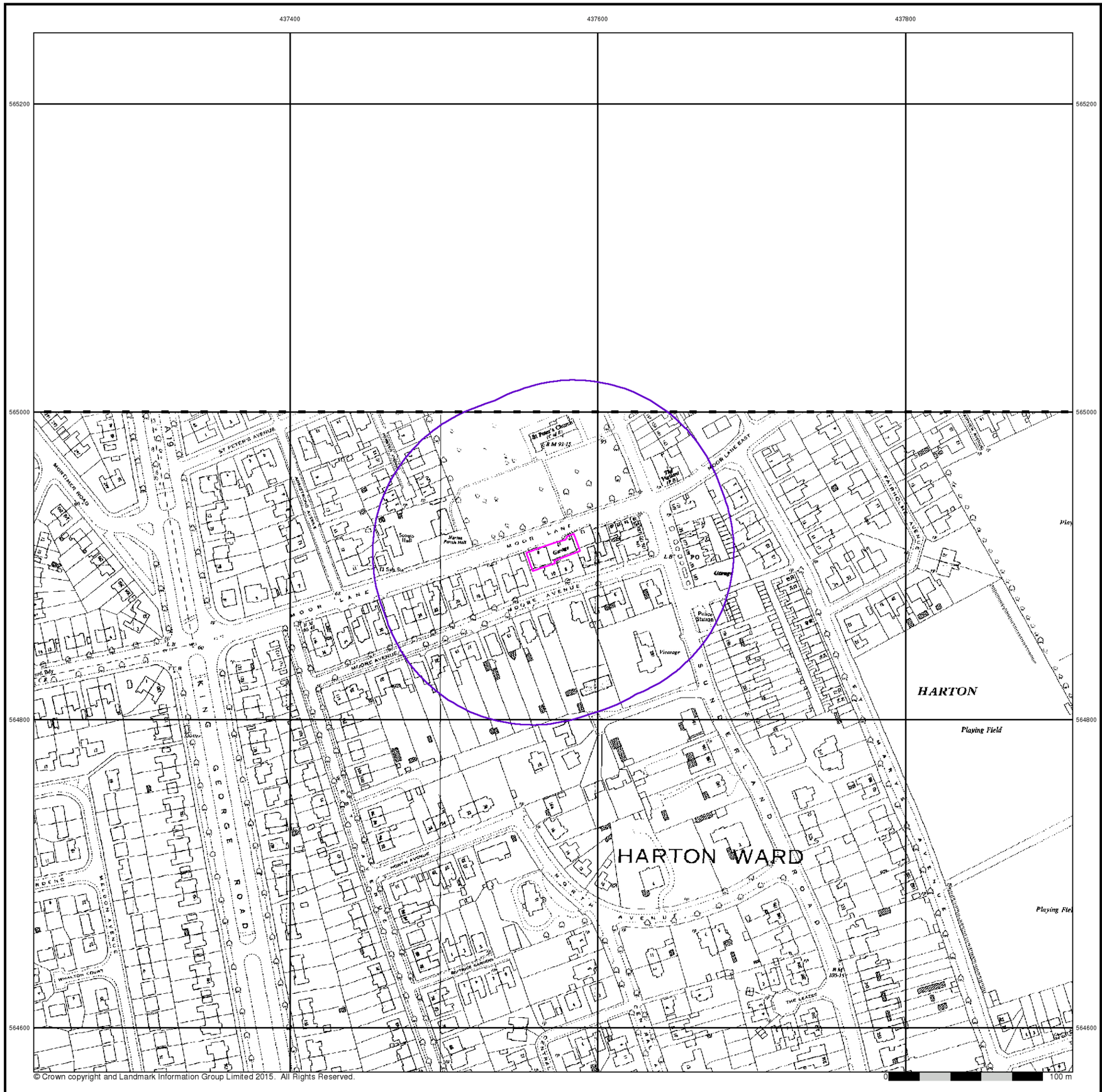
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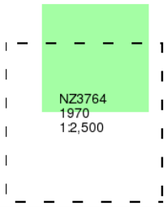
Ordnance Survey Plan

Published 1970

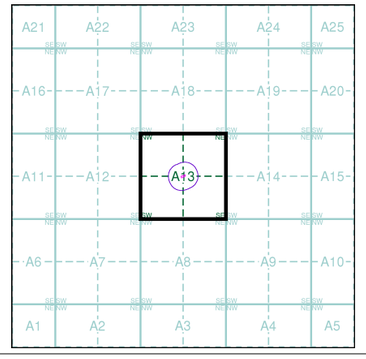
Source map scale - 1:2,500

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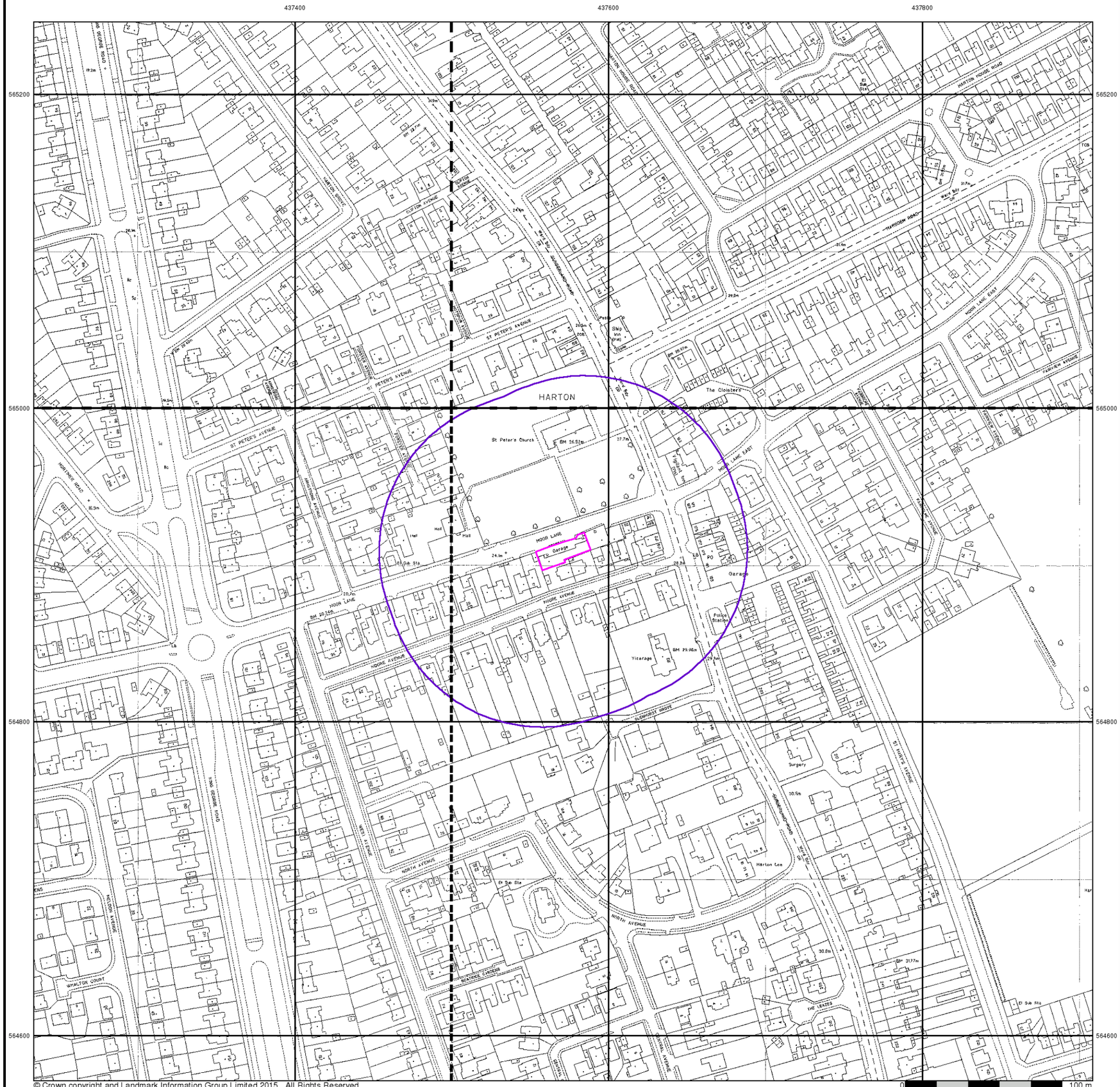
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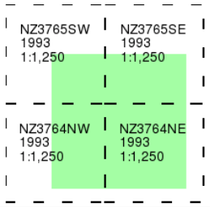
Large-Scale National Grid Data

Published 1993

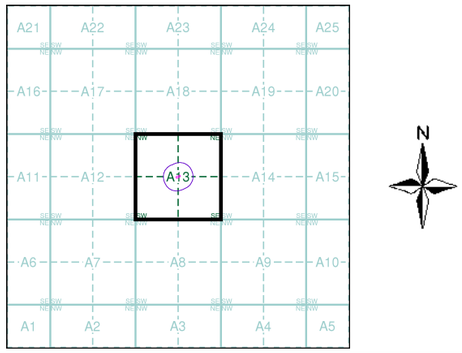
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Environmental - Geotechnical - Laboratory - Foundations
13 Triangle Business Park, Stoke Mandeville, HP22 5BL
Tel: 01296 739400 Email: consultants@subadra.com

ATTACHMENT THREE:
PETROLEUM OFFICER REPORT

TYNE AND WEAR FIRE AND RESCUE AUTHORITY

Petroleum Certificate Number: C4/38/15K

1 PETROLEUM ENFORCEMENT AUTHOURITY (PEA) AND SITE DETAILS

This certificate has been issued by **Tyne and Wear Fire & Rescue Authority** being the PEA for the petrol filling station located at:

Moor Lane Filling Station, 8 Moor Lane, South Shields, Tyne And Wear, NE34 6BZ

2 STORAGE ARRANGEMENTS

The storage arrangements below have been registered with the PEA named in section 1 of this certificate.

A	General site layout	As in place on 01/04/2017
B	Fuel and vapour containment systems, including storage tanks pipework and dispensers	As in place on 01/04/2017
C	Spillage containment / drainage systems	As in place on 01/04/2017

Table 1 [1,2]

Tank ID	Maximum Working Capacity (MWC) (litres)	Contents
1	6900	Petrol
2	15200	Diesel
3	13300	Diesel
4	31500	Petrol

3 CHANGES TO THE REGISTERED STORAGE ARRANGEMENTS

Changes to any of the storage arrangements contained in this certificate must be notified to the PEA named in this certificate.

[1] Table 1 provides a record of those tanks registered to store petrol at the site.

[2] The fee payable to the PEA is based on the MWC of the tanks in which petrol is stored, not the WC of the tanks in which petrol may be stored.

4 PERIOD OF REGISTRATION

This certificate remains valid until:

a) There is/are prescribed material changes to the register arrangements relevant to this certificate: OR
b) Operations at the site cease for a period exceeding 12 months, i.e. the site having been made temporary safe, or control measures identified and implemented to maintain the site in a safe condition.

Issued by:

[redacted]

Chief Fire Officer
Tyne and Wear Fire and Rescue Service

Dated: **01 April 2017**

Certification Guidance

		NEW PSC TO BE ISSUED?		
Prescribed material changes to the registered arrangements	**Notify PEA**	**YES**	**NO**	**POSSIBLY**
The installation of any tank, pipeline or vapour pipeline associated with the storage and dispensing of petrol	✓	✓		
The installation of any pump/dispenser in a new location	✓	✓		
Cessation of use of the petrol storage tanks (for up to 12 months)	✓	✓		
The removal or permanent decommissioning of the petrol storage tanks	✓		✓	

		CERTIFICATE NO LONGER VALID?		
Other changes (including Mode(s) of Operation to the registered arrangements)	**Notify PEA**	**YES**	**NO**	**POSSIBLY**
A change or additional Mode(s) of Operation or Petrol Tanker Delivery	✓		✓	
Any alteration to the site layout that would or could effect of change the operation of the site.	✓			✓
The storage or cessation of storage of any other vehicle fuel on the petrol filling station.	✓			✓

Records Information Request for Petroleum Officers

SUBADRA
Environmental - Geotechnical - Laboratory - Foundations
13 Triangle Business Park, Stoke Mandeville, HP22 5BL
Tel: 01296 739400 Email: consultants@subadra.com

Site Name:	**Moor Lane Service Station**
Site Location:	**8 Moor Lane, South Shields, Tyne & Wear**
Permission for Release of Information Granted by:	**Kavitha Thirumalai**
Date of Search:	**18/03/2025**

Note: If there are any fees associated with the search please contact Gill Cameron (camerong@subadra.com / 01296 739406)

Petroleum Records Questionnaire

Current Petroleum Installation	When was the site first licensed to store petroleum spirit?	**Unknown**
	Number of operational tanks on record / Details?	Tank 1 6900 Petrol Tank 2 15200 Diesel Tank 3 13300 Diesel Tank 4 31500 Petrol
	Age of operational tanks?	1967 & 1995
	Construction details of operational tanks? double / single skin, steel / GRP etc)	Tank 1 Single Skin Steel Tank 2 Single Skin Steel Tank 3 13300 Double Skin Steel Tank 4 31500 Double Skin Steel
	Construction details of fuel lines? (double / single skin, steel / GRP etc)	See attached file for details of 1995 installation, no evidence it has been replaced
	Have the tanks or lines been pressure tested in the last 5 years?	No Evidence on file
	What type of wetstock gauge /system does the site operate?	Veeder Root
	What type of vapour recovery system is present?	Stage 1

Records Information Request for Petroleum Officers

SUBADRA
Environmental - Geotechnical - Laboratory - Foundations
13 Triangle Business Park, Stoke Mandeville, HP22 5BL
Tel: 01296 739400 Email: consultants@subadra.com

Petroleum Records Questionnaire (continued)

Other Information	When was the site last redeveloped (i.e. new tanks/lines etc?)	1995
	To the best of your knowledge are there any old / decommissioned tanks present at the site? Please provide details (number, location, construction details, decommissioning detail)	Evidence 2 x 11,350l tanks made permanently safe by concrete slurry filling 15/02/1995 (See attachment)
	Are historical site plans available? **Please provide plans if possible - or advise if plans are available for viewing**	See attachment
	Is there any information regarding reported fuel leaks or spillages at the site? If yes, please provide details i.e. volume lost, fuel type, cause, actions taken etc	None on file
	Is there any information relating to previous site investigation and/or remediation works	A tank installed early 1995 suffered from subsidence, (see attachments for full report and the available follow up correspondence)

Please return this form to camerong@subadra.com

CASE NOTE

K/MOO1/2 G & B GARAGES, MOOR LANE, SOUTH SHIELDS

The writer witnessed two underground storage tanks No 3 & 4 11,350 litres each being made permanently safe by concrete slurry filling.

Dated 15th February 1995

StnO Emmerson

MOOR AVENUE

N° 4

N° 6

N° 8

N° 10

N° 12

N° 12

N° 14

Office

Store

W.C

W.C

Cashier

Sales

Concrete

G

Vents

Trash Area

Extg To Remain

Access Only

Existing Wall To Remain

Line Of New Canopy

New 15,000g Split Compartment Tank

Parking

1

2

Concrete

Diesel

6 Hose

O.S.F Position

6 Hose

Concrete Tanker Stand

?

S.W. 7mm

S.W. 7mm

New Interceptor

Vent.

G

Aco Drain

Egress Only

Rail secured ✓

Tanker stand is 4m x 5m

0 Set Rits —

Back fill ✓

Tank:

electrics TNS ✓

MOOR LANE

K/M001/2

Revised 12/5/94

conoco

Sheet Title DRAFT PROPOSAL

Scale 1/100

Date 5/4/94

Project G AND B MOTORS
8-10 MOOR LANE
SOUTH SHIELDS

Project Engineer A.Dyson 0926/404172 Conoco

Microfilm No. 10/366/2

Architect SYMON YOUNG 0243/539833

CJ492

EVADAY HOUSE, 141-143 WORCESTER ROAD,
BROMSGROVE, WORCESTERSHIRE B61 7HN
Office Telephone No.: 01527 570300
Fax: 01527 570121

Ref : SM/MAH/SAP/Q994

Mr C. Cleaver
Conoco Limited
98 Renfrew Road
PAISLEY
Scotland
PA3 4BJ

17 November 1995

Dear Mr Cleaver,

Ref : Pipework Testing at G & B Motors South Shields

Further to your recent enquiry, we have pleasure in submitting our quotation to attend site and investigate problems with tanker delivery and test all associated pipwork at the aforementioned site.

Please find work to be carried out as follows :

1. Attend site and investigate problems with tanker deliveries associated with Vapour Recovery.
2. Test vent and vapour recovery lines.
3. Test offset fills.
4. Test all associated suction lines.

Our total price for the above is £734.00 plus V.A.T at standard rate.

We trust the above price is satisfactory and thank you for your valued custom.

Yours faithfully,
For and on behalf of
SM Forecourt Installations Services Limited

[redacted]

Mark Halliday
Operations and Field Director

EVADAY HOUSE, 141-143 WORCESTER ROAD.
BROMSGROVE, WORCESTERSHIRE B61 7HN
Office Telephone No.: 01527 570300
Fax: 01527 570121

Ref : SM/MAH/SAP/440

Mr C. Cleaver
Conoco Limited
98 Renfrew Road
PAISLEY
Scotland
PA3 4BJ

17 November 1995

Dear Mr Cleaver,

Report on : Tanker Delivery Problems at G.B. Motors South Sheilds.

Introduction :

I Mark Halliday of SM Forecourt Installations Services Limited have been asked by Mr Chris Cleaver of Conoco Limited to investigate a problem with tanker deliveries at G.B. Motors South Shields.

Present Situation :

Mr Stephen Evans (Field and Operations Director) of SM Forecourt Installations Services Limited visited the aforementioned site on Wednesday 15th Novemeber 1995. During our visit, we observed that a gap of approximately six inches had developed between the concrete pad and the top of the chamber liners which indicated that the surface concrete pads were suspended with no or very little support. This immediately gave rise to concern us to the effect that such ground movement may have had on recently installed pipework. All the vents and offset fills have been installed in Durapipe and all the suctions have been installed in U.P.P. On closer examination of the pipework within the manway chambers it was clearly visible that the pipework had been affected by the subsequent ground movement but the extent of the problem can not be evaluated without further investigation work. Also during our visit, Mr Evans spoke to the original building contractor (Mr Alan Dyson) who advised him that the tanks had been installed on a foam base which was six inches thick. Mr Dyson also stated that the foam was of a thirty newton strength which also encased the tanks within the excavation.

Conclusion :

Without a visit from a structural engineer, it is not possible to conclude the extent of the ground problems and the effect that the conditions are presently having on the pipework installation. With reference to the comments from Mr Dyson concerning the installation practices used to install the aforementioned tanks, it does appear more than just co-incidental that the gap between the concrete pads and the chambers liners are that of the tank base depth.

Continued .....

Recommendations :

We would recommend that a structural engineer be employed to evaluate the extent of the gound problems presently being experienced and also recommend a full site pipework test to ensure pipework integrity.

We trust the aforementioned is satisfactory, but should you require any further assistance please do not hesitate to contact us.

Yours faithfully,
For and on behalf of
SM Forecourt Installations Services Limited

[redacted]

Operations and Field Director

S.M.FORECOURT INSTALLATIONS SERVICES LTD
EVADAY HOUSE
141-143 WORCESTER ROAD
BROMSGROVE
WORCESTERSHIRE B61 7HN

V.A.T. NO : 589 2313 13
TELEPHONE : 01527 570300
FAX : 01527 570121

Invoice

CONOCO LIMITED
98 RENFREW ROAD
PAISLEY
RENFREWSHIRE
PA3 4BG

DOCUMENT No.	11020
DATE/TAX POINT	20/11/95
ORDER No.	
ACCOUNT No.	CON05

DETAILS

ATTENDED SITE BELOW TO CARRY OUT THE FOLLOWING WORKS :

1. INVESTIGATED PROBLEM DURING TANKER DELIVERY.
2. TESTED ALL SITE ASSOCIATED PIPEWORK, SUCTIONS AND OFFSET FILLS ARE O/K.
   VENTS (VAPOUR RECOVERY) - FAILED

SW / SCOT / NI BUSINESS UNIT			
GENERAL CODE	SUB CODE	ANALYSIS CODE	ID CODE
NAME:	C CLEAVER	DATE:	29/11/95
SIGNATURE:	[redacted]		
FIELD ENGINEER SCOTLAND / NI			H

to be reinvoiced to G & B.

PLEASE NOTE : ANY QUERIES MUST BE RAISED WITHIN 14 DAYS OF INVOICE DATE IN ORDER TO BE CONSIDERED VALID

DUK 055

SITE ADDRESS
G & B MOTORS
SOUTH SHIELDS

Nett Amount	750.00
Total Tax	131.25
Carriage	0.00
Total Amount	881.25

PAYMENT TERMS :
STRICTLY 30 DAYS FROM INVOICE DATE

CASE NOTE

G & B Garages
Moor Lane
South Shields

K/MOO1/2

21 November 1995

The writer visited the above filling station and spoke to the Licensee Denis Coston following a call which indicated problems on the forecourt.

On arrival the Licensee stated that a back pressure had occurred on the vapour recovering line and when the tank lids were removed it was found that the large 3 compartment tank had sunk approximately 6 inches. All UPP plastic lines had been tested was found satisfactory and a report from the structural engineer is awaited.

The tank was installed in January 1995 and was laid on a concrete base back filled with RG30 rigid foam, the tank lying on a bed of foam. The tank may have sank due to one of the following:-

1. The RG30 foam under the tank has cracked or moved;

2. The concrete base has sunk due to the ground drying out during the long hot summer.

Whatever the results are from the engineer, the void beneath the concrete forecourt will have to be made good.

J G JEFFREY
Station Officer

EVADAY HOUSE, 141-143 WORCESTER ROAD,
BROMSGROVE, WORCESTERSHIRE B61 7HN
Office Telephone No.: 01527 570300
Fax: 01527 570121

Ref : SM/MAH/AJG/450

Mr C Cleaver
98 Renfrew Road
PAISLEY
Scotland
PA3 4BG

22 November 1995

Dear Mr Cleaver,

Ref : Pipework Testing at :
G & B Motors, South Shields

Further to our site visit and subsequent pipework test at the aforementioned site, I am now in a position to confirm that the pipework installation has failed on the underground Vapour Recovery system and that the manifold system is of 90mm Durapipe construction with 63mm spurs into the tank chambers.

It is not possible, however, to pin point the exact position of the problem because the vents are all manifolded into one common line. The vents themselves may be in tact but the main line could be damaged. The extent of which, at this stage, is unquantifiable and can not be known without excavational works being carried out.

I trust the aforementioned is satisfactory and should you require any further assistance in this matter, please do not hesitate to contact me.

Yours sincerely,
For and on behalf of
SM Forecourt Installations Services Limited

[redacted]

Mark Halliday
Operations and Administration Director

Tyne and Wear Metropolitan Fire Brigade

Brigade Headquarters: PO Box 1HR, Pilgrim Street, Newcastle upon Tyne, NE99 1HR. Tel: (0191) 232 1224

SOUTH DIVISION HEADQUARTERS

Railway Row, Sunderland, SR1 3HE

Tel: (0191) 514 3262
Fax: (0191) 564 1350

Divisional Commander: J J Usher,

Mrs D Coston
G & B Garages
Moor Lane
SOUTH SHIELDS
Tyne & Wear
NE34 6BZ

TELEPHONE ENQUIRIES TO:
Station Officer Jeffrey - 0191 5679333

YOUR REF:

OUR REF: JGJ/LC/K/MOO1/2

DATE: 18 December 1995

Dear Madam

PETROLEUM (REGULATIONS) ACTS 1928 & 1936
G & B GARAGES, MOOR LANE, SOUTH SHIELDS, TYNE & WEAR

I refer to my officers recent visits to the above premises following problems with RG30 Hard Foam material beneath the new petroleum storage tank and have to inform you that, having studied the engineers report, it will be necessary for you to carry out the following works to satisfy the Licensing Authority that the site is safe from explosion and fire.

1. replace the existing steel vapour recovering line with U.P.P. plastic or similar material;

2. all offset fill and pump suction lines to be checked for stress and replaced as necessary;

3. make good the void beneath the forecourt and tank top with a suitable material.

It will be necessary for you to inform me when the above works are due to commence to allow my officer to carry out inspections of the site.

Yours faithfully

[redacted]

Divisional Officer

NATIONAL TRAINING AWARDS MCMXCIV

GEOFFREY WHEELER
MARKETING

Mr J.G. Jeffrey
Fire Safety Officer
Tyne & Wear Metropolitan Fire Brigade
Railway Row
Sunderland
Tyne & Wear
SR1 3HW

2nd January 1996

Dear Mr Jeffery

G & B GARAGES

With reference to our recent meeting, I can confirm the following:

The sample of foam handed to me by the consultants was analysed by RTI and SVCBV in Holland who confirm that it was good foam of the type RG31. I have asked for an official certificate which will be sent to me within the next few days and I will pass it onto you.

Also, I can confirm that my recommendation is to monitor the level of the tank and the slab but to in-fill the void with RG30. I believe that the consultants have recommended using pea shingle which is compacted but this is going to mean a massive excavation and I cannot quite see the necessity. In any case pea shingle is liable to move and in my view is not very satisfactory for the purpose. Using RG30 could be a very economical way of solving the problem.

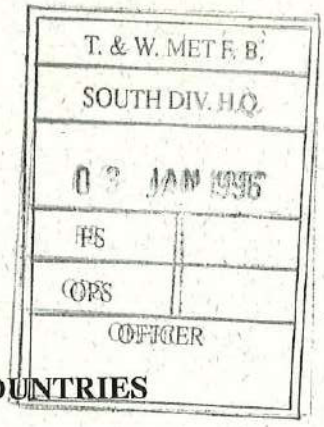
Also, I now understand that Alan Dyson Limited's Liability Insurance is in force and it may be possible for a claim to be made against him even though his company is no longer trading.

Please let me know if I can help further.

Yours sincerely

[redacted]

GEOFFREY WHEELER
AGENT FOR RTI IN UK, EIRE AND SCANDINAVIAN COUNTRIES



9 The Colonnade Woolston Southampton Hampshire SO2 7QT
Office Tel: 44 0 703 446044 Office Fax: 0703 447791 Home Tel: 0703 449841 Home Fax: 0703 421901 Mobile: 0831 132394

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AAE/KW/01867

Structural Report

G & B Motors Limited
8-10 Moor Lane
Harton
South Shields

Investigations into subsidence of 10,000 gallon below ground fuel storage tank

1.0 Instructions

Instructions received were to carry out investigations into subsidence of a 10,000 gallon below ground fuel storage tank at the above site. A copy of our instructions are included in appendix B attached to this report.

The purpose of the investigations was to identify the cause of subsidence and determine whether any further progressive movement is likely to occur. Investigations were carried out under the supervision of Alan Elrington of Peter Fall Cowie between Tuesday the 15th December and Thursday 17th December 1995. Below ground inspection of the existing fuel storage tank was carried out in accordance with our previous recommendations in our preliminary inspection dated Tuesday 14th November 1995. Attached to this report are the following documents which should be read in conjunction with the report.

Appendix A: Preliminary report 14th November 1995

Appendix B: Letter of instruction and method statement for investigations

Appendix C: Trial hole log and photograph schedule

Appendix D: Tanksafe technical literature (Thermotank RG30 hard foam)

2.0 The Premises

2.1 The premises comprise a privately owned fuel filling station situated on Moor Lane, Harton, South Shields. The station has a Jet franchise and was refurbished at the beginning of 1995. There is a forecourt sales building, a steel framed canopy situated over fuel dispensers and a new steel 10,000 gallon below ground fuel storage tank between the pump island and the rear wall of the site.

2.2 For the purposes of this report, the terms "left" and "right" will be taken as when facing the front of the site from the outside. i.e. the front will be taken as that facing Moor Lane.

Partners • Peter W. Fall F.R.I.C.S. • J. Alan Cowie F.R.I.C.S., A.C.I.Arb.
Stephen A. Chappell B.Sc., F.R.I.C.S. • Eric Shepherd A.R.I.C.S. • Stephen Nesbitt B.Sc., A.R.I.C.S.
Offices also at • Darlington • Middlesbrough • Carlisle • Leeds • London

2.3 At the time of our investigations, weather conditions were generally very cold with occasional snow and rain showers. The premises remained partially open during our investigative works when conditions were safe enough to do so. Where referred to in this report, figures shown in brackets refer to photographs in the attached schedule.

3.0 Earlier Inspection dated 14th November 1995

3.1 From our earlier inspection and discussions, we understand the new 10,000 fuel storage tank was installed with a Thermotank RG30 foam surround by Tank Safe Limited.

3.2 We understand a concrete slab was installed at the base of the excavations at a depth of approximately 4m below finished ground level onto which an RG30 foam bed was laid. Within 24 hours of the foam having been installed, the new fuel storage tank was lifted into position on top of the foam and the remainder of the excavation was subsequently back filled with similar RG30 foam. The purpose of the foam we understand is to insulate the tank and aid tank removal should redevelopment of the site be considered.

3.3 When the foam had cured, site levels were subsequently brought up with granular sub base and a new concrete slab or apron constructed as a wearing surface. Shortly after the site was opened problems were discovered with the vapour recovery lines and pressure was found to be building up within the tank.

3.4 We were instructed to carry out a preliminary inspection of the site following reports that voids were apparent beneath the concrete apron.

3.5 Following inspection, it was evident that a gap of approximately 100 - 150mm exists between the underside of the concrete slab and granular sub base over which the original slab had been laid. We concluded from our inspection that both the tank and surrounding fill material appeared to have settled or subsided away from the ground bearing slab. In its current position, the slab is arching between the ground on either side of the tank. The amount of settlement or subsidence appeared to be uniform within all three of the chambers inspected over the tank.

3.6 We recommended that below ground investigations were necessary as a matter of some urgency to determine the cause of this movement and whether any further subsequent movement could occur. We were concerned that further settlement could lead to fracturing of the suction or offset fill lines causing fuel to leak into the surrounding ground.

4.0 Investigations

4.1 Investigations involved excavation of a slit trench or inspection pit to the right hand end of the fuel storage tank (1). We anticipated excavations to be approximately 4m deep and as such, it was necessary to provide temporary trench support. Inspection of the 1 - 50,000 geological survey map of the area indicated surface soils to comprise glacial drift deposits. The purpose of our inspection trench was to assess whether the tank had settled within the foam surround or whether the tank slab had subsided on possible poor supporting sub soils.

4.2 The forecourt concrete apron was saw cut using a diamond tip blade in order to effect a suitable repair to the forecourt running surface when excavations were complete. Excavations were generally carried out using a JCB with a 450mm wide flat tipped steel bucket on an extending back jib. In general, strata mainly comprised a very stiff red brown boulder clay including large cobbles and sandstone boulders. Excavations proceeded without difficulty to a depth of approximately 2.4m where sandstone boulders and cobbles became more frequent. It was necessary to break these out using a handheld pneumatic breaker due to the close proximity of the tank. Trench sheets could not be driven due to boulders and obstructions and it became necessary to install upper and lower walings and props as and when obstructions were encountered. Excavations were completed in about 3 days and at all times, the trench remained dry. We found no indications of a rising ground water level or found it necessary to use the submersible pump standing nearby.

4.3 Our inspection found the top of the concrete base slab at approximately 3.7m below forecourt level being founded on a dense to very dense yellow fine sand. Samples of the sand were recovered by driving a 50mm diameter steel tube. The sand became increasingly dense and we found it increasingly difficult to recover samples. In total, the tube was driven to a final set of around 1000mm below the underside of the concrete slab.

4.4 The soils encountered during these investigations would appear to be natural and are consistent with boulder/glacial deposits as described on the 1:50,000 geological survey map. We found no indications of poor ground and would assess the boulder clay to have an allowable bearing capacity somewhere in excess of 300kn/m^2. The bearing capacity of the dense yellow fine sand is of similar order. On this basis, the strata encountered are suitable for supporting the structural weight of the tank without significant settlement.

4.5 A section of the foam jacket was cut away near the base of the tank to physically inspect the clearance between the invert of the tank and top of the concrete slab. The tank was found to sit approximately 80mm above the 280mm thick concrete founding slab (2). The foam encountered beneath the tank we assessed as being relatively dense compared with the foam we cut away from the end, indicative that some compression of the material has occurred. Samples of the foam were recovered for subsequent analysis should this become necessary. Initially when the foam was cut away at the base of the tank, a pocket of water had been retained within the visqueen surround. This we found had an extremely pungent chemical odour although it was not consistent with petroleum based products.

4.6 After inspection, the void was back filled with pea gravel to a level approximating that of the vapour lines. The remainder of the excavation was filled with compacted granular sub base over which a concrete patch repair was cast.

5.0 Conclusions

5.1 Inspection would indicate the recently installed fuel storage tank has settled within its foam jacket. From discussions with Mrs D Coston, Managing Director and Mr Mike Wilson, the Earthworks contractor, we understand a minimum of 150 - 200mm of foam bedding was installed prior to positioning the fuel storage tank. This would agree with information supplied within the (Thermotank) technical literature where it is specified that a layer of approximately 200mm to 500mm is required. On the basis that the tank was physically measured at only 80mm above the concrete slab we can conclude that the steel tank has settled within or on the foam bedding rather than global subsidence of the supporting slab.

5.2 Manufacturers literature claims that the foam has a compressive strength of 300 kpa equating to $0.3n/mm^2$ which can allow the installation of the tanks and cover slab within a 12 - 24 hour period depending on Ambient temperature after foaming. The combined weight of a 10,000 gallon tank, contents and granular fill above assuming a petrol density of $7.1kn/m^3$, will be in the region of 86 metric tonnes. This equates to a bearing pressure of $0.03n/mm^2$ assuming the tank has a foot print in the region of 10m x 2.5m. Hence, in theory the foam is capable of sustaining the combined weight of the tank and fuel. However, manufacturers figures do not indicate what settlement can be expected within the foam at working load.

5.3 We have not analysed the foam sample or carried out any compressive tests as yet and would require further instructions to carry out these further investigations. However, we are of the opinion that the foam has yielded plastically and would appear to have been squeezed out from beneath the tank. In summary, either the hardened foam has insufficient structural strength or the foam had not cured sufficiently to support the structural loads imposed after placing the tank.

6.0 Recommendations

6.1 The amount of settlement that has occurred to date has been significant and it is likely that the suction and vapour lines and possibly the off set fill lines have been stressed by this movement. We further understand that one of the vapour lines is no longer in operable and as such, it is likely that this has buckled as a result of the tank settlement.

6.2 From our inspection at the base of the trench, the foam which currently exists at the underside of the tank would appear to be highly compressed and we consider it unlikely that there is potential for further settlement. However, as you will appreciate this cannot be confirmed from a single inspection without a suitable period of monitoring.

6.3 We would therefore recommend that the tank is monitored on a monthly basis for a total period of between 4 - 6 months. The monitoring process will take the form of precise levelling at the top of the tank from within the existing access chambers. Before or after the monitoring period, the fill, vapour and suction lines should be exposed and checked for any signs of overstressing or deterioration as a consequence of the tank settlement. Exposing the lines will involve extensive breaking out of the existing concrete apron. We would therefore recommend that the concrete apron is cut back to a convenient joint and broken out where disrupted by exposing the services. The void beneath the slab over the tanks should be made good using compacted hardcore and a new reinforced concrete apron, to a similar specification as the original, constructed. It is envisaged, that these works would involve temporary partial closure or full closure of the service station.

6.4 We would further recommend that when the concrete slab is broken out that the existing tank lash straps at the top of the tank are exposed and tightened to minimise risk of floatation should the ground water table rise.

6.4 We trust this report is sufficient for your present requirements but should you require clarification please do not hesitate to contact the undersigned.

[redacted]

A Elrington BEng;CEng;MIStructE
Peter Fall Cowie
Structural Engineering Department

Appendix A

Preliminary report 14th November 1995

Inspection of

G & B Garages
8-10 Moor Lane
Harton
South Shields
Tyne & Wear

Date of Inspection: Tuesday 14th November 1995

Instructions

At the request of C Cleaver of Conoco Ltd, we carried out a preliminary visual inspection at the above site.

The purpose of our inspection was to comment upon voids which have appeared beneath the forecourt concrete apron or slab.

Generally

We understand the filling station is a dealer site and was redeveloped by the owners at the beginning of this year.

For the purposes of this report, the terms "left" and "right" are taken as when facing the front of the garage premises from outside. The front of the garage premises will be taken as that facing Moor Lane.

The premises comprise a fuel filling station situated just off Moor Lane in South Shields. There is a forecourt sales building situated to the left hand side of the site and a steel framed cantilever canopy has been provided over the fuel dispensers. Between the pump island and the rear wall a new 10,000 gallon tank was installed below ground level when the site was redeveloped.

1.0 Inspection/Discussion

1.1 From discussions with the site owner, we understand that the new tank installation comprised 3 compartment 10,000 gallon tank with foam surround approximately 150mm thick. The remaining excavation was subsequently back filled with a pea gravel surround. The purpose of the foam we understand is to insulate the tank.

1.2 We further understand from our discussions with the site owners that problems have been experienced with the vapour lines and pressure has been building up within the tanks.

1.3 At the time of our inspection, the site was in full operation and a number of inspection chamber lids were lifted for internal inspection.

1.4 At inspection chamber 3, it was evident that a gap of approximately 100-130mm exists between the underside of the manhole frame and brickwork levelling course which ultimately sits on top of the pre-cast concrete chamber cover. We inspected the void with the aid of a torch and it is evident that both the tank and surrounding fill material appear to have settled away from the underside of the slab. At present, the slab would appear to be arching between supports either side of the tank and is possibly gaining some additional support from the canopy column bases. Similar observations were observed within inspection chamber 4 where the inspection chamber walls have settled away from the underside of the slab of similar magnitude.

1.5 Within inspection chamber 5, the problem is somewhat different in that the inspection chamber wall has settled away from the underside of the pre-cast concrete chamber cover. However, similar settlements of approximately 100-150mm were evident between the concrete apron and the fill material.

2.0 site Geology

2.1 The 1:50,000 geological survey map (Drift Edition) of the area indicate no obvious problems concerning filled or poor ground conditions exist on the site. Drift or soils comprise pelaw clays and glacial deposits. Historically, shallow and deep mining activity has taken place in this area. It is unlikely that this will have affected the site however.

3.0 Conclusions

3.1 From our brief visual inspection, it would appear that the recently installed below ground fuel storage tanks and backfill material has subsided away from the concrete apron or slab above. With the aid of a torch and a 1 meter spirit level, we probed the depth of the void beneath the slab which would appear to spread for a distance of between 1-2 metre radius from each of the tank manhole chambers 3 through to 5. We do not think there is a global problem with the site and would appear to be restricted within the vicinity of the recently installed tanks.

3.2 As the manhole chamber and surrounding fill would appear to have settled away form the underside of the slab, we are of the opinion that

the tank itself has settled by approximately 100-150mm in total. It is possible, that such settlement may have disrupted the vapour lines causing problems with back pressure noted earlier. However, this could only be confirmed by additional inspection or testing of the lines. We understand, that the lines are to be tested on Thursday 16th November 1995, and as such, this may verify our suspicions. We do not know in what form the foam jacket took prior to back filling and we wonder whether this has in fact began to deteriorate through possible aggressive ground water attack.

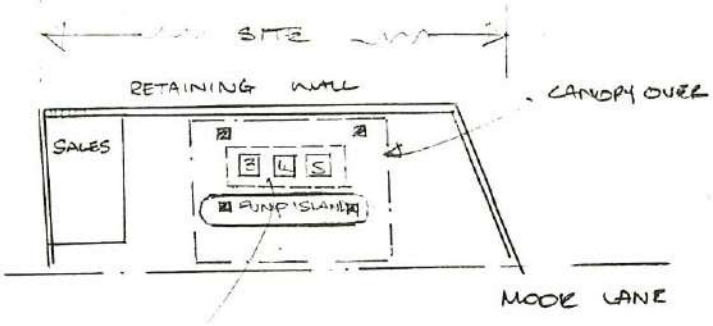
3.3 We are concerned that the tank and surrounding fill appear to have settled by such a significant amount under their own self weight. We do not think this settlement is a result of vehicular trafficking as at present, the concrete slabs are spanning clear of the fill materials and hence, no load is being transferred directly to the fill. In our opinion, there is no immediate danger of sudden collapse of the concrete apron as the site has been trading for some time with this problem without incident. However, we would recommend immediate attention be given to investigating the cause of this significant movement and ascertain whether any damage has been sustained by the fill or vapour lines as a result.

3.4 We would recommend investigative trial holes are excavated through the apron and fill material at least to the depth of the surface connections to the tanks. It will also be necessary to expose the foam jacket surround to the tank to ascertain its condition. It is unlikely that poor compaction of the fill material is the proximate cause of this movement. If trial holes do not reveal the cause of this movement it may become necessary to percussion drill a bore hole with casing to ascertain prevailing soil conditions at a depth beneath the tanks. One further point, if trial holes are cut through the slab, this could disrupt the natural arching action causing the forecourt slab to crack and drop. It may then become necessary to break out the area of slab affected and recast new slabs on recompacted fill. We further enclose for your attention, a set of photographs and site sketch taken of the site and look forward to your response.

[redacted]

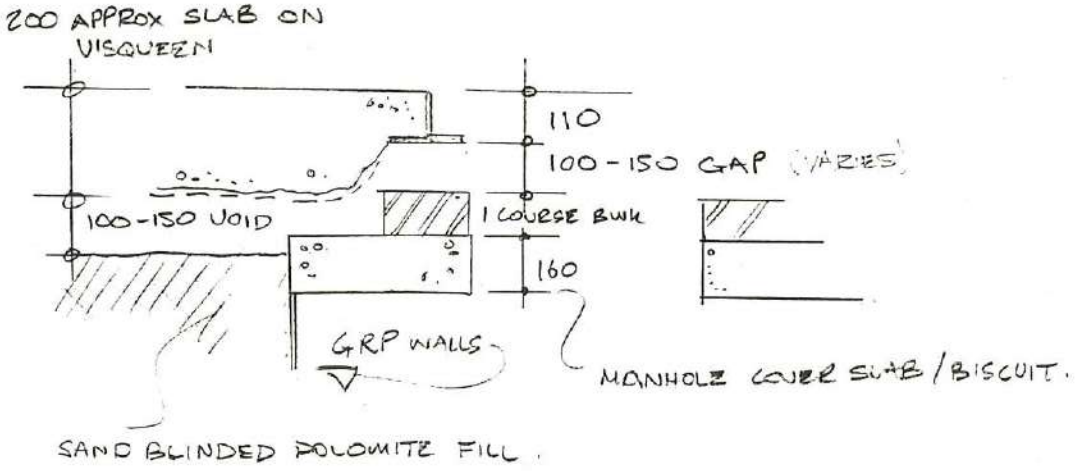
A A Elrington BEng, CEng, MIStructE
Peter Fall Cowie
Structural Engineering Department

Project: DEALER SITE	Job No. 01867	Sheet No. 01	Rev.
8-10 MOOR ROAD, SOUTH SHIELDS		Date 15-11-95	
Section: SITE DETAILS.		By AAE	
		Ckd	



APPROXIMATE LOCATION - NEW TANK 10,000 G.

SITE PLAN



DETAIL AT CHAMBER 3/4/5

Appendix B

Letter of instruction and method statement for investigations

G A R A G E S L T D

8-10 Moor Lane, South Shields, Tyne & Wear NE34 6SZ
Tel: (0191) 455 5241 / 455 7412

30 November 1995

Mr A A Elrington
Peter Fall Cowie
194 Portland Road
Newcastle upon Tyne
NE2 1DJ

Dear Alan,

Further to your letter of 27th November 1995 I write to confirm that the investigations into subsidence of below ground fuel storage tank should go ahead without delay.

I thank you for your prompt attention.

Sincerely,

[redacted]

Mrs D Coston

Managing Director

RECEIVED
- 1 DEC 1995

Reg in England No. 542452
VAT No. 176139743

Directors: Mr J. Storey (Chairman). Mrs D. Storey.
Mrs D. Coston Bsc. (Managing Director).

Method Statement For

Proposed Temporary Trench Supports at

G & B Garages
8/10 Moor Lane
Harton
South Shields
Tyne & Wear

1.0 Generally

1.1 It is proposed to excavate a slit trench for visual inspection of the underground fuel storage tank at the above location. Previous inspection revealed that the tanks would appear to have subsided away from the concrete apron above. We are concerned that disruption of the fuel and vapour lines may occur should further settlement take place and we therefore propose to excavate a slit trench to the end of the tank in order that foundations can be inspected.

1.2 These works will be carried out in a particularly hazardous area, i.e. a petrol filling station and as such, it will be necessary to take measures to avoid the likelihood or flammable or explosive atmospheres being present during operations. Please note, that the filling station will be closed during excavation work but may be allowed to reopen when the sheets and excavations have been completed for a short period only.

1.3 The use of electrical equipment or cutting equipment which may produce sparks will not be permitted at any time during the works and at all times, smoking will be prohibited to minimise sources of ignition.

1.4 The existing concrete forecourt is to be sawn cut with a disc cutter with a water supply so as to minimise dust generation and risk of ignition.

1.5 The slab is to be broken up and carted off site for disposal. Excavations within the first metre should be carried out carefully to ensure no services exist.

1.6 We would envisage excavations to be carried out to a depth of around 1m prior to installing and driving trench sheets. It may become necessary to drive the sheets to a shallow depth upon which the first frame or prop position can be installed. Subsequent excavation could then recommence to the next frame or propping level and props installed. These sheets could then be redriven having removed a substantial amount of soil internally to the required depth. Excavations could recommence to the final frame or propping level at the base. Please note, the trench sheets should be placed approximately 50mm apart so as to minimise the affects of water building up behind the sheets. It will therefore be necessary to provide temporary dewatering facilities which could be discharged directly into the surface water drainage via the petrol interceptor. At all times, the sheets should have a minimum toe in of approximately 600mm before placing each prop or frame level and proceeding with further excavations. Details of the temporary supports are provided on the attached sheets.

1.7 In response to discussions with the fire officer, provision of additional fire fighting equipment will not be necessary as the filling station currently has adequate provision.

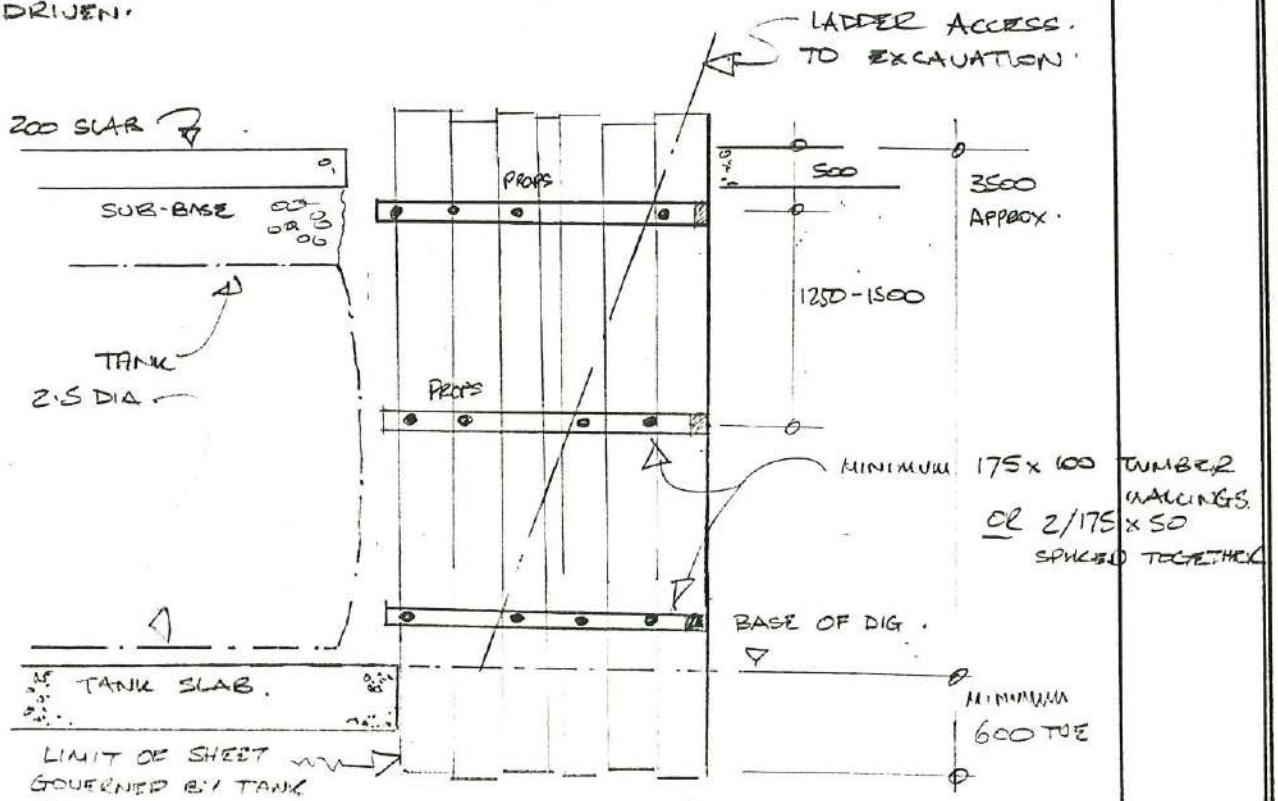
1.8 Soil samples may need to be recovered from the underside of the tank slab and we would request that you supply a 2m length of scaffolding tube which could be driven into the underlying soils and samples subsequently recovered. To drive this tube we generally use a 14lb hammer. To recover the tube from co hesive or clay materials it is necessary to provide large adjustable spanner type grips in order that the tube can be spun within the hole and recovered.

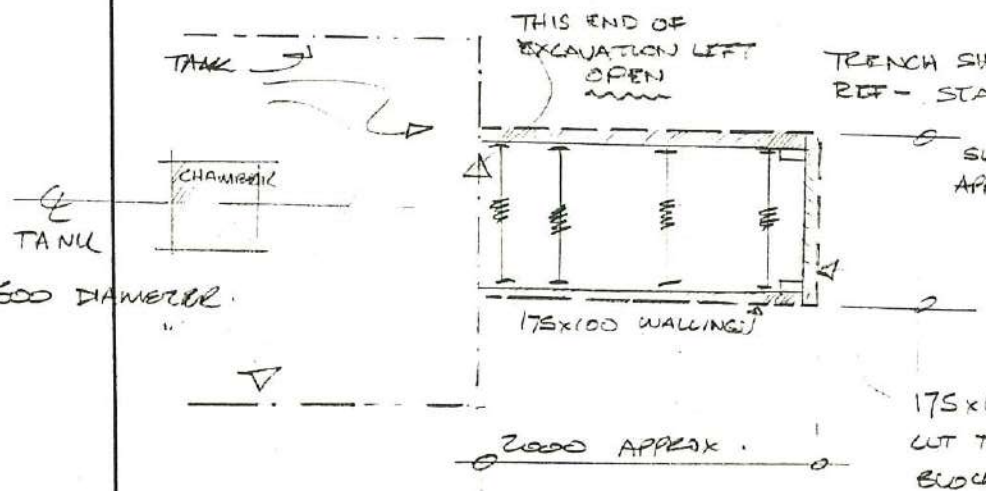
1.9 The contractor should allow for back filling the excavation with pea-gravel or adequately compacted sub base material. Recompacting the excavated material will not be permitted unless it is predominately granular.

PETER-FALL-COWIE

Project: G & B GARAGES Job No. 01867	Sheet No. 01	Rev.
	Date 1-12-95	
Section: TEMPORARY TRENCH SUPPORTS	By AAE	
	Ckd	

TRENCH SHEETS BUCKET / HAMMER DRIVEN.





TRENCH SHEETS ~ 4.5m LONG. REF - STANDARD SHEETS 15.3cm³ EACH.

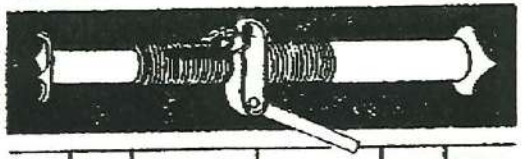
SLIT TRENCH APPROX 900 W.

175x100 TIMBER WALING CUT TO LENGTH TO TIGHT FIT. BLOCKING PIECES IF REQUIRED.

NB - ALLOW SLIGHT GAPS IN SHEETS TO ALLOW WATER TO SEEP THROUGH.

P.02
TO 01912221201
FROM 091 295 5333
01-12-1995 13:16

TRENCH STRUTS

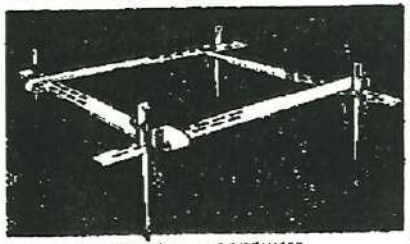


Size	Code	Closed	Open	Weight	Weight Kilos
No. 0	G.S.0.	.305m 1'0"	.475m 1'6"	11 lbs	4.99
No. 1	G.S.1.	.475m 1'6"	.686m 2'3"	15 lbs	6.58
No. 2	G.S.2.	.686m 2'3"	1.092m 3'7"	19 lbs	8.62
No. 3	G.S.3.	1.016m 3'4"	1.676m 5'6"	27 lbs	11.79

Heavy specification with end plate corners turned up as a grip for timbers. On all sizes except the smallest, a captive link retains inner and outer together, in 4 sizes (0-3). Adjustment from 1'0" to 5'7" (.305m to 1.7m). Adjustable steel trench struts eliminate all the cutting, wedging and nailing which are involved in the old fashioned method of strutting trenches with timber.

They are basically similar in design to props and are placed in position and adjusted to the required length by one man in a few seconds. Like props, they are steel throughout and therefore indestructable.

ADJUSTABLE COLUMN CLAMP

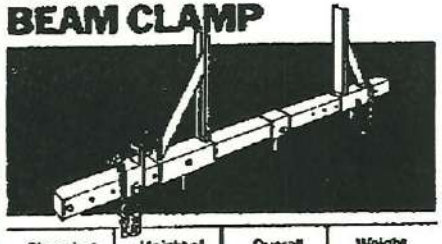


INSIDE CLAMPING DISTANCES

Size	Minimum		Maximum		Weight Per Set	
	Imp	Metric	Imp	Metric	Lbs	Kg
1	9"	228.6mm	21.5"	546.1mm	25	11.34
2	13"	330.2mm	35"	889mm	33	15.00
3	23.5"	596.9mm	50"	1270mm	58.5	26.54

For rapidly and rigidly clamping temporary formwork for concrete columns and concrete casings to steel stanchions. It will be evident that with the slots staggered and lapping as shown, the clamps can be set and secured accurately to any dimension. They can be used for square, rectangular or polygon sections. If a column is unusually long in section as compared with its width, two arms of one size can be used together with two arms of another size, to suit.

ADJUSTABLE BEAM CLAMP



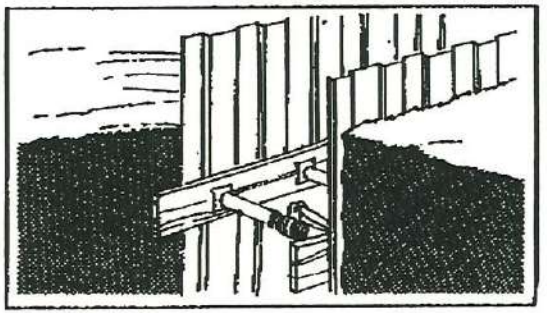
Clamping Distance Imp	Clamping Distance Metric	Height of Arm Imp	Height of Arm M	Overall Length Imp	Overall Length M	Weight Lbs	Weight Kg
5½" to 2'5"	0.14m to 0.736m	12" to 18" to 24"	.305m .457m .610m	3'11" to 3'11" to 3'11"	1.194m 1.194m 1.194m	30 to 32.5 to 35	13.6 to 14.7 to 15.88

Adjustable Beam Clamps are designed to clamp beam formwork into position. They can also be used in drop slab construction for edge beams and ground beams. The adjustable beam clamp is designed to be used in conjunction with props or other tubular support mediums as vertical support.

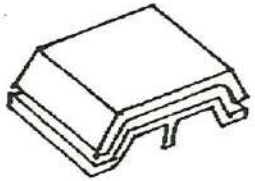
Advantages

- Strongest beam clamp on the market.
- Light weight – only 30 lb. with 12" arms.
- Simply fixed by unskilled labour, and show great savings over timber strutting.
- All adjustments without tools.
- All parts easily interchangeable.
- Spigots provided for props.

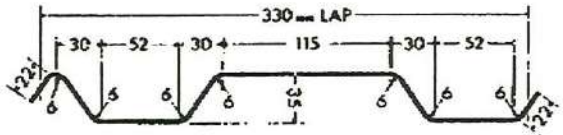
TRENCH SHEETING



DRIVING CAP
WEIGHT 10kg



LIGHTWEIGHT



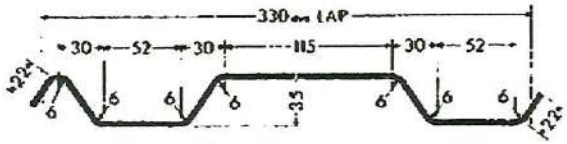
MATERIAL = 2.64 mm.

METRIC CHARACTERISTICS OF SECTIONS

Gauge	2.64mm
Weight per lin. metre	8.2kg
Weight per sq. metre	24.8kg
Section modulus	11.7cm³

USE THIS TYPE OF SHEET

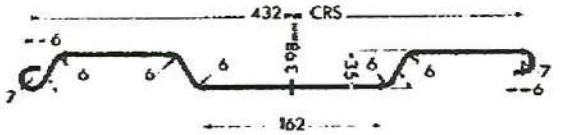
STANDARD



MATERIAL = 3.6 mm.

Gauge	3.6mm
Weight per lin. metre	11.3kg
Weight per sq. metre	34.3kg
Section modulus	15.3cm³

INTERLOCKING



MATERIAL = 3.98 mm.

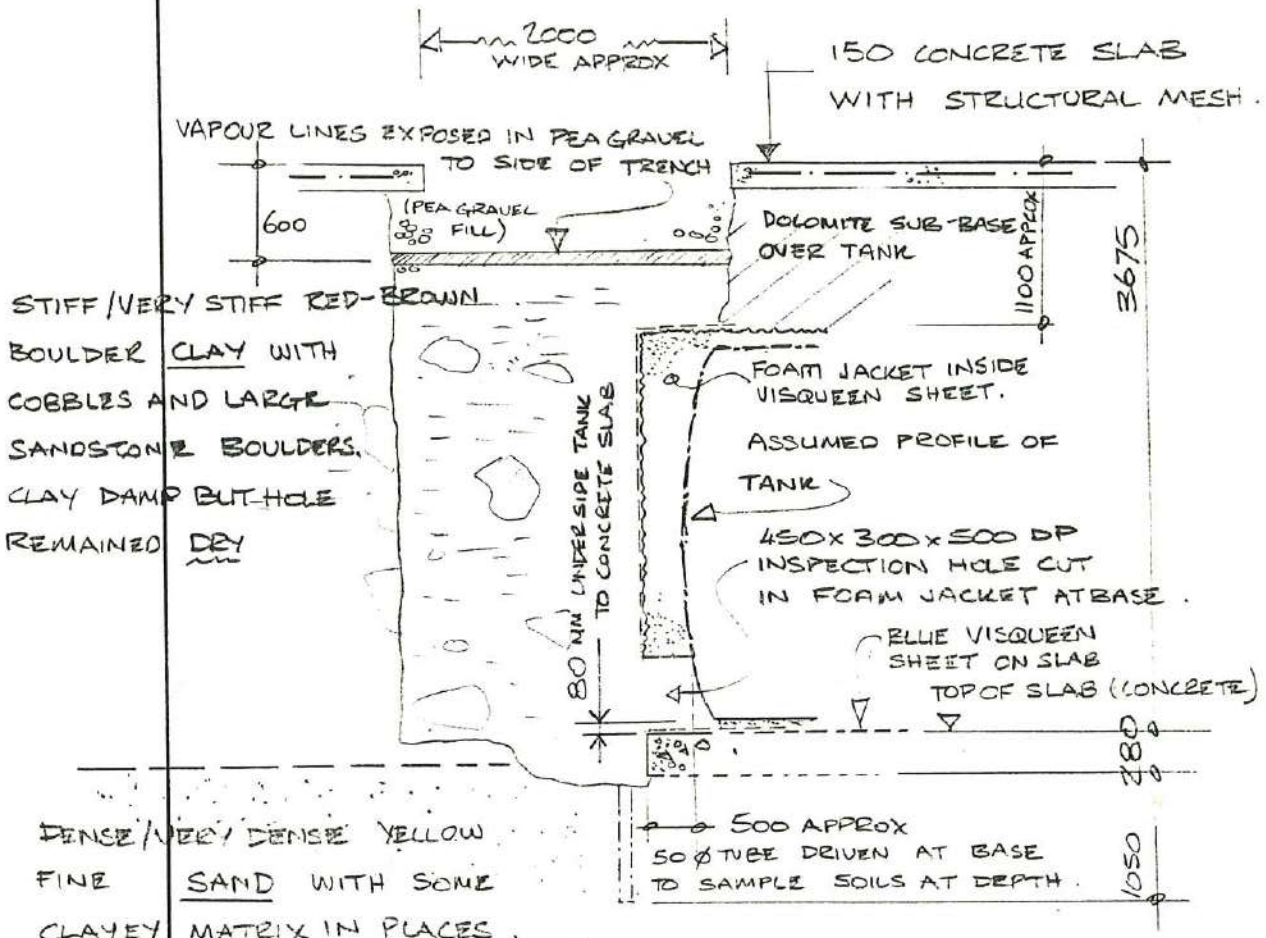
Gauge	3.55mm
Weight per lin. metre	15.16kg
Weight per sq. metre	35.09kg
Section modulus	21.07cm³

PLEASE SPECIFY LENGTHS REQUIRED

Appendix C

Trial hole log and photograph schedule

Project: G & B GARAGES LTD · Job No. 01867	Sheet No. 01		Rev.
	Date	7-12-95	
Section: SLIT TRENCH / INSPECTION PIT.	By	AAE	
END OF 10,000G TANK	Ckd		

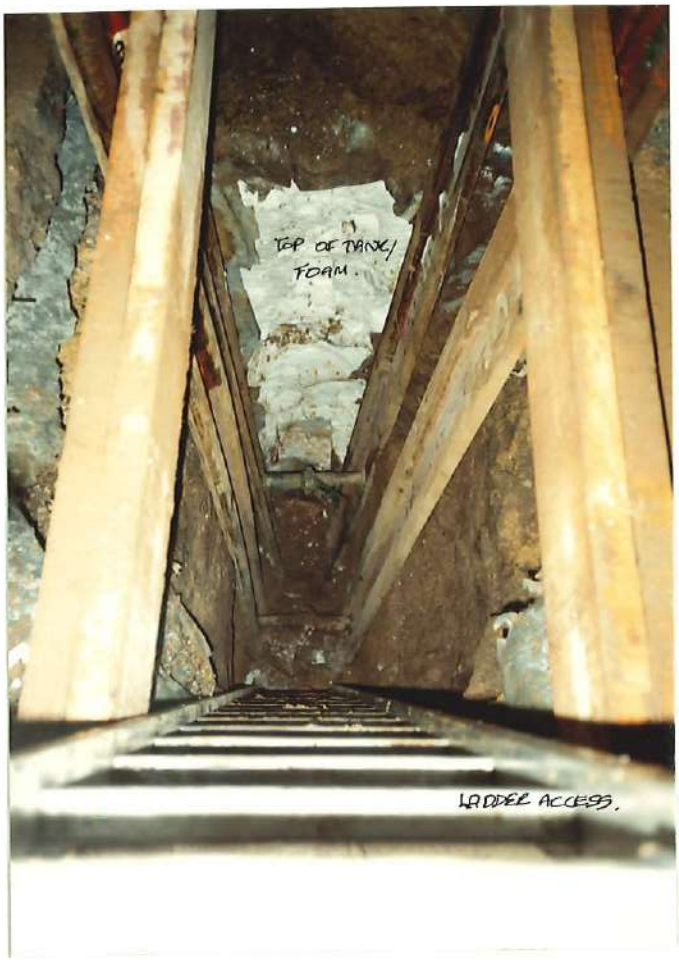


NOTES : 1. DIFFICULT TO EXCAVATE TRENCH WITH JCB BACK ACTER WITH LARGE BOULDERS IN CLAY SOIL - BOULDERS BROKEN UP WITH HAND HELD PNEUMATIC DRILL IN ORDER TO PROGRESS DIG.

2. BOULDER SIZES APPROX 400 - 900 MM LONG/THICK COBBLES TAKEN AS LESS THAN 300 MM IN DIAMETER.

3. EXCAVATION REMAINED DRY - SLIGHT WATER INFLOW INTO BASE OF HOLE WHEN FOAM CUT AT BASE SLAB - PUNGENT ODOUR FROM FOAM/WATER WHEN HOLE IN FOAM CUT.

4. VERY DIFFICULT TO DRIVE AND RECOVER 50Ø SAMPLE TUBE IN DENSE SAND.


TOP OF TANK/
FOAM.
LADDER ACCESS.


FOAM JACKET.
UNDERSIDE OF
TANK
80 MM
BASE SLAB

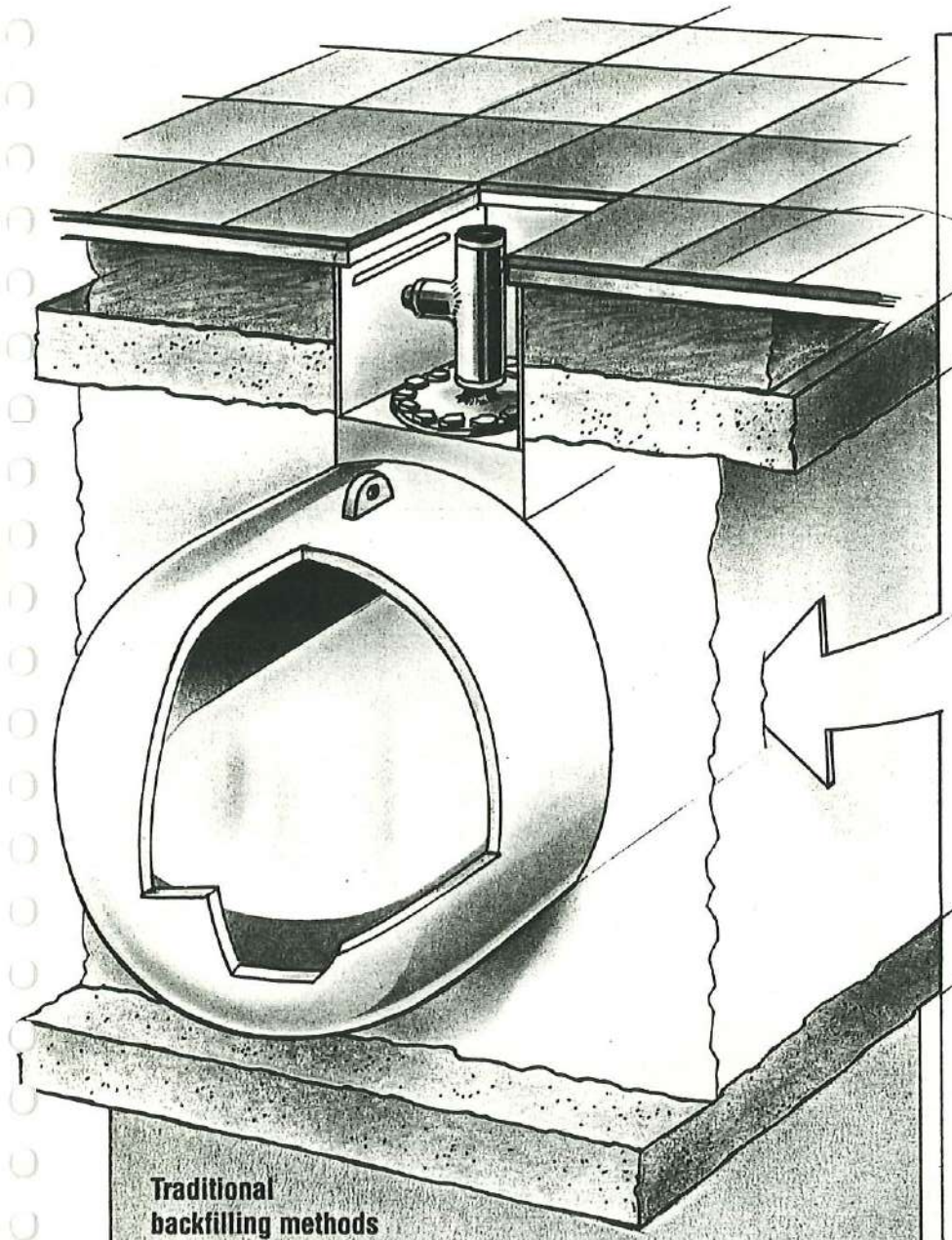
Appendix D

Tanksafe technical literature (Thermotank RG30 hard foam)

THERMOTANK

RG30 HARD FOAM

A MODERN BACKFILL MATERIAL FOR UNDERGROUND STORAGE TANKS



Traditional backfilling methods

Backfilling of underground storage tanks has traditionnally been done with the excavated soil or with acid free sand. An other method consists of installing the tank in a brick or concrete vault filled with acid free sand. The selection of the backfill material and technique depends on the nature of the ground, local preferences and regulations.

In some countries underground tanks have been surrounded with concrete because it holds the storage and distribution system components firmly together, protects it from groundwater and slows down the migration of spillages and leaks to the ground and the ground water. Also the concrete surrounding technique prevents the direct transmission of superimposed loads to the storage installation. The method however complicates modifications to the installation and doesn't make tanks easy to remove because of the weight.

Granular non-cohesive backfill material such as pea gravel is used in various countries. Although it enables superimposed loads to be transferred to a point below the storage installation and it renders the tank removable, concerns are expressed about migration of the material and the abrasive effect of it working against the tank walls.

RG30 thermo-protective hard foam for backfilling underground storage tanks

RG30 hard foam is a chemically hardening aminoplast polymer produced and applied in an aqueous environment. This non solvent-based foam is ecologically sound and has special chemical and mechanical properties that makes it attractive for surrounding underground storage tanks wether they are made of steel or fibreglass.

Produced on site by mixing under pressure the resin with a water based hardener, the foam is easy to apply all around and beneath the tank in a layer of 200 mm to 500 mm.

The foam has a gellying time of 5 to 30 sec. after leaving the injection nozzle. The hardening is solely chemical and occurs even at low temperatures. Long netted polymer threads with cross-link coupling are created, transforming the foam into one solid body around the tank. The operation can be interrupted and restarted at will.

The foam once hardened is rigid and cohesive, holding the thank firmly without adhering to it.

There is no chemical reaction between the foam and the tank walls.

It has a compressive strength of 300 kPA [redacted] and therefore superimposed loads will be transferred to the tank base slab and not through the tank.

The foam has an open cell structure operating on the principle of surface tension resulting in the absorption of all hydrocarbons such as diesel and petrol, up to 80 % of its volume. Water on the other hand is repelled by the foam.

Accelerated ageing tests indicated no alteration of the material over a projected hundred and fifty years and within a temperature envelope of -198 °C and +100 °C. The foam does not burn, but char at temperature above 300 °C.

The foam is an excellent insulator keeping the product inside the tank for many days at constant temperature.

The foam is removable by using steam, which breaks down the cell structure, but not the polymer, or simply by using hand tools. Once removed the uncontaminated foam is degradable through photosynthesis, reverting to nitrogen. If contaminated the foam can be compressed and burned off, where permitted, like a wick.

RG30 hard foam is also used as soil stabilisation material, to inject in water filled cavities in canal embankments and quai walls, and to stop road subsidences.

Your applicator

TankSafe

TANKSAFE LIMITED

4th Floor, Bell Court House
11 Blomfield Street
London EC2M 7AY
Tel: 0171-628 5695
or 0171-628 4851
Mobile: 0850 842828
Fax: 0171-374 0408

24 May 1994

Mr Geoffrey
Petroleum Officer - South Shields
Fire Station H.Q.
Railway Row
Sunderland
SR1 3HE

CONOCO LIMITED
CONOCO CENTRE
WARWICK TECHNOLOGY PARK
GALLOWS HILL
WARWICK CV34 6DA
TELEX: 317112 FAX: 0926 404099
TELEPHONE: 0926 404000

Dear Sir

G & B Motors, Moor Lane, South Shields

Enclosed please find two copies of our development proposals for the above JET, dealer-owned site.

We anticipate a start date in early July.

Specification proposals are as follows:

Tanks:	Manufacturer	Cookson and Zinn
	Type	Double-skin steel
	Backfill medium	RG30 rigid foam SBINCMAF..
Chambers:	Manufacturer	Bufflex
Pumps:	Manufacturer	Red Jacket
	Type	Submersible turbine pump - 0.55kw single-phase
Dispensers:	Manufacturer	Pumptronics B.S.
Interceptor:	Manufacturer	MSI
	Type	Superceptor Size
Lines:	Manufacturer	Bufflex
	Type	Removable, flexible, double wall system
Dispenser: Containment Sumps	Manufacturer	Bufflex

PRINTED ON RECYCLED PAPER

REGISTERED IN ENGLAND
REGISTERED No. 525086
REGISTERED OFFICE
CONOCO CENTRE
WARWICK TECHNOLOGY PARK
GALLOWS HILL
WARWICK CV34 6DA

A DU PONT COMPANY

Leak detection:	Manufacturer Type	Red Jacket ELD 3
	Manufacturer Type	Eurogauge Interstitial monitoring
	Manufacturer Type	Petrovend Site sentinal precision gauge/leak detection system
Offset fill/ vent lines:	Manufacturer	Durapipe
Existing tanks:	Neutralised with RG22 rigid foam	

Vapour recovery stage 1b will be installed and operational - utilising an Emco Wheaton underground manifold system.

It is our wish to keep the existing site running during development - effectively building the new site behind it.

[redacted]

PLEASE REPLY TO: **THE FORUM, STIRLING ROAD, CHICHESTER, WEST SUSSEX P019 2EN.**

TEL: 0243 539833