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Address Removed

Attn: Rob Smith
Plans and Technical Services Team Leader
Minerals & Waste Joint Plan – Preferred Options Consu
North Yorkshire County Council

By email: mwjointplan@northyorks.gov.uk

Dear Sirs

With reference to:
1823 **Jurassic Limestone (extension of existing quarry): MJP12 (Whitewall Quarry) – CURRENTLY PREFERRED**
Recycling for construction, demolition and soil waste for secondary aggregates:
1824 **MJP13 (Whitewall Quarry) – CURRENTLY PREFERRED**
1825 **Materials Recycling: WJP09 (Whitewall Quarry) – CURRENTLY DISCOUNTED**

Objections to MJP13 and WJP09 are in line with those for MJP12 since they are/would be regarded as "ancillary" to the limestone quarry and therefore would not be present there without it.

Making related reference to:
Jurassic Limestone (extension of existing quarry): MJP 08 (Settrington Quarry) – CURRENTLY PREFERRED
Jurassic Limestone for building stone and aggregate: MJP64 (Cropton Quarry) – CURRENTLY DISCOUNTED
Jurassic Limestone (extension of former quarry): MJP69 (~~East~~ 59 West Ayton) – CURRENTLY DISCOUNTED

I write with reference to the above currently Preferred and Discounted sites.

MJP12; MJP13 and WJP09 – Whitewall Quarry

Whitewall Quarry has been quarried for limestone in the current location since the early 1970s. Using an average of 175,000 tonnes/annum, **between 5-6 milion tonnes** have already been quarried from this site. The stone is Jurassic, and is Corallian, not Magnesian Limestone. The stone is relatively soft, so it is not suitable for either building or concrete, which limits its scope of use to filler and underlay where softer stone will be adequate. This and the earlier site (just north of the current site, at Whitewall Corner), have been blasted for over 40 years (current site) and many more years in the earlier site. The aggregate from Whitewall Quarry is therefore of limited strategic importance since it is widely available.

Norton on Derwent

Norton on Derwent lies on the floodplain south of the River Derwent and Malton, which largely lies on higher ground. Norton is therefore highly susceptible to flood risk, as is regularly (and currently) experienced, year after year. At the time of writing, County Bridge between Norton and Malton, is closed due to the high level of the River Derwent, and

concern about the strength of the bridge, and Church Street, which links the junction south of County Bridge and the railway level crossing, to Commercial Street in Norton, has been closed for nearly 3 weeks while water is continuously pumped into the Derwent. This has become an annual event, and despite flood prevention scheme investment, has yet to be resolved.

Norton on Derwent has around 7,000 residents (some 2,000 more than Malton), and is the largest residential population in Ryedale. It is also one of the four main racehorse training centres in the UK, the majority of which are stabled in racehorse training yards around the west, south and eastern perimeters of Norton, within hacking distance of the two sets of centralised gallops at Highfield and Langton Wold. There are also prosperous industrial estates, within easy access of the A64, at Norton Grove, and Showfield Lane.

Commercial Street is the main thoroughfare through Norton, but despite the name it is mainly residential (with parking on both sides since many houses are terraced), interspersed with local shops and small businesses. Norton College (secondary school) and Norton Primary Schools are within walking distance of Commercial Street, which throngs with children and young families on foot and bicycle, throughout the day, before and after school, and during breaktimes.

From the south, the three roads into Norton are from the south west – Welham Road (which becomes Whitewall Hill); from the south – Langton Road (which runs alongside the gallops) south of Norton); and from the south east – Beverley Road. These all eventually join Church St and Commercial St from east to west.

This town profile, you would imagine, would make it a priority to protect the sensitive environment and habitat for this important town and its residents and core economy.

Topography

Whitewall Quarry which lies due south of Norton, has been dug out of Whitewall Hill which as is shown on **Appendix A – Topography of Malton and Norton,** lies up to between 70-80m above Norton.

Whitewall Quarry and Flooding in Norton

Appendix B – Hydrogeology Report, Ashton Bennett was commissioned by the Malton Racing Association in relation to the asphalt plant application at Whitewall Quarry of 2013. Your attention is drawn to the whole report, but in particular sections on Geology; Geographical Faults; Geological Hazards; Local Boreholes and Floodrisks; Hydrology – Surface Water and Flood Risk; Hydrogeology – Superficial Deposits and Becrock from numbered pages 8-14 inclusive.

As can be seen from Figures 4-11, Whitewall Quarry is dug out of the Corallian Limestone which sits on top of the Ampthill clay (an impermeable layer), and a geographical fault line runs the length of Whitewall/Bazleys Lane (due north of the Quarry). In particular:

> "The Corallian Limestone is an oolitic calciferous strata of circa 30m in thickness underlain by the Calcareous Grit Sandstone also of 30m in thickness, which is in turn underlain by the impermeable Oxford Clay which exceeds 110m in thickness in this area and forms an effective impermeable seal to the base of the permeable strata. The Corallian Limestone is traversed by large and small joints generally in two directions at nearly right angles and it is thin to medium bedded both of which enhance flow of groundwater through the strata."

"There are three geological faults indicated by the BGS in the locality of the site shown as Figure 6. These are substantial fractures in the strata ..."

"Geological faults are areas of broken ground and fractured strata caused by the ground movements and they facilitate the movement of groundwater through the strata"

"A large proportion of the rainfall over the area of the site and local environs will be absorbed into the permeable limestone strata and drain northwards into the River Derwent. Water entering the Corallian Limestone flows northwards and exits as springs along the geological fault line to the north of the site which abuts the permeable limestone to the south against impermeable Ampthill Clay to the North. The water then flows overland to drain into the River Derwent."

"The springs occur along the geological fault line that has caused impermeable strata to the north to be juxtaposed to the permeable Corallian Limestone to the south. Groundwater flowing north through the Corallian therefore springs out of the ground when the impermeable strata is met."

"There are BGS groundwater flooding susceptibility areas within 50m of the site."

"The EA Groundwater Vulnerability maps indicate the superficial strata to the north of the site to comprise a "Secondary (A) Aquifer ... [which] are formations with permeable layers capable of supporting water supplies at local rather than strategic scale, and in some cases forming an important source of base flow to rivers."

"The bedrock beneath the site is classified by the EA as a principal aquifer. These are areas of geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale."

"The Corallian Limestone is highly permeable and highly fractured. Fracturing is expected to be very high in the quarry if explosives have been used for quarrying. Joints and fractures create easy pathways for surface water/groundwater to travel large distances."

"As the Corallian Limestone is highly permeable and a principal aquifer it is classified by the EA as highly vulnerable to pollution. The limestone provides potable water on a strategic and local scale and it is therefore imperative that it is protected from pollution."

In conclusion, the continuing removal of a substantial amount of the permeable limestone cap (Whitewall Quarry) which lies above the impermeable Ampthill Clay (of Norton floodplain), has caused a significant increase in water flow and crucially, increase in speed of water flow, due to the removal of the "trickle" through the ever-reducing permeable limestone cap, to vulnerable flood points, notably in the lowest lying area below Whitewall Hill/Scotts Hill, which (as can be seen on **Appendix A – Topography of Malton and Norton**) is the area of the east end of Bazleys Lane/ Spring Cottage/Auburn Hill/Langton Road, which has severe flooding problems and where the water table and springs are at ground level and overflowing. Whitewall Quarry, which provides potable water on a strategic and lower scale, should be protected from pollution, as it is highly vulnerable to pollution.

The removal of more of this permeable limestone cap also contribute to the increase in flow, and speed of flow, of water to the River Derwent, contributing to the flooding in Norton near the river.

Appendix C – Index and Flooding Photographs demonstrating the flooding in these areas, which is seriously exacerbated by Whitewall Quarry, is attached in the 3 zip files.

This is not something that can be mitigated against – it simply has to stop as soon as possible, and certainly not be permitted to continue longer than necessary. The current permissions permit nearly 8 years of quarrying – which using 175,000 tonnes a year, would be nearly 1.5 million more tonnes of limestone being removed. We can only imagine the impact that this will have on Norton, its residents and economy, in terms of flooding alone. Permitting beyond this would be catastrophic.

Dust

Dust is an ongoing problem, the dust from the enormous unrestored limestone bowl, blows with the prevailing SW wind and is a particular problem in the area around Spring Cottage/Langton Road/Bazleys Lane, to the detriment of the health of humans and racehorses, who return from the centralised gallops along the racehorse walk along Langton Road, parallel with the quarry.

The vehicles from the concrete batching plant do not use the weighbridge or wheelwash, and contribute substantially to the dust and dirt on Welham Road. The hedges are frequently thick with dust especially when there has been a dry spell. This has been an ongoing problem for years and without restoration of the quarry, cannot be mitigated against. Quarry vehicles are generally sheeted (after much campaigning) and are meant to use the wheelwash, but there are many other vehicles such as employees cars and others who do not use the wheelwash, who contribute to the dust and dirt on the road.

Racehorse training in Norton

See **Appendix D - Map of Racehorse Training Yards and Centralised Gallops – Norton.** Norton has been a major centre of racehorse training for nearly 300 years. There are over 400 thoroughbred racehorses stabled in the 15 racing yards within hacking distance of the centralised gallops at Highfield and Langton Road, which provide direct and indirect employment to 200 direct and another 200 indirect, and which contributes over £20m annually to the local economy. Horseracing is the biggest single contributor to the economy of Norton. There are at least a similar number again within a 20 mile radius of the centralised gallops, many of whom regularly use the facilities at Norton.

HGV Traffic Problems caused by Whitewall Quarry

There are unlimited volumes of HGV and other traffic (comprising often enormous lowloaders for concrete products; articulated lorries; trucks (Watts and other contractors) up to 40 tonnes; concrete mixers and miscellaneous other delivery vehicles. There are no restrictions on the numbers of vehicles, and the attached survey by NAG (Norton Action Group) on a random day in October 2014, recording traffic in the north direction only, recorded 117 HGV vehicles. Obviously this did not account for HGV traffic heading south from the quarry. See **Appendix E – NAG Traffic Survey of 2 October 2014.** These noisy HGVs shudder along Welham Road well before 7am and in high volume from that time, shaking properties and disturbing the local amenity from the early hours, throughout the whole day and generated a huge volume of complaints and comments relating to the asphalt plant application recently, which are in NYCC's possession and of which you are well aware. The noise and vibration from the continual stream of HGVs up and down Welham Road has contributed greatly to the ongoing deterioration of this neighbourhood, entirely do the the quarry.

The majority of HGV traffic from the quarry travels to the A64 north via Welham Road, and has in the last 8 years forced the racehorses stabled in racehorse training yards off Welham Road, who until recent years were able to access the centralised gallops by foot, to have to be boxed up, which is unacceptable and damaging to the local economy.

AQM – Malton - Adverse Impact of HGVs on Norton and Commercial Street in particular- Unsuitability of Brambling Fields Junction – Limitations of other routes from Whitewall Quarry

In order to reach the A64 and other northern, west or eastern destinations, HGVs reach the top of Welham Road, and then either turn left over the level crossing (which is a tight turn and difficult manoever for HGVs) into Railway Street, or continue over County Bridge (which is currently closed due to the height of the river) to Castlegate and the traffic lights at Butchers Corner, which has a chronic air quality management problem and for some time has been an AQM Zone. Or, it has to turn right into Church Street, Norton (which has at the time of writing been closed for 3 weeks due to flooding), and onwards over 2 mini roundabouts and 3 pedestrian crossings, along the residential and local shopping area of Commercial Street. As previously described, this is an entirely unsuitable route for HGVs – most of the houses are terraced with residential parking spaces on the roads (so frequently being used by people getting in and out of cars), and as it runs through the middle of the main residential area of Norton, is full of pedestrians – people walking to the station, young families with pushchairs accompanying children on foot to Norton Primary School which is just behind Commercial Street, and older schoolchildren on foot and bicycle, walking to Norton College which is a few hundred yards south along Langton Road; and shoppers on foot throughout the day. Commercial Street is full of pedestrians from early morning until the evening, and it is an outrage that this local amenity, for the densest residential population in Norton is being treated so poorly – shifting the AQM problem from Malton to Norton is not the answer and a scandal.

There is currently a plan mooted to ban HG V traffic from Malton, so all the HGV traffic from the Quarry that used to go through Malton will be forced through Norton. The town and people of Norton will pay the price for Malton's benefit. There is a very high risk that Norton's Air Quality, notably at the mini-roundabout with the junction of Langton Road and Commercial Street, will suffer as a result.

Appendix F - Highways Authority Traffic Data - Commercial St, Norton - 13 Nov 2014 is a sample taken on this date, indicating the type of traffic passing during the day, east and westbound, from 7am to 7pm. **Appendix G - Extract from Calculation of Design Traffic - provided by Highway Authority - November 2014** provides the key to describing vehicles included under the class OGV1 and OGV2 which are relevant for this purpose. We can see from this data that 76 OGV1 and 71 OGV2 vehicles passed eastbound; and 82 OGV1 and 77 OGV2 passed westbound; a total of 306 in the 12 hour period. Bearing in mind that such a high proportion of these are from W Clifford Watts, who on a random day as shown in **Appendix E** are responsible for 118 vehicles northwards towards the Welham Road/Church St junction with the level crossing, allowing for 1/3 of these vehicles going over the level crossing, if 80 OGV1 and OGV2 were related to the quarry operations, then that indicates that Whitewall Quarry is currently responsible for between 25-30% of the OGV1 and OGV2 traffic along Commercial Street, which is an astonishing cost to the town of Norton for one business that contributes so little to the local economy.

Furthermore, the Brambling Fields roundabout on the A64 which was built in an attempt to take HGV traffic in particular out of the centre of Malton, is a white elephant since it is too tight for many HGVs to negotiate without climbing the kerb and damaging their wheels and tyres, so operators instruct their drivers not to use it. NAG have submitted detailed information on this to NYCC (in relation to the asphalt plant application) to which you are referred.

Other routes from the quarry are limited as follows: Kirkham Bridge is approached by very narrow lanes and it is a narrow bridge which will be closed (yet again) for repair for several weeks this year, and Network Rail have already stipulated that they do not want HGV traffic crossing at this junction. There is a steep hill on the north side of the level crossing, and it is unsuitable for HGVs.

Langton village has a primary school on the main lane through the village, and WCW lorries using this route have resulted in strong complaints from the school, parents and officers, relating to poor driving and safety.

The only alternative route is down towards Buttercrambe (which is impassable for HGVs), and to turn left along country lane towards Stamford Bridge.

Noise and Blasting

The noise permissions are constantly and continually breached, we are awaiting completion and publication of background noise levels (NYCC arranged for background levels to be monitored over the Christmas and new Year holiday, but the weather was so bad it remains to be seen if any of the data will be valid). Despite repeated attempts to portray this issue as resolved, it remains unresolved to date, with noise nuisance continuing even this week.

Blasting has been going on on Whitewall Hill for 40 years in the current location and 20 years before that in the original quarry on Whitewall Corner. The irreversible fracturing damage done to the strata is impossible to mitigate, and goes well beyond the original intention, and there has been a complete lack of adequate local consultation in particular to the local amenity who suffer most from the noise, blasting, heavy traffic and dust. Impossible to mitigate against, already constantly breached.

Why other sites are preferable

There are substantial and widespread deposits of stone which would be suitable for use as crushed rock, and the time has come to consider other sites, and to bring Whitewall Quarry to a close, because of the collateral damage this quarry has done to the geography of the local amenity, damage it has inflicted on the local economy and residents, both in Norton and Malton, as described above.

Other proffered sites in the MJWP include:

1826 **MJP08 – Settrington – CURRENTLY PREFERRED**

The obvious advantage of this Quarry to provide limestone is because it would have access to the A64 and B-roads without having to go through either the AQM in Malton, or Commercial Street in Norton, and therefore will cause less disruption to the way of life and economy of fewer people. This quarry is already operational so there are already established routes.

1827 **MJP64 - Cropton – CURRENTLY DISCOUNTED**

This site has been applied for by the same operator as Whitewall Quarry, and the potential output is similar but it can also produce building quality stone which makes it more versatile. It lies very close to the A170, and as it is not within the North York Moors National Park this is an advantage. There is also the potential for a route to the A170 to the west of Wrelton, which might avoid imposing HGV traffic on this village. However this is already a very busy road at all times of the day. This location is better placed to provide a wider variety of stone

and aggregate, with much less disruption to the local amenity, than Whitewall Quarry. Furthermore, claiming that "there would be likely to be a significant potential risk of contamination of groundwater source protection zone" is no more applicable to Cropton Quarry, as it is to Whitewall Quarry, which is also a primary aquifer (see **Appendix B**).

1828 **MJP ~~69~~ 59 - Spikers Quarry, West Ayton – CURRENTLY DISCOUNTED**

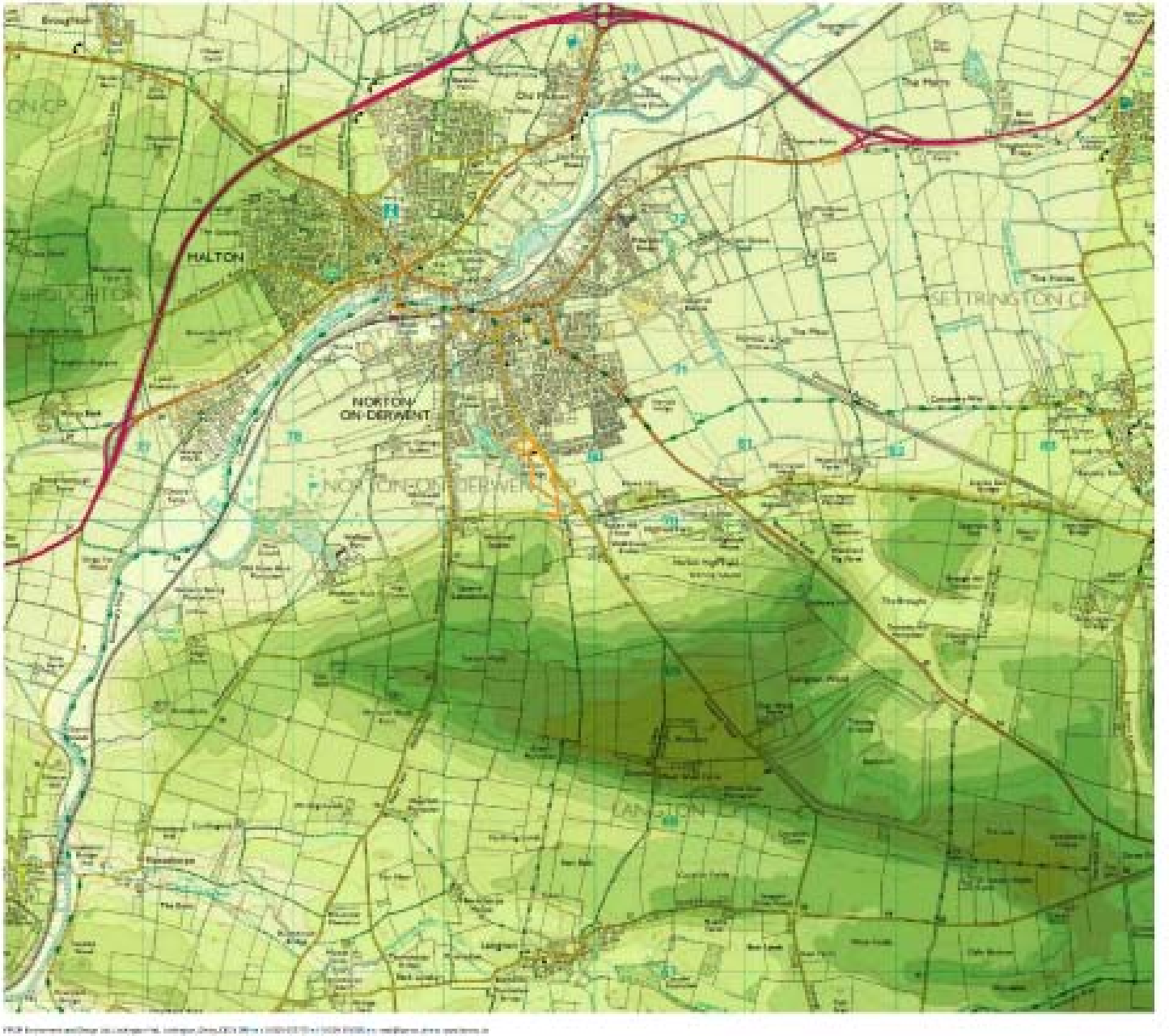
This quarry is close to the A170, and it would be perfectly possible for HGVs to access this quarry from the A170 to the west of the village of West Ayton. Again, claims of water contamination would be no less applicable than those that apply to Whitewall Quarry.

Conclusions

Considering the major contributions to damage that Whitewall Quarry has made over the last 40+ years (in its current location), and many years before that in its original location on Whitewall Corner, to the local amenity and economy of Norton and Malton, which continue unabated and unchecked under present planning conditions, it is completely unjustifiable to attempt to extend the current permissions (which runs to November 2023), any longer, and indeed there is a strong case for reviewing all the current planning permissions, due to the huge number of continual breaches of permissions, which NYCC are fully aware of, and collateral damage that Whitewall Quarry has caused, and continues to cause, to the local amenity and economy.

It is time that other locations were considered in preference; Norton and Malton have already paid too heavy a price and will fight any further attempts to inflict more misery on our sensitive and important economy and environments.

Yours faithfully



- Sites
- 110m - 120m AOD
- 100m - 110m AOD
- 90m - 100m AOD
- 80m - 90m AOD
- 70m - 80m AOD
- 60m - 70m AOD
- 50m - 60m AOD
- 40m - 50m AOD
- 30m - 40m AOD
- 20m - 30m AOD
- 10m - 20m AOD

Gladman Developments Ltd

Langton Road,
Norton, North Yorkshire

TOPOGRAPHY PLAN

1:25000 @ A3 | OS© Crown Copyright | January 2018

Figure 3

HYDROGEOLOGY REPORT

AT

WHITEWALL QUARRY
NORTON

FOR

MALTON RACING ASSOCIATION

REPORT REF: MRA 3150

Engineering Geologists and Environmental Scientists

Ashton Bennett

North: Bridge Mills, Huddersfield Road,
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HYDROGEOLOGY REPORT

AT

WHITEWALL QUARRY
NORTON

FOR

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REPORT REF: MRA 3150

ASHTON BENNETT CONSULTANCY
Engineering Geologists & Environmental Scientists

MARCH 2014

Ashton Bennett Limited Co Reg No: 3318828 is a member of the Ashton Bennett Consultancy group of companies

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APPENDIX A	Historical Maps
APPENDIX B	Photographs
APPENDIX C	Site Proposals

INTRODUCTION

1. INTRODUCTION

This report describes the results of a Hydrological and Hydrogeological Baseline Study and Impact Assessment undertaken to assess the impact on controlled waters of the proposals to construct an asphalt plant within the limestone quarry in Whitewall Corner Hill, in Norton, North Yorkshire.

The work was commissioned by Malton Racing Association and was carried out by this Consultancy, the Ashton Bennett Consultancy.

W Clifford Watts Ltd have applied to North Yorkshire County Council to site an Asphalt Plant within a working limestone quarry at Whitewall Quarry, Norton, North Yorkshire,

The purpose of this study is to assess the environmental impact of the proposals on the groundwater and local abstractions and other controlled water. This includes collating and assessing information on the site including geological, hydrological and hydrogeological information, archival maps and historical review to determine past use, a database review, environmental data on water and soil, and a site reconnaissance to enable an assessment to

determine the likely presence and areas of environmental concerns to the proposals and the presence of pathways of migration of contamination and potentially sensitive receptors that could be detrimentally affected by the proposed asphalt plant.

This report describes the research work carried out, presents the results of the study and from the conceptual model of the site makes recommendations regarding environmental risks to sensitive receptors from the proposals for an asphalt plant.

The collection and interpretation of baseline data has facilitated a detailed understanding of the nature of and interactions between the groundwater and surface water systems on and around the site. The understanding of these has been applied to assess the likely impact of the development on the water environment.

Planning Policy determines that surface and groundwater should not be polluted.

The National Planning Policy Framework (NPPF), published in March 2012 constitutes the governments planning policies for England. Paragraph 144 states 'ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment…'

Paragraph 109 states ' The planning system should contribute to and enhance the natural and local environment by…..preventing both new and existing development from contributing to…..unacceptable levels of soil, air, water or noise pollution or land instability:'

The Environment Protection Act 1990 and the Water Resources Act (WRA) 1991 legislate to protect controlled waters. The WRA makes provisions relevant to water quality including definition of controlled waters, Source Protection Zones, offences of polluting controlled waters, discharge consents and abstraction licences. It makes it an offence to pollute controlled waters, surface and groundwater, whether or not the waters are being used for abstraction.

2. THE SITE

The entrance to the site for the proposed plant can be found off Whitewall Corner Hill south of the village of Norton on Derwent in North Yorkshire. The site of the quarry lies on the east side of the road which runs from Norton due south to Stamford Bridge and York.

Figure 1 Site Location Plan

The site is bounded to the north by open fields, once quarried and Whitewall Stables. The site is bounded to the west by Whitewall Corner Hill and open fields with Welham Hall and fish ponds and golf courses to the west.

The site is bounded to the east by open fields with Wold House and other Stables beyond. The site is bounded to the south by open fields.

Figure 2 Site Plan

The centre of the quarry site lies around National Grid Reference 479127^{E}, 469254^{N} at a height of 60.96m above Ordnance Datum in the north rising to 76.20m aOD in the south of the site. The site covers an area of 29.83 hectares. A Site Location Plan is presented as Figure 1 and a Site Plan is presented as Figure 2, a Historical View 2002 is presented as Figure 3 and a Geology Plan of Bedrock is presented as Figure 4, a Geology Plan of Superficial Deposits is presented as Figure 5, a Plan of Geological Faults is presented as Figure 6 and a Plan of Local Boreholes is presented as Figure 7. A Hydrology Plan of the Site and Environs is presented in Figure 8 and a Water Features Plan in Figure 9.

Secondary Aquifers in Superficial Deposits are presented in Figure 10 and Principal Aquifer in Bedrock is presented in Figure 11. Source Protection Zones are presented in Figure 12, Local Quarried Areas in Figure 13, Environmentally Sensitive Sites in Figure 14 and Local Landfill Sites are presented in Figure 11.

Archival maps are presented in Appendix A. Photographs are presented as Appendix B and a Site Proposals are presented as Appendix C.

3. REPORT OBJECTIVE AND REPORT SCOPE

3.1 Report Objective

The objective of the study is to determine the environmental nature of the site and its local surroundings and to establish any environmental concerns with particular reference to the proposed construction of an asphalt plant within Whitewall Quarry impacting on controlled waters.

The report undertaken is a Baseline Study and Impact Assessment taking into account the potential contamination, the migration pathways and the presence of potentially sensitive receptors and the detrimental effect of any potential contamination on local sensitive receptors.

3.2 Report Scope

The information for this report is from sources recommended by the Institute of Civil Engineers (ICE), the Association of Geotechnical and Geoenvironmental Specialists (AGS), Construction Industry Research and Information Association (CIRIA) and the Department of the Environment Transport and the Regions (DETR). The report has been compiled in accordance with the latest ICE, DETR, Department of Environment, Food and Rural Affairs (DEFRA), British Standard Draft Documents and British Standards, CIRIA, CLR Reports and Eurocode 7.

In addition the scope of the investigation has used the extensive knowledge and experience of the staff of Ashton Bennett Consultancy to assess the data and to interpret the findings.

The scope of the report includes an assessment of the history of the site and its surroundings, the local geology, hydrology and hydrogeology, the potential contamination from the proposals and the level of any detrimental affect such contamination may have on sensitive receptors including land, humans, controlled waters and animals.

BASELINE STUDY

4. SITE HISTORY

The following maps and plans were inspected to assess the history of the site and its past environments. The maps are presented in Appendix A.

TABLE 1
Historical Maps Inspected

DATE	SCALE	DESCRIPTION	
		SITE	SURROUNDING AREA
1851	1:10,560	Open fields within Sutton Wold. Small limestone quarries are annotated in the extreme south west and southern boundaries of the site	Open fields with Whitewall Corner Hill and Welham House to the west, Whitewall Corner to the north and open land to the east and south. Limestone quarries are annotated to the north and west of the site.
1892	1:10,560	The site is shown as four open fields with the limestone quarries on the southern boundaries annotated as 'old'.	Welham Park to the north west of the site has springs annotated and large fish ponds. A Stud Farm for horses is annotated north east of the site at Blinkbonny Stud Farm. To the north at Whitewall Corner are Whitewall House, limekilns and old quarries.

DATE	SCALE	DESCRIPTION	
		SITE	SURROUNDING AREA
			To the north east are springs feeding Mill ponds at Sutton Grange. Old quarries and limekilns are annotated to the south east.
1909	1:10,560	There is no change shown on the site	No significant change in the surroundings. Fish Hatcheries are annotated within Welham Park
1926	1:10,560	No significant change on the site	No significant change in the surroundings. Fish Hatcheries are shown to the north of the site at Sutton Grange.
1938	1:10,560	No significant change on the site	No significant change in the surroundings.
1950	1: 10,560	No significant change on the site	No significant change in the surroundings.
1957-58	1:10,560		No significant change in the surroundings
1972-73	1:2,500	No significant change on the site.	No significant change in the surroundings.
1974-75	1:10,000	The northern extremity of the site is annotated as Whitewall Quarry (Limestone)	Whitewall is annotated as stables to the north of the site. To the north east of the site Blinkbonny Stables, Wold House Stables, Spring Cottage Stables are annotated. Training gallops and stables are shown to the north west of the site.
2002	1:10,000	Whitewall Quarry is shown to extend to the south boundary of the second field from the north with the two most southern fields still lying as open ground.	No significant change in the surroundings.
2012	1:10,000	No significant change on the site.	No significant change in the surroundings.

In summary, the site has been occupied by open ground until around 1974 when the northern extent of the site was quarried for limestone.

Stud farms were established close to the site by 1892 with numerous stables and training gallops present by the 1970's. Fish Ponds and Fish Hatcheries were present to the west and north of the site.

Figure 3 Historical View 2002

5. GEOLOGY
5.1 Geology

The geological maps published by the British Geological Survey (BGS) at 1:10,000 scale indicate the site to be underlain by the Corallian Limestone of Jurassic Geological Age. The geological maps indicate the presence of superficial Pleistocene glacial sand and gravel, Recent alluvial and Head deposits to the north of the site overlying the bedrock. Weathered strata is expected to be present on the site.

A simplified plan of the geology on and in the vicinity of the site is presented in Figure 4 Geology Plan of Bedrock and in Figure 5 Geology Plan of Superficial Deposits.

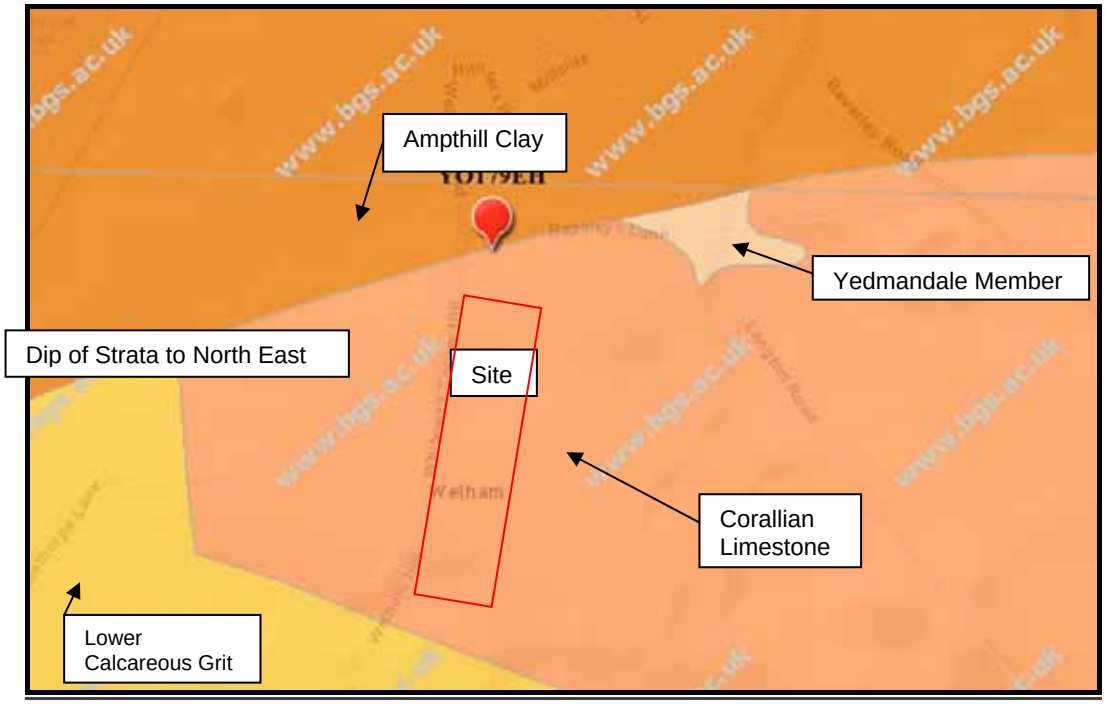

Figure 4 Geology Plan of Bedrock

The Corallian Limestone is an oolitic calciferous strata of circa 30m in thickness underlain by the Calcareous Grit Sandstone also of 30m in thickness which is in turn underlain by the impermeable Oxford Clay which exceeds 110m in thickness in this area and forms an effective impermeable seal to the base of the permeable strata.

The Corallian Limestone is traversed by large and small joints generally in two directions at nearly right angles and it is thin to medium bedded both of which enhance flow of groundwater through the strata.

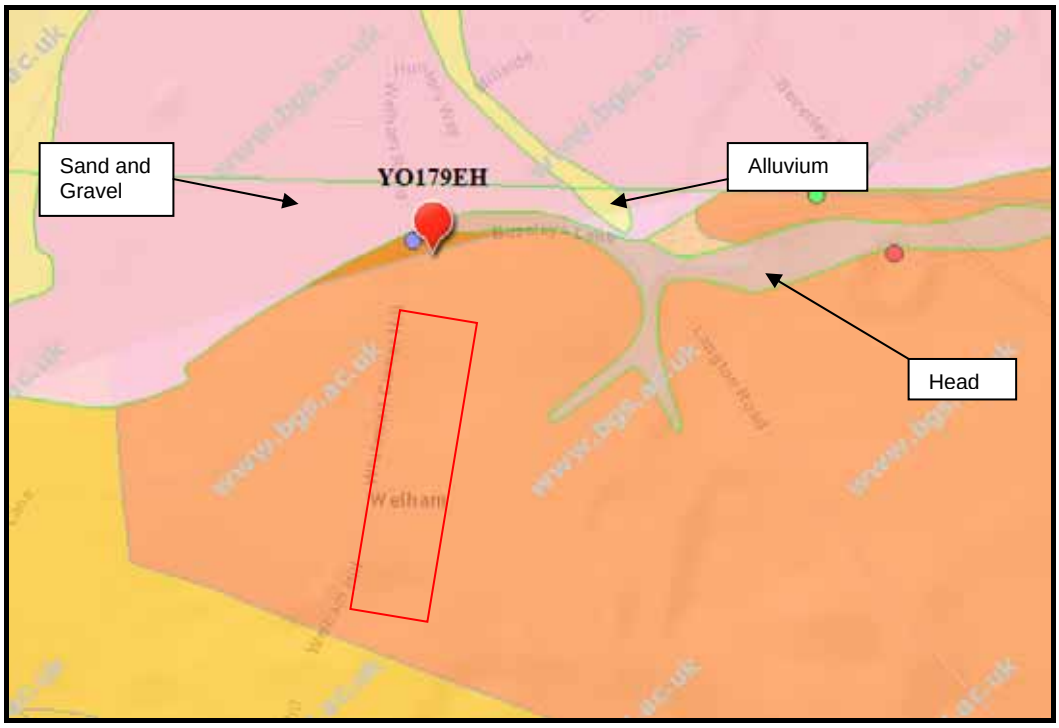

Figure 5 Geology Plan of Superficial Deposits

5.2 Geological Faults

There are three geological faults indicated by the BGS in the locality of the site as shown in Figure 6. These are substantial fractures in the strata that have displaced large volumes of younger strata against older strata during the Hercynian tectonic movements.

Fault 10 trends WSW to ESE and divides the Corallian Limestone from the Ampthill Clay to the north. Fault 11 trends N to S and then NW to SE dividing the Corallian Limestone from the underlying Lower Calcareous Grit. Fault 9 trends nearly west to east as an extension of Fault 11 and extends across the southern boundary of the quarry.

Further smaller faults may spur from these faults and some may cross the site. Geological faults are areas of broken ground and fractured strata caused by the ground movements and they facilitate the movement of groundwater through the strata.

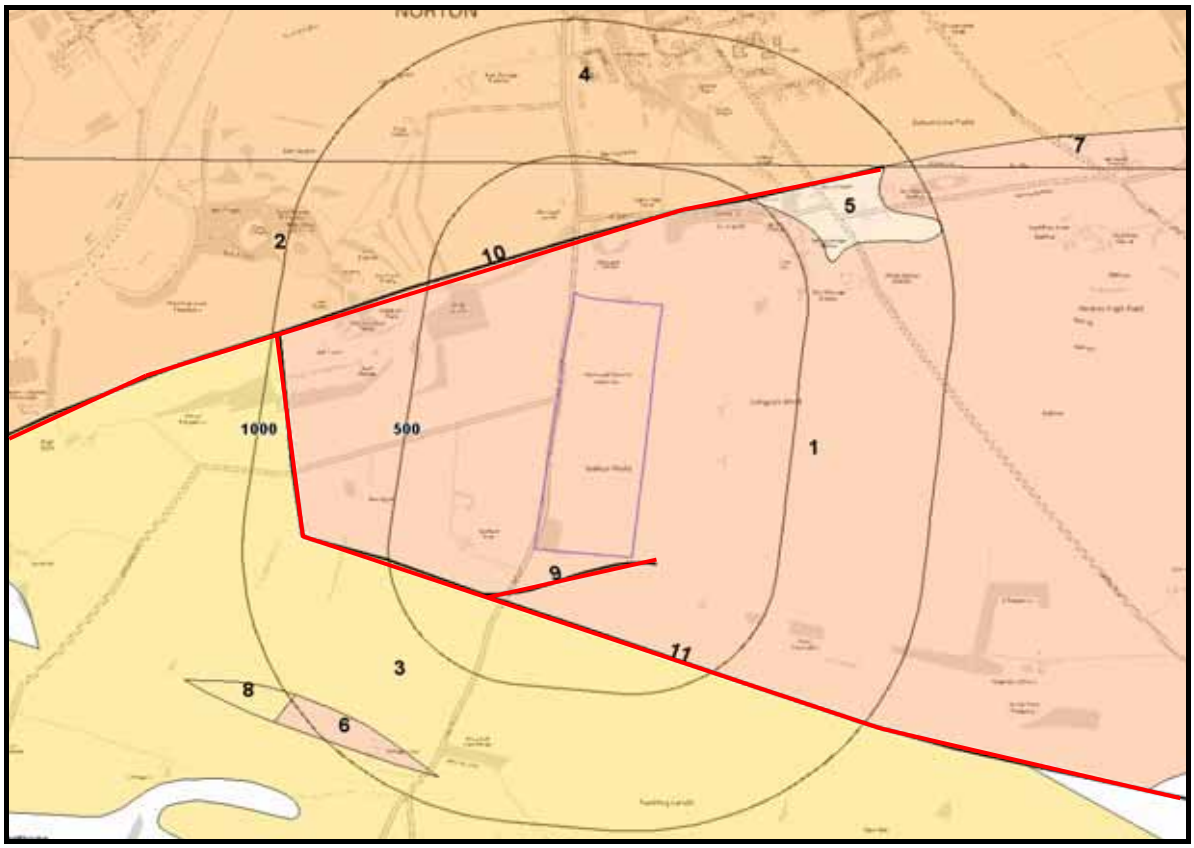

Figure 6 Local Geological Faults

5.3 Geological Hazards

According to the British Geological Survey there is a negligible risk of a shrink and swell hazard from clays, a very low risk of collapsible rocks, a negligible risk of compressible ground and negligible risk of running sand, a very low risk of landslides and a very low risk of ground dissolution of soluble rocks on or within the vicinity of the site.

The Corallian Limestone is known for the presence of voids caused by calcareous rock being carried away in solution by groundwater. It is possible that voids may be present in the Corallian on or within vicinity of the site.

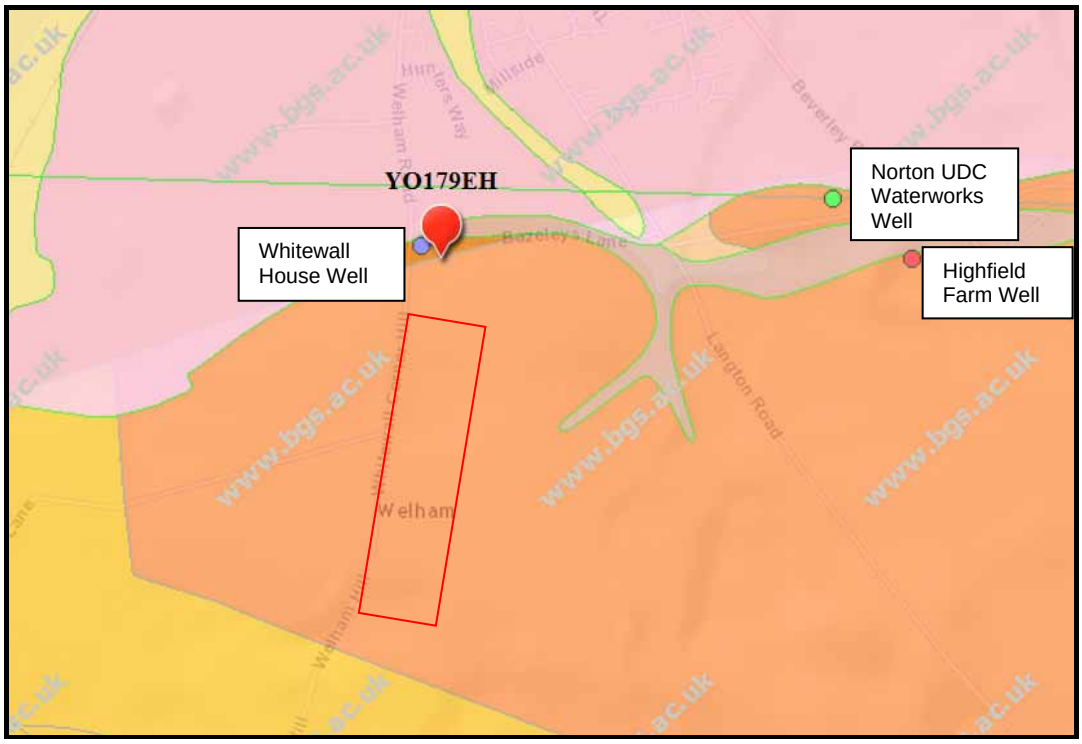

Figure 7 Local Boreholes

5.4 Local Boreholes

The BGS hold details of three boreholes drilled close to the site and detailed in Table 2 below.

TABLE 2
BGS Boreholes

Borehole	BGS Reference	Depth in mbgl	NGR	Drilled
Whitewall House Well	SE77SE106	8.23m	479100E, 470010N	Before 1942
Norton UDC Waterworks	SE77SE2	19.2m	480522E 470195N	1891
Highfield Farm Well	SE86NW7	45m	480800E, 469990N	2006

The boreholes encountered a thin topsoil or up to 5m of sand underlain by limestone confirming the nature of the strata.

6. HYDROLOGY

6.1 Surface Water

A large proportion of the rainfall over the area of the site and local environs will be absorbed into the permeable limestone strata and drain northwards into the River Derwent. Water entering the Corallian Limestone flows northwards and exits as springs along the geological fault line to the north of the site which abuts the permeable limestone to the south against impermeable Ampthill Clay to the north. The water then flows overland to drain into the River Derwent.

The River Derwent runs west and north of the site. There are no chemical or biological water quality assessments within 1500m of the site. According to the EA the River Derwent is mainly groundwater fed with flows being dependent on levels of water within the main aquifers.

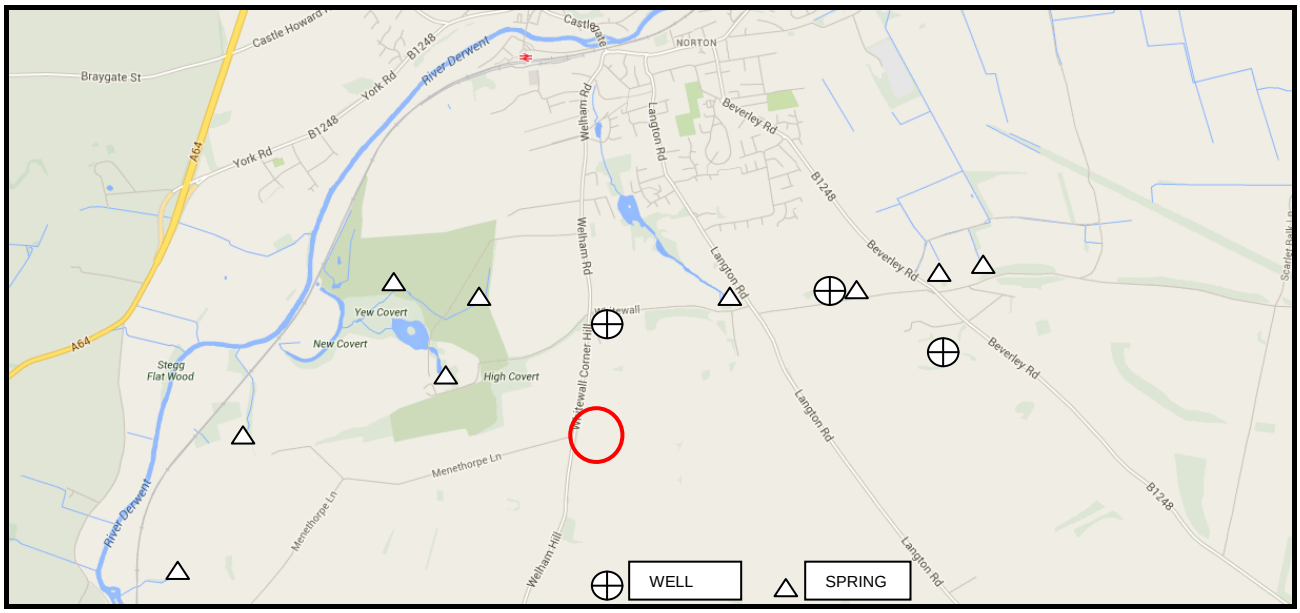

Figure 8 Hydrology Plan of Site and Environs

Surface Water Features close to the site are shown on Figure 8 and 9 and indicate the following:

- A pond in the Limestone Quarry.
- Springs at Welham Park draining through Ponds and Fish Hatcheries to the River Derwent SSSI to the west.
- Springs north of Welham Park draining to River Derwent.
- Springs near Spring Cottage draining north through mill ponds and Fish Hatcheries to the River Derwent in Malton.
- Springs east of Langton Road draining north to River Derwent.
- Springs at Howe Hill.
- Springs west of the site draining west to the River Derwent.
- River Derwent to west and north of the site.

The springs occur along the geological fault line that has caused impermeable strata to the north to be juxtaposed to the permeable Corallian limestone to the south. Groundwater flowing north through the Corallian therefore springs out of the ground when the impermeable strata is met.

Groundwater flow in the Corallian is to the north and west and therefore water entering the site, if polluted, may contaminate surface water which is recharged from groundwater in the Limestone and emerges as surface water as springs to the immediate north of the site.

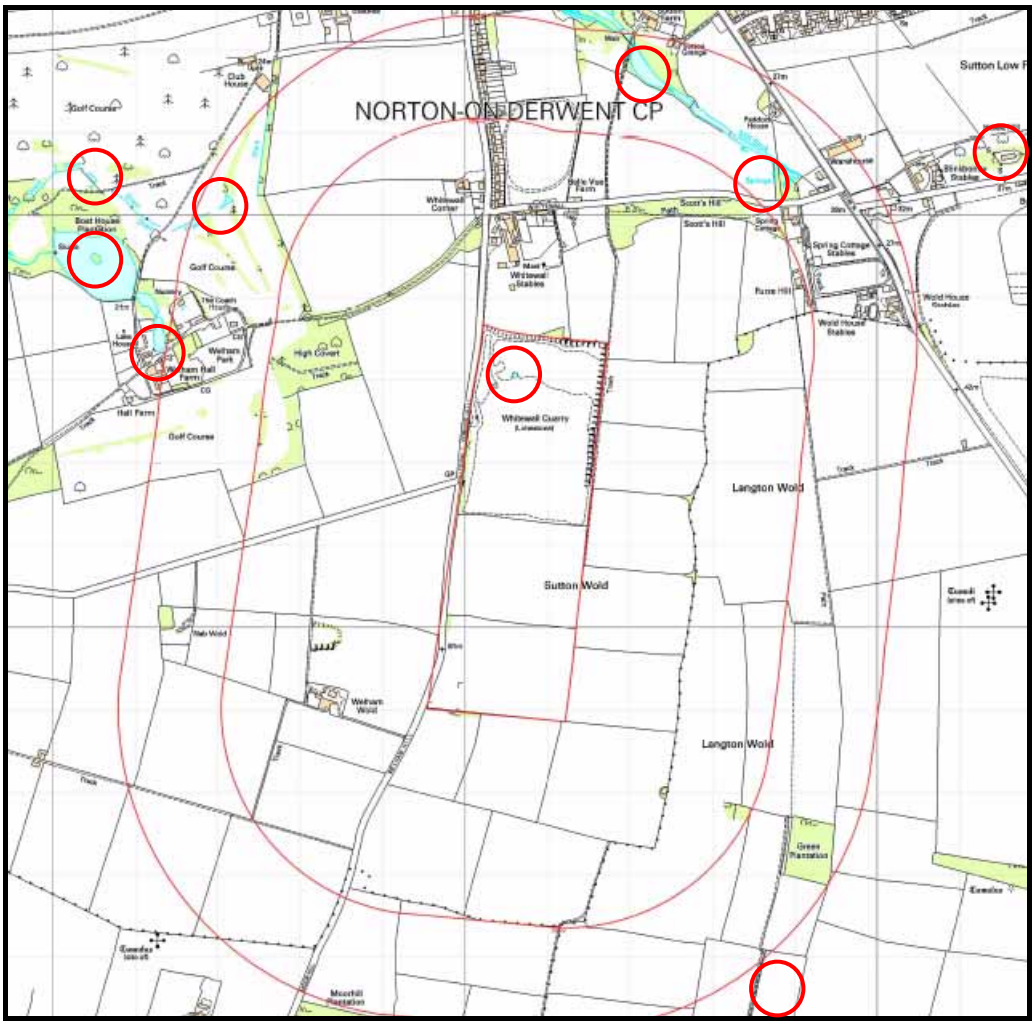

Figure 9 Surface Water Features Plan

6.2 Flood Risk

The site does not lie within a Flood Risk Area as defined by the Environment Agency.

There are BGS groundwater flooding susceptibility areas within 50m of the site. The highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions is moderate.

7. HYDROGEOLOGY

7.1 General

The geological maps produced by the BGS indicate the site to be underlain by permeable Corallian Limestone and Calcareous Sandstone underlain by impermeable clays. The bedrock is covered to the north of the site by superficial deposits which outcrop to the north of Whitehall/Beazely Lane.

7.2 Superficial Deposits

The Environment Agency (EA) Groundwater Vulnerability maps indicate the superficial strata to the north of the site to comprise a 'Secondary (A) Aquifer'. Secondary (A) aquifers (formerly referred to as minor aquifers) are formations with permeable layers capable of supporting water supplies at local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The permeable layers are the glacial sand and gravel and recent alluvium. These aquifers are unlikely to be affected by pollution from the site unless contaminated surface water flows over the aquifers.

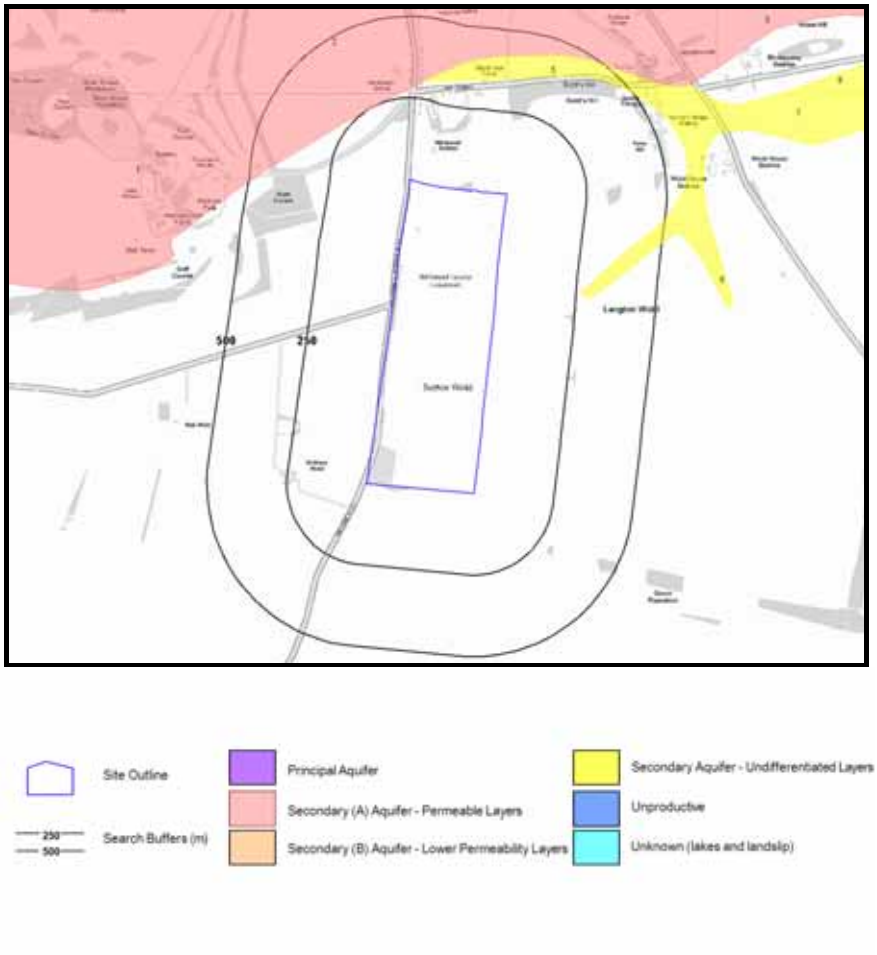

Figure 10 Secondary Aquifers in Superficial Deposits

7.3 Bedrock

The bedrock beneath the site is classified by the EA as a principal aquifer. These are areas of geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

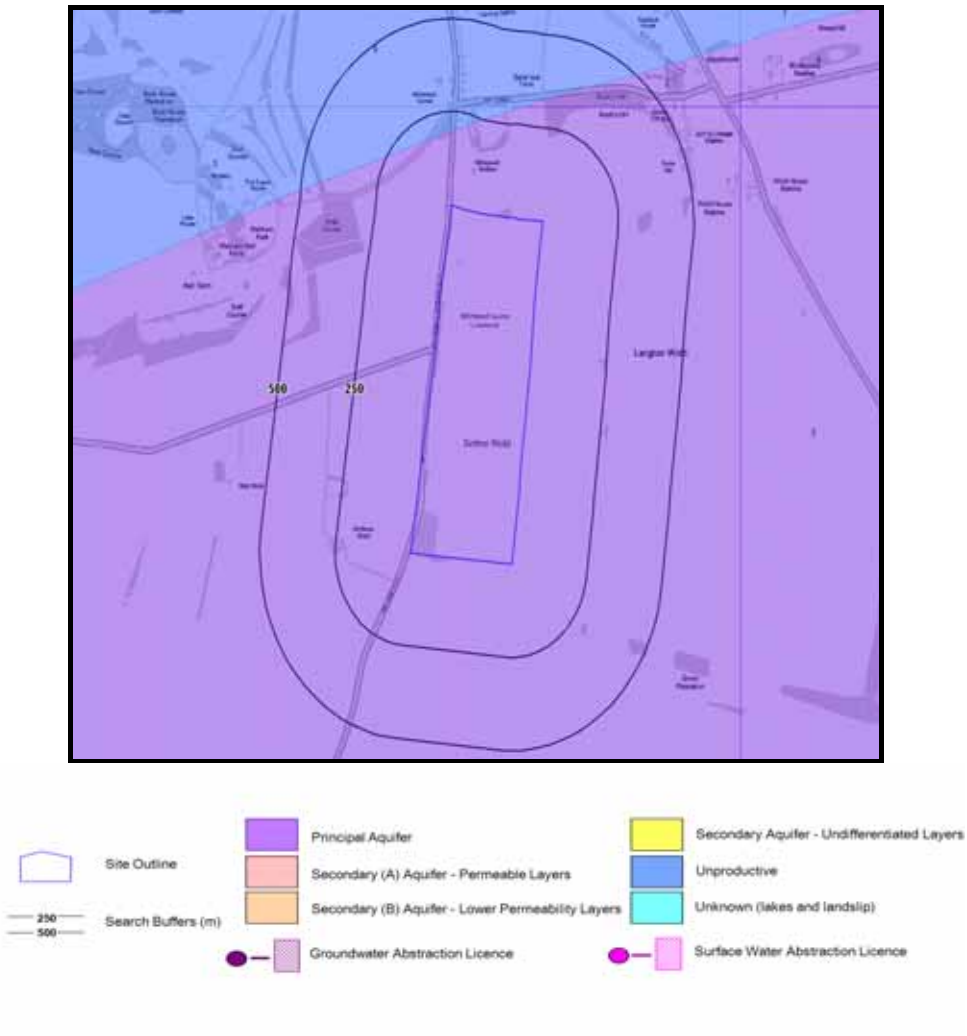

Figure 11 Principal Aquifer in Bedrock

The Corallian Limestone is highly permeable and highly fractured. Fracturing is expected to be very high in the quarry if explosives have been used for quarrying. Joints and fractures create easy pathways for surface water/groundwater to travel large distances.

As the Corallian Limestone is highly permeable and a principal aquifer it is classified by the EA as highly vulnerable to pollution. The limestone provides potable water on a strategic and local scale and it is therefore imperative that it is protected from pollution.

7.4 Abstraction Licences

There are five recorded abstraction wells within vicinity of the site as detailed in Table 4.

Table 4
Abstraction Wells

Distance from site	NGR	Name	Source	Purpose
1391m W	477700E 470100N	Welham Park	Spring fed pond from groundwater	Spray irrigation
1393m NE	480600E 470300N	Howe Hill Norton UDC	Groundwater	PUBLIC Potable Water Supply
711m N	479400E 470400N	Fish Farm	Mill Beck from groundwater	Fish Farm/Cress Pond
100m N	479100E 470010N	Whitewall House Farm	Groundwater	Potable Water Supply plus racehorse water
1500m NE	480800E 469990N	Highfield Farm Well	Groundwater	Potable Water Supply plus racehorse water

The abstraction licence at Welham Park is from a spring fed pond for spray irrigation.

The well at Howe Hill was sunk in 1891 to provide potable water for public supply to Norton and Malton. The well encountered 5m of sand overlying limestone and was constructed as a shaft of 2.4m diameter to 8m depth with two boreholes sunk to 14m and 19.2m extending into the limestone. Large fractures were encountered in the shorter borehole and water flows from these fractures to the second borehole, where it is pumped to the surface at a rate of 36m3/hour.

Abstraction is recorded as 454m3 per day with a reservoir storage capacity of 1235m3. The water supply was apparently copious due to the closeness of the well to the fracturing along the geological fault line. The water in 1893 comprised 'a moderately hard water of more than average purity and admirably suited for the supply to the district'. This public supply well is protected by a Source Protection Zone as detailed in Section 7.5 below.

The abstraction at the Fish Farm is for the fish farming and cress pond.

The abstraction well at Whitewall House Farm was considered contaminated in 1942 but there are no details. It is possible that it has become contaminated from quarrying operations. The abstraction well at Highfield Farm is still in use for human and animal (racehorse) drinking water.

Other unrecorded or unlicensed wells may be present close to the site. Historic wells may exist within 500m of the site. As the local groundwater may be utilised for abstraction from old unlicensed wells, it is important that it is protected from pollution. It is an offence to pollute the groundwater, whether or not it is used for abstraction.

According to the EA Derwent Abstraction Licensing Strategy (Feb 2013) there is restricted groundwater available within the Corallian Limestone for abstraction and the groundwater in this aquifer therefore requires protection.

The Environment Agency have commissioned a review of the Corallian of North Yorkshire due to its poor chemical status due to diffuse nitrate pollution and poor quantitative status due to abstraction and natural flow loss pressures on the water balance. This is particularly important as

the aquifer supports several large public water supplies and Scarborough relies entirely on the Corallian for its water.

7.5 Source Protection Zone

The site is shown to lie within 800m of a Source Protection Zone. The protection zone extends southeastwards up hydraulic gradient from the Howe Hill public supply well, over an area that must not be used for a potentially contaminating use to protect the potable water.

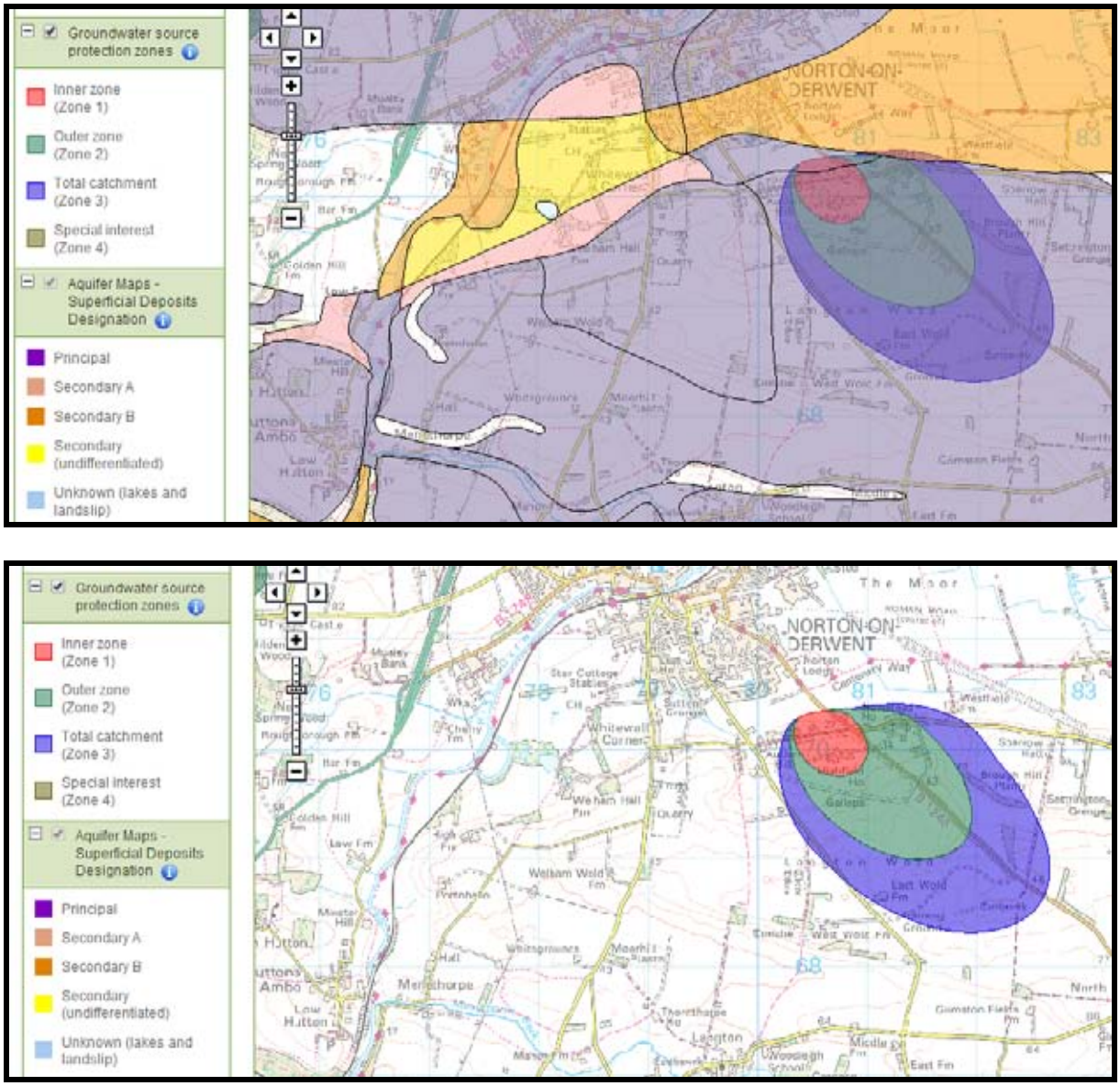

Figure 12 Source Protection Zone

The location of the Howe Hill well is close to the northern faulted edge of a large outcrop of Coralline Oolite which forms Langton Wold to the south east of Malton. The Corallian Oolite is nearly 30m in thickness and is underlain by the Calcareous Grit also 30m in thickness. These strata are water bearing and underlain by inpervious Oxford Clay.

The source of the water in the well draws its water from rain falling on the Corallian Oolite forming Langton Wold. The limestone is traversed by strong joints in two directions nearly at right angles and is well bedded. As a result water will readily flow towards the well from any direction. The main direction of flow however is clearly from the south east down the dip slope of the strata. Occassional thin marly partings may afford a certain degree of filtration to downward percolating water, but it is impossible to estimate the degree of efficiency of the filtration.

Over most of the area the covering of soil is only a 30mm thick and rests on subsoil which may reach a thickness of 1.80m.The surface runoff is low in this area and absorption of water is high, probably more than one third of the rainfall finding its way into the strata.

With a yearly rainfall of 0.67m, the storage daily absorption of the gathering ground was estimated by the BGS (1932) to be 700,000 gall, or 3182m3. The effective gathering ground for the well was estimated as 2 square miles but may exceed 3 square miles.

Due to the high level of abstraction from the well and the restricted recharge area to supply the well, the EA recommend that where abstraction exceeds 75% of the recharge, then the entire aquifer should be considered as a Source Protection Zone (SPZ). Due to the high vulnerability of the Principal Aquifer of Corallian Limestone it is considered that the entire outcrop of limestone should be considered a SPZ. This would include the site.

It is extremely probable that the groundwater is augmented to some extent by rain falling on an extensive area of Calcareous Grit to the north of Langton and separated from the Corallian by a geological fault.

The report (BGS 1932) concluded that it was unlikely that the well would suffer from pollution from the River Derwent as the hydrogeological flow is to the north towards the river.

With regard to possible pollution from the limestone gathering ground the BGS report expressed concern regarding the sanitary condition of farms as sewage can travel considerable distances through the jointed rock without receiving complete filtration.

The BGS report concluded that ‘The entry into the ground of untreated sewage at any of these points would be most dangerous’. There was also great concern regarding the protection of the well from contamination and this still applies today.

8. QUARRYING

8.1 Quarrying

The site is used for the quarrying of limestone. Land to the north of the site has been quarried for limestone and infilled and there are a large number of former limestone quarries, smaller than Whitewall, in the district.

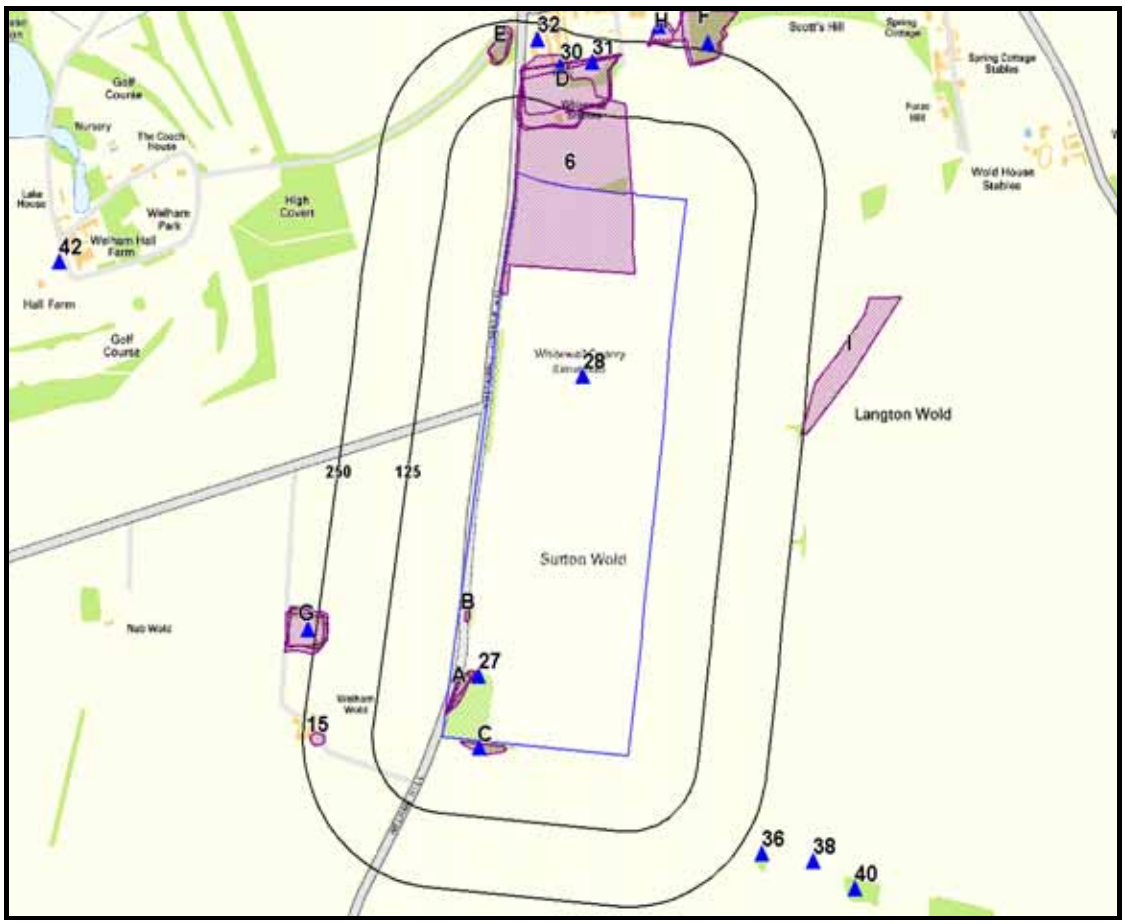

Figure 14 Local Quarried Areas

8.2 Other Mineral Extraction

The site does not lie in an area of recorded mining for coal, tin, gypsum, clay or salt or stone.

9. ENVIRONMENTALLY SENSITIVE SITES

The site does not lie within or within 2000m of a National Nature Reserve, a Special Protection Area, a RAMSAR site, an Ancient Woodland, a Local Nature Reserve, a World Heritage Site, an Environmentally Sensitive Area, an Area of Outstanding Natural Beauty or a National Park.

The site lies within a Nitrate Vulnerable Zone on site. The site lies within 1500m of a Special Area of Conservation of the River Derwent.

The site lies within 1500m of a Site of Special Scientific Interest (SSSI) at 1220m E at Three Dykes and at 1284m W at the River Derwent.

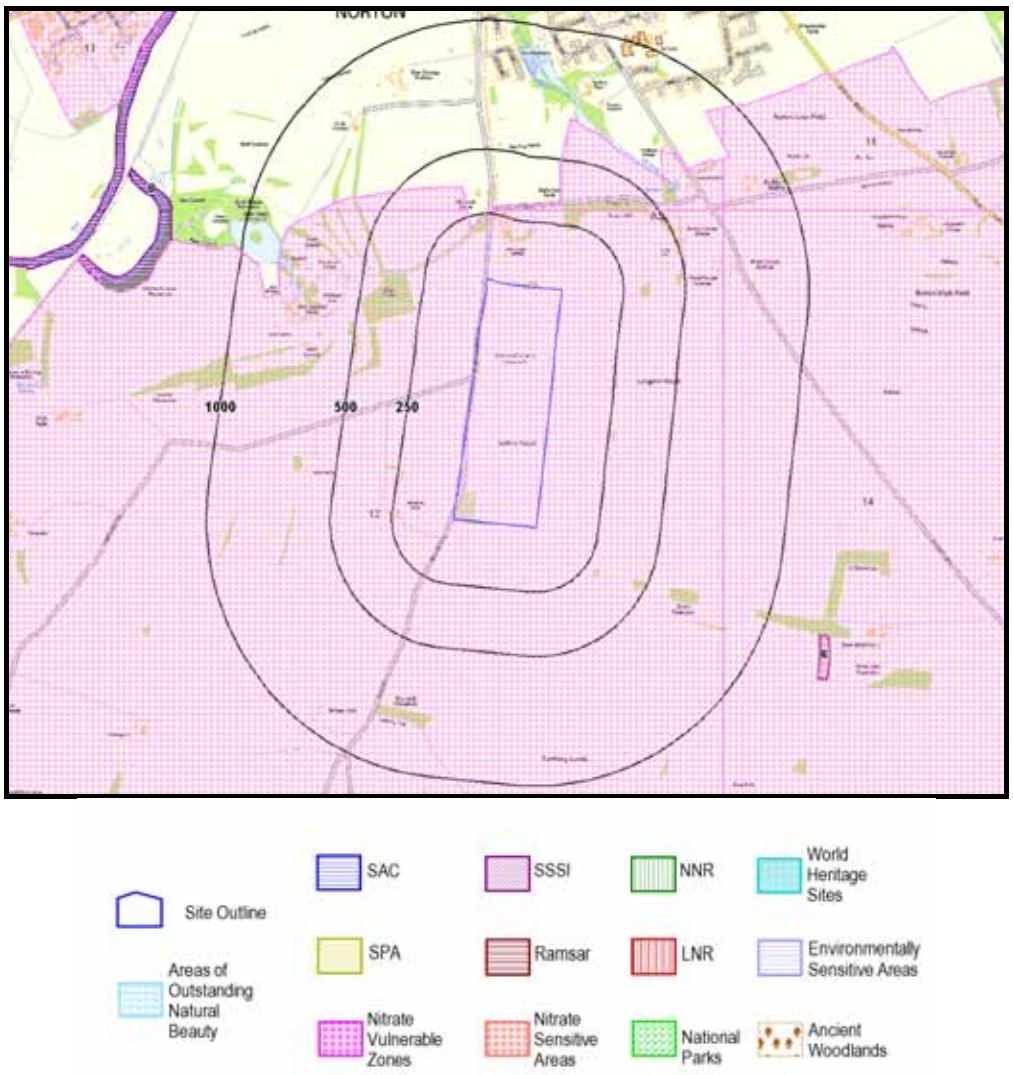

Figure 14 Environmentally Sensitive Areas

10. REGULATED INDUSTRIES

Results of searches for regulated industries are presented in Table 3.

TABLE 3
Authorisations, Incidents and Registers

Regulated Industry	On SITE	Within 250m	DETAILS
Historic IPC Authorisations	None	None	-
Part A(1) and IPPC Authorised Activities	None	None	
Water Industry Referrals	None	None	-
Records of Red List Discharge Consents	None	None	-
Records of List 1 Dangerous Substances Inventory Sites	None	None	-
Records of List 2 Dangerous Substances Inventory Sites	None	None	-
Records of Part A(2) and Part B activities and enforcements	1	None	On site:W Clifford Watts Ltd, Whitewall Quarry, Norton YO17 9EH. Process quarrying Part B, no enforcements notified.
Records of Category 3 or 4 Radioactive Consents	None	None	-
Records of Licensed Discharge Consents	None	None	
Records of Planning Hazardous Substance Consents and Enforcements	None	None	-
Records of COMAH and NIHHS sites	None	None	-
Records of National Incidents Recording System List 2	None	None	
Records of National Incidents Recording System List 1	None	None	
Records of sites determined as contaminated land under Section 78R of EPA 1990	None	None	-
Records of Worked Ground	None	Yes	On site backfill to quarry
Records from EA landfill Data	None	None	-
Records of Operational Landfill Sites	None	None	-
Records of EA historic landfill sites	None	None	
Records of non operational landfill sites	None	None	-
Records of local authority landfill sites	None	None	-
Records of operational and non operational waste treatment, transfer or disposal sites	None	None	
Records of EA licensed waste sites	1	None	On Site: Welham Road, Corner Hill, Norton YO17 9EH. Transfer station for non biodegradeable wastes. <25000tonnes.
Current Industrial Land Use	1	None	Quarrying and concrete products
Petrol and Fuel Sites	None	None	-
Underground High Pressure Oil and Gas Pipelines	None	None	-
Residential Property (within 250m)	No	Yes	Residential properties within 200-250m of the site.
Radon Protection Required	No	No	The property is in a Radon Affected Areas where

			between 1% and 3% of properties are above action level. Radon protection is not required according to BR211 by the Building Research Establishment.
Registered as Contaminated Land under Part IIA EPA 1990	No	No	

Results of searches for regulated industries, pollution incidents and registered authorisations are presented in Table 3 above and indicate that the site and underlying strata/controlled waters are unlikely to be affected by current local off-site activity.

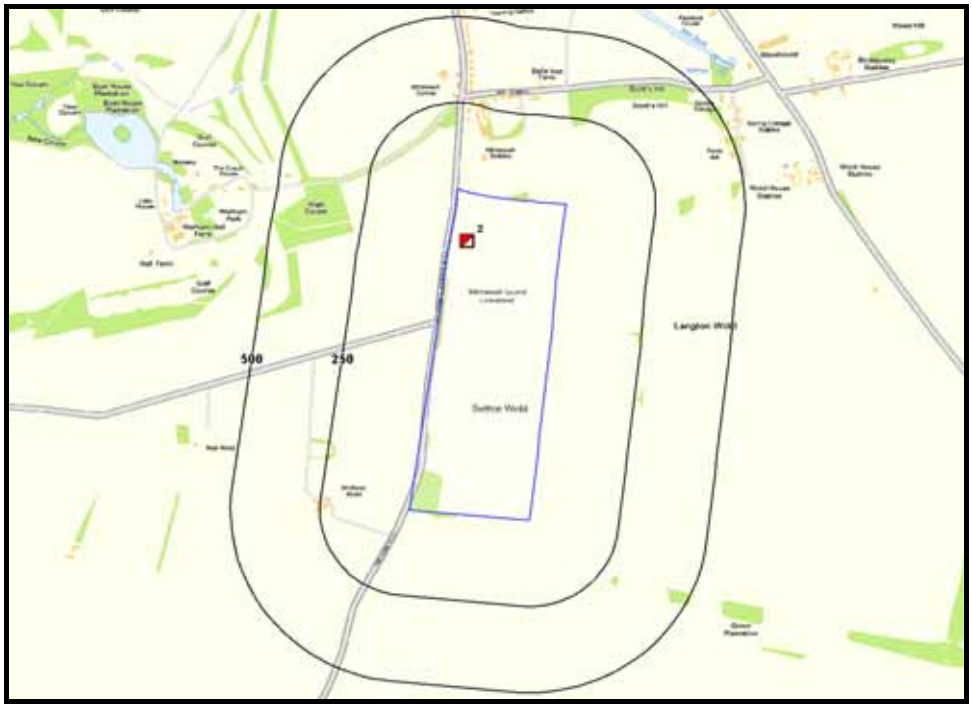

Figure 15 Local Landfill Sites

11. PROPOSALS

It is proposed to construct an asphalt production plant within the working limestone quarry.

It is proposed for the plant to produce 140tonnes of asphalt per day.

The manufacture of asphalt is a mixture of aggregate, sand, stone dust and a binder. The binder known as asphalt cement is a mixture of petroleum products produced by oil refineries, 'usually bitumen based, or in some cases tar'. (Design and Access and Supporting Statement for W Clifford Watts Ltd)

The mixing process uses temperatures of 300 to 325 degrees C with a product temperature of 100 to 200 degrees C for delivery to enable the material to be workable.

The process includes import of bitumen for binding the sand, limestone and aggregate and then the export of asphalt. The binder used is generally bitumen derived from crude oil and comprises 6% of the final mix. Road planings are sometimes used and may contain tar which is derived from the pyrolysis of coal. The use of tar in the roadstone process is rare today due to Health and Safety concerns over the high concentrations of PAHs present in tar. However where recycling of old road planings is undertaken, as proposed on site, tar may be present. Tar contains high levels of polyaromatic hydrocarbons some of which are carcinogenic.

Bitumen is produces as a residue during the vacuum distillation of crude oil. It is composed of relatively high molecular weight alkenes, cycloalkenes and aromatics, along with heterocyclic oxygen, sulphur and nitrogen compounds and heavy metals. The polyaromatic content of bitumen is less than coal tars because the vacuum distillation removes much of the low boiling point material, including PAHs with 3-7 fused rings and because the temperature involved in production (350-450degrees C) are not high enough to initiate significant PAH formation.

The bitumen requirement will be 22.40 tonnes per day or 6160 tonnes per year based on 405 of material being recycled asphalt pavement. Lorries delivering per day will be 6 for delivery of aggregates, 2 lorries per day will be required of virgin bitumen with 14 lorries per day for delivery and return of asphalt, giving a total of 22 lorries per day. The lorries will move on site, be stored and maintained and await loading on site. There is also a proposal to store 70 tonnes of bitumen on site.

IMPACT ASSESSMENT

12. IMPACT ASSESSMENT

12.1 Introduction

The Baseline Study has enabled a detailed understanding of the surface water and groundwater model in the region of the site. This has enabled an assessment to be made of the potential impacts posed by the proposed development on the water environment. Where risks are identified then mitigation measures may be required or prevention by no development.

The sources of contamination are potentially:

- Leaking fuel from lorries delivering/dispatching
- Leaking oils from vehicles
- Oils from lubrication and hydraulics
- Storage of bitumen
- Spillage from vehicles on the road/on site
- Spillage of bitumen by accidents or turning over of lorries
- Recycling of coal tar based road planings
- Sewage from toilets if disposed to cess pits
- Chemicals used to prevent bitumen adhering to lorry sides
- Washing down waste water
- Organic substances (PAHs, TPHs) from oil and waste fuel from lorries
- Heavy metals from fuel and bitumen

The proposed asphalt plant has the potential to impact on the water environment by:

- Derogation of groundwater quality
- Derogation of surface water
- Derogation of potable water

These could lead to impacts on :

- humans from contaminated wells
- animals from contaminated wells
- flora and fauna from contaminated water
- fish in ponds and hatcheries
- cress farm
- racehorses from contaminated wells
- Fish in rivers
- River Derwent and SSSI
- Other users of public supply water

Environmental risk considerations on the site have been assessed by adopting a site specific qualitative approach to identify the risk, if any, of environmental harm. In accordance with the DETR Draft Statutory Guidance on Contaminated Land the approach is by identifying a hazardous source and establishing possible links between the source via exposure pathways to a potential receptor.

The hazard is a contaminant or potentially polluting substance which has the potential to cause harm or to cause pollution to controlled waters. The receptor is a living organism or organisms, an ecological system or piece of property, which is being harmed, interfered with or polluted by the contaminant. The pollutant linkage is by means of the pathway which is one or more routes by or through which that receptor is being, or could be, exposed to, or affected by, that contaminant. Thus the presence of a hazard on a site does not necessarily mean that there are risks unless pathways and receptors are present and are receptive to being affected by that specific hazard or contaminant.

- SOURCE - release of pollutant - eg. oil spills
- PATHWAY - route to receptor - eg. permeable strata
- SENSITIVE RECEPTOR –receiver of pollutant eg. groundwater, surface water

The likelihood of contamination affecting the environment depends on the migration and persistence of contaminants which varies with the nature of the contaminant and the ground and groundwater conditions, and the presence of sensitive receptors.

12.2 Potential Pathways for Migration

The potential pathways for migration of any contamination include:

- Fissures and fractures in the limestone strata
- Fault fractures strata
- Groundwater
- Surface water from the site
- Spillage from lorries outside the site

12.3 Potential Sensitive Receptors

Sensitive receptors to potential contamination include:

- Humans from contaminated drinking water in wells
- Animals/Racehorses from contaminated drinking water in wells
- Flora and fauna from contaminated surface water
- Principal Aquifer in limestone
- River Derwent via tributaries
- Surface Water

12.4 Summary of Impact Assessment

By considering where a viable pathway exists which connects a source to a receptor, this assessment will identify where pollutant linkages may exist. If there is no pollutant linkage, then theoretically there is no risk. Therefore only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. On this site there is a potential for contamination to be present, there are routes for migration of contamination and sensitive receptors that could be detrimentally affected by the contamination.

13. RECOMMENDATIONS

The report has highlighted the potential for contamination of groundwater and surface water from the proposals to construct an asphalt plant within Whitewall Quarry.

The study has shown that the consequences of such contamination could have long term consequences on potable water supply, animals, humans and the environment.

It is required by law to protect the environment and particularly controlled waters from pollution. The site lies on a principal aquifer highly vulnerable to pollution and adjacent to a Source Protection Zone for public water supply.

It is recommended that further work is undertaken to assess the quantitive impact of the potential sources of contamination on the sensitive receptors. This will enable mitigating measures to be designed or no development to take place in order to preserve the status quo.

14. GENERAL REMARKS

This report truly reflects the conditions found during the study. Whilst the study was undertaken in a professional manner taking due regard of additional information which became available as a result of ongoing research, the results portrayed only pertain to the information attained, and the ground and gas conditions, mining conditions and contamination expected and it is possible that other undetected information and undetected ground and gas conditions, undetected mining conditions and undetected contamination may exist. The study was only undertaken within the site boundaries and should not be used for interpretation purposes elsewhere. These conclusions are

only a brief summary of the report, and it is recommended that the report is read in full to ensure that all recommendations have been understood.

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Frances A Bennett
BSc, CGeol, FGS, FIMMM, CEnv, MCIWEM, AIEMA, MIEnvSci

Appendix **A**

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Historical Mapping Extract

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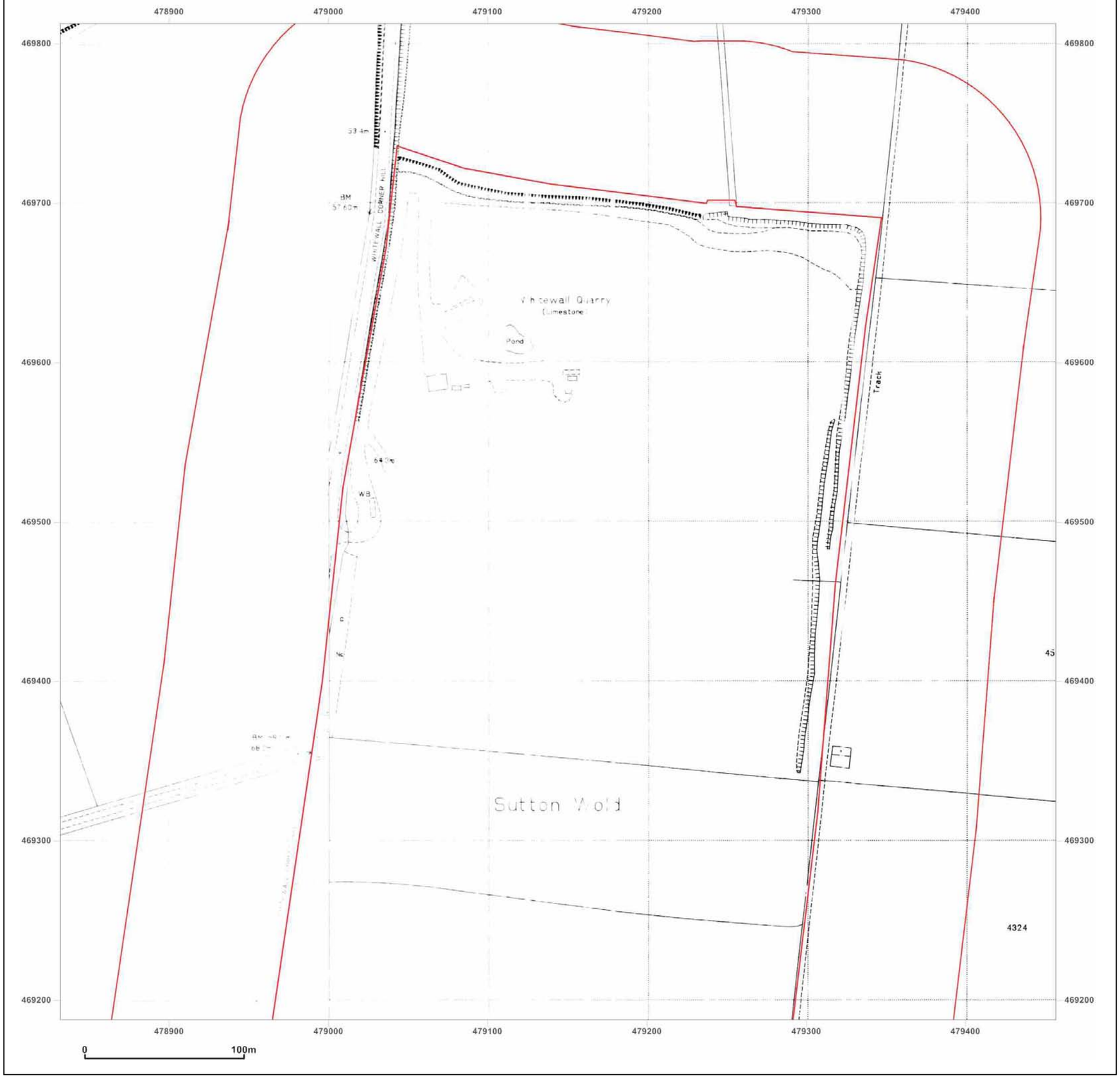

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Whitewall QUARRY

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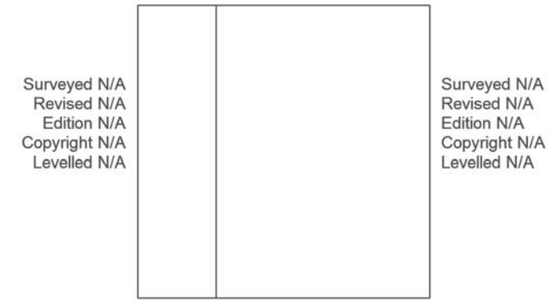

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To view map legend click here *Legend*

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Site Details:

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Map date: **1973**

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Printed at: 1:2,500

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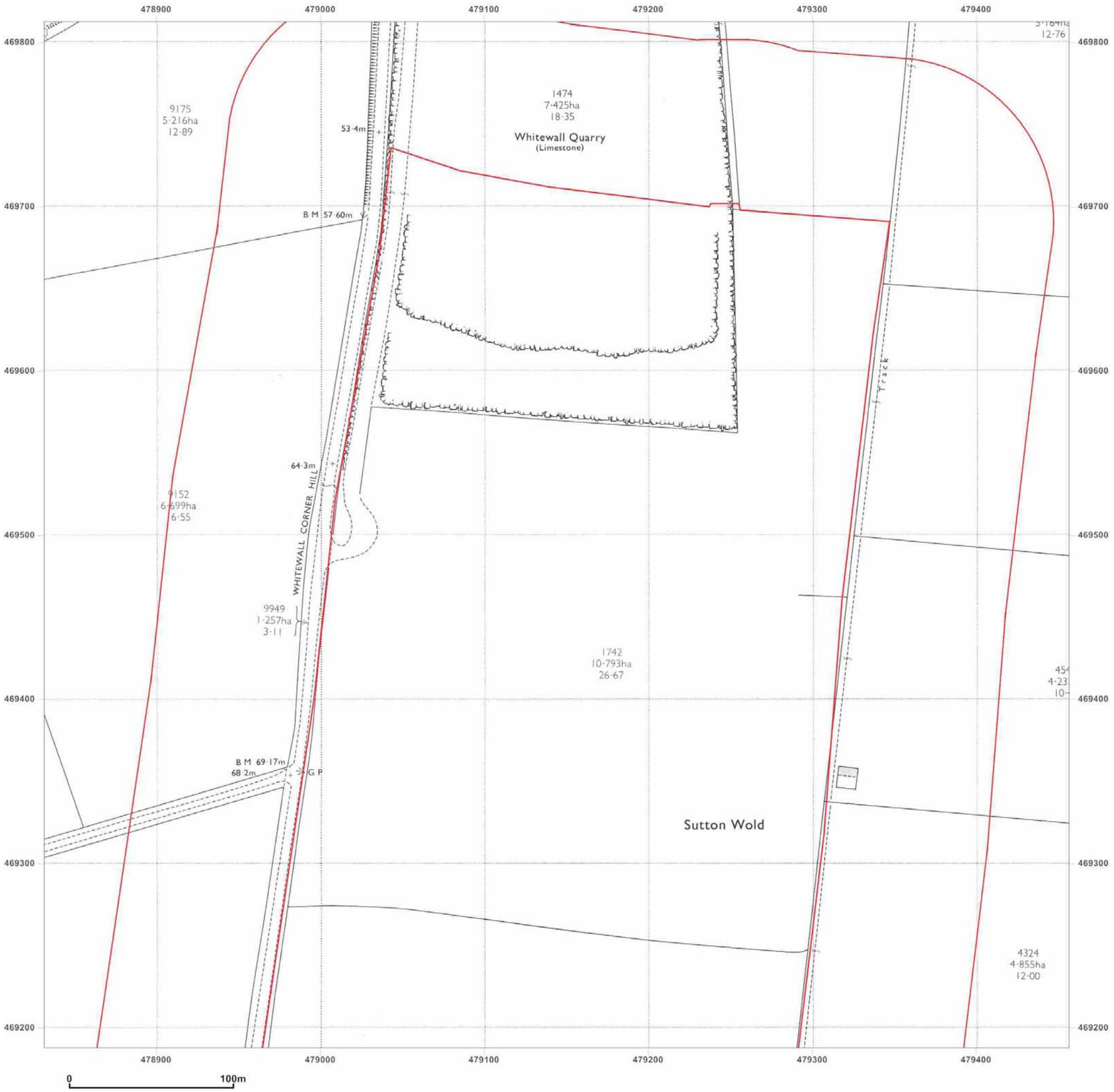

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Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

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Grid Ref: 479144, 469500

Map Name: County Series

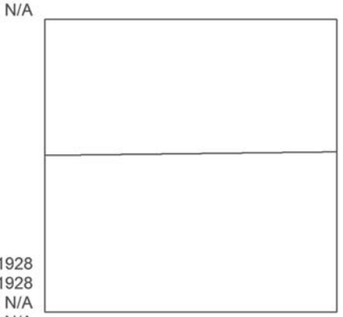
Map date: **1928**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1928
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1928
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 04 March 2014

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A1
Grid Ref: 479144, 469500

Map Name: County Series

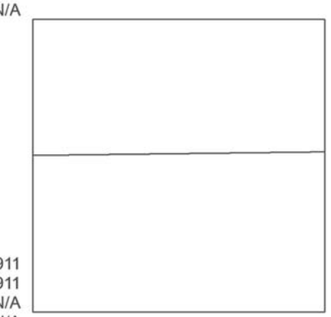
Map date: **1911**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1911
Revised 1911
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1911
Revised 1911
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 04 March 2014

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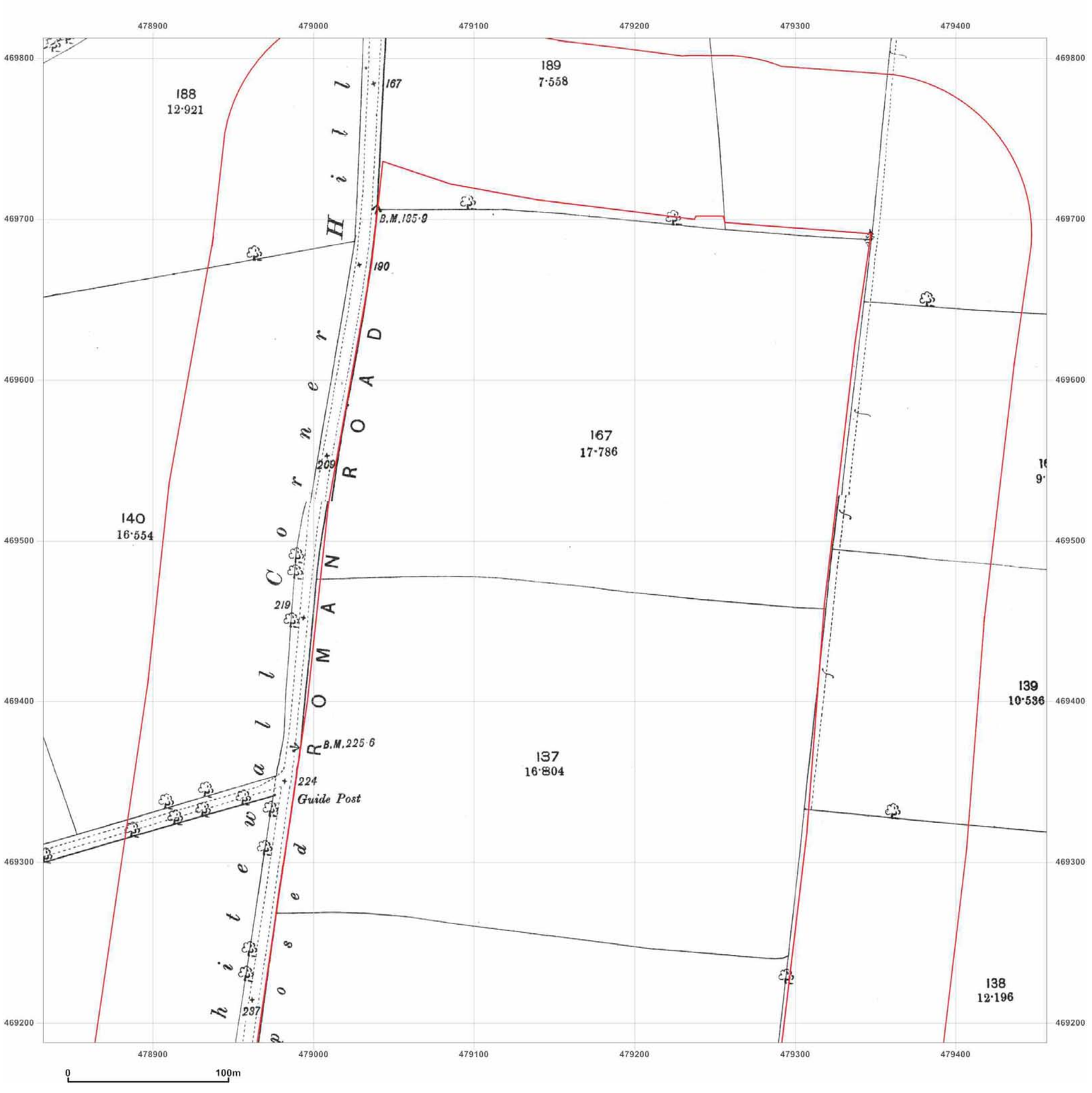

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A1
Grid Ref: 479144, 469500

Map Name: County Series

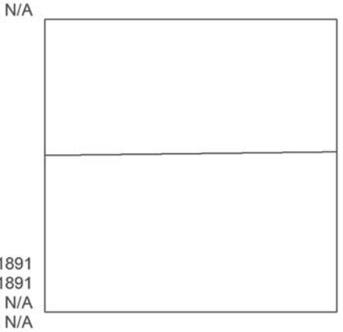
Map date: **1891**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

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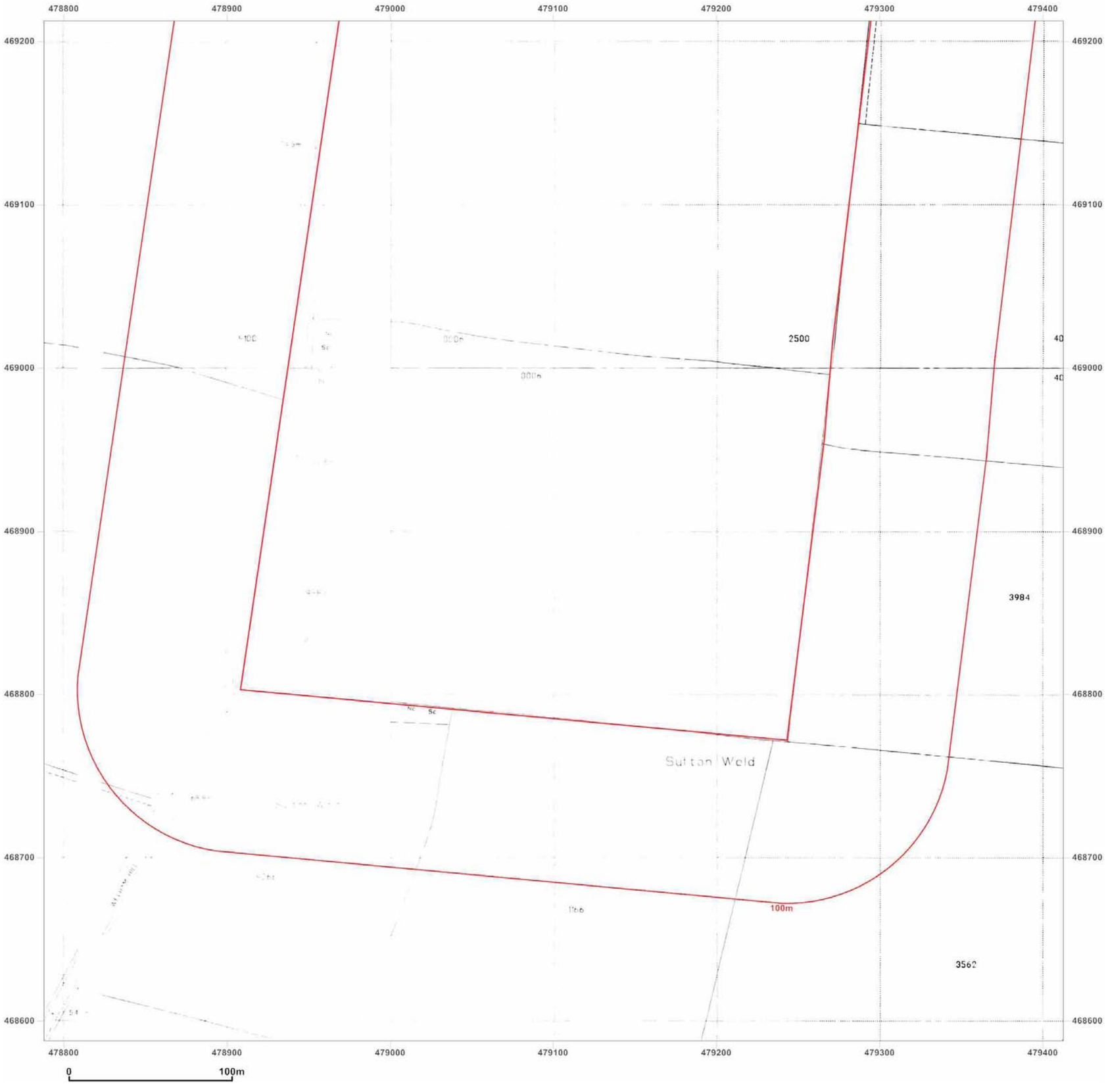

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

N W E S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: National Grid

Map date: **1972-1973**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1972
Revised 1972
Edition N/A
Copyright 1973
Levelled 1969

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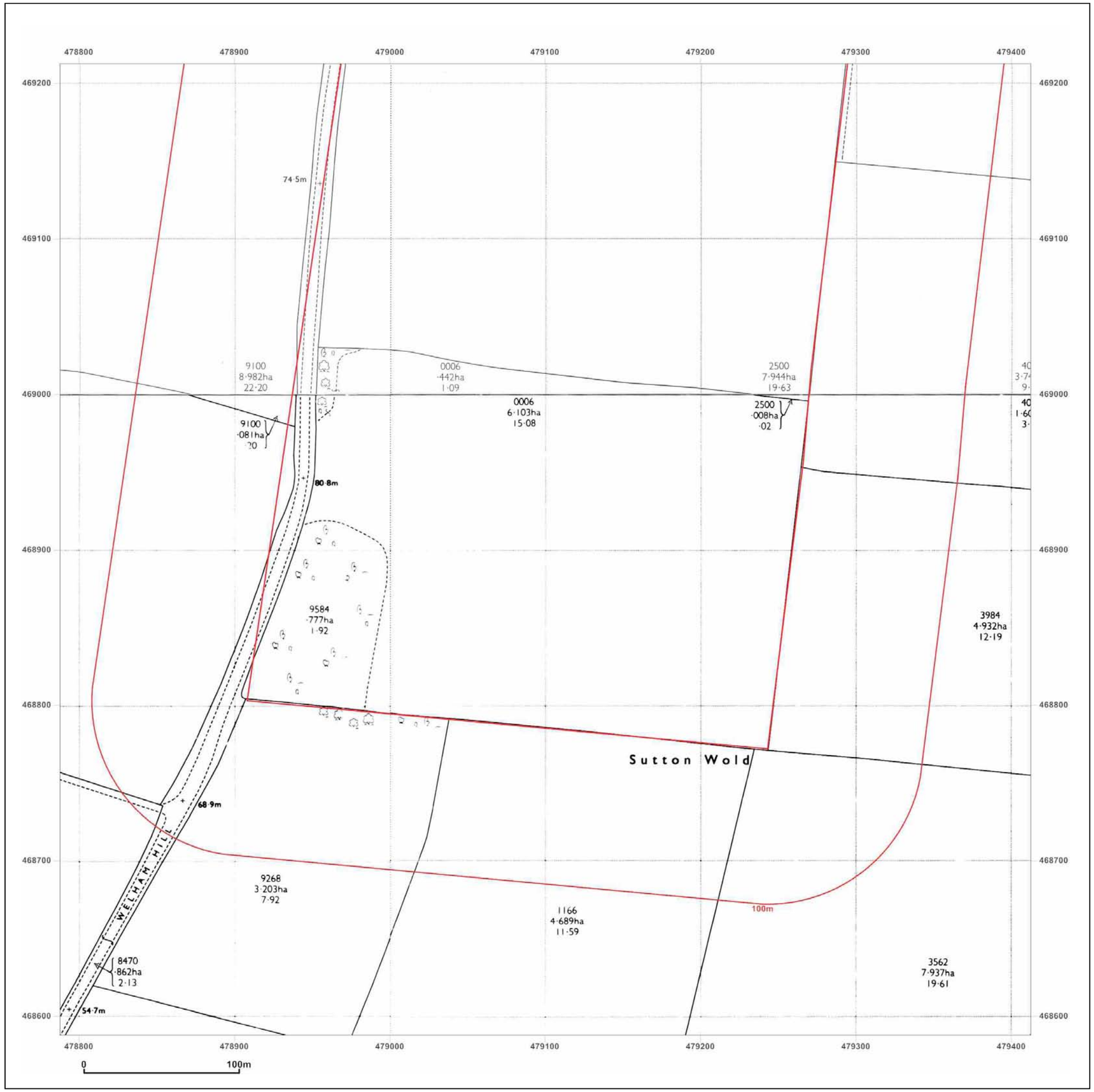
To view map legend click here *Legend*



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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: National Grid

Map date: **1972-1973**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1972
Revised 1972
Edition N/A
Copyright N/A
Levelled 1969

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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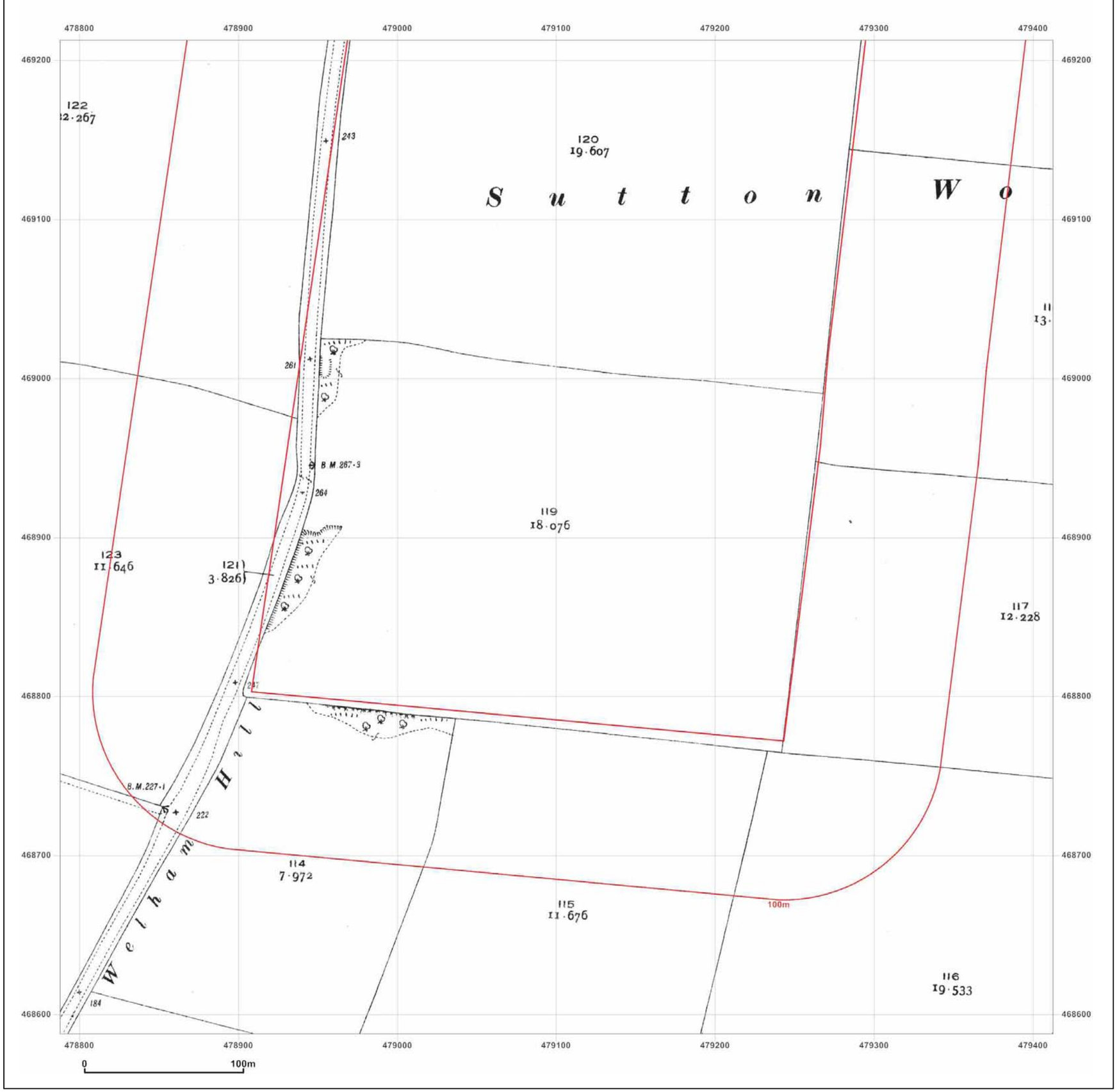
Production date: 04 March 2014

To view map legend click here *Legend*



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Historical Mapping Extract

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: County Series

Map date: **1928**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1928
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: County Series

Map date: **1911**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1911
Revised 1911
Edition N/A
Copyright N/A
Levelled N/A

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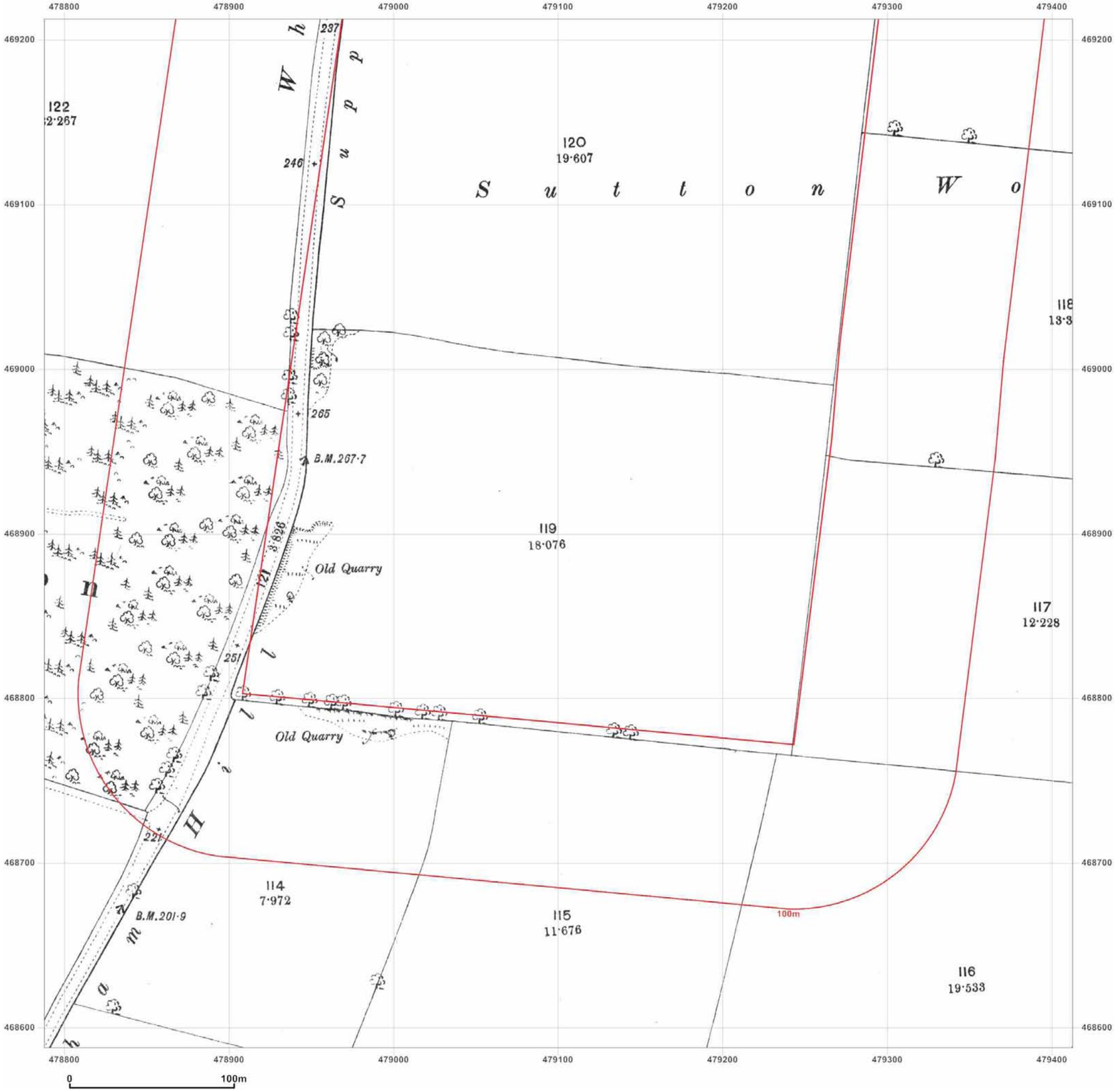
Production date: 04 March 2014

To view map legend click here *Legend*



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Historical Mapping Extract

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS_LS_A2
Grid Ref: 479100, 468900

Map Name: County Series

Map date: **1891**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: National Grid

Map date: **2012**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2012

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

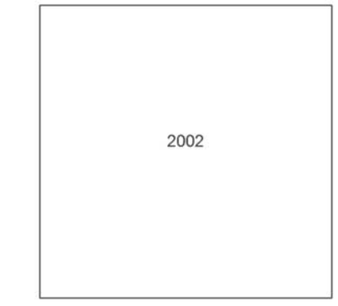
Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N W E S



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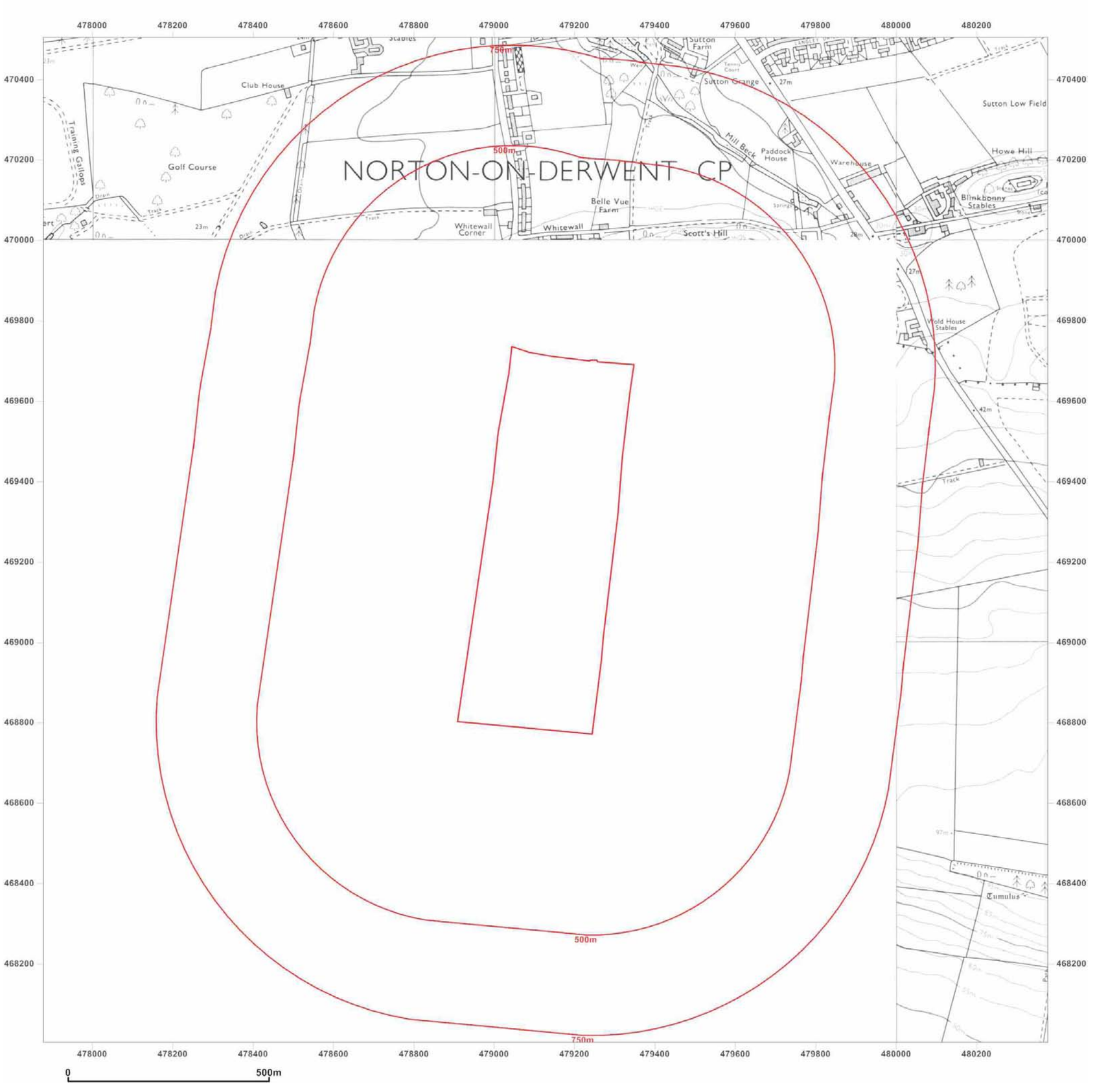
Production date: 03 March 2014

To view map legend click here *Legend*



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Historical Mapping Extract

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: National Grid

Map date: **1981-1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1982
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1980
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1976
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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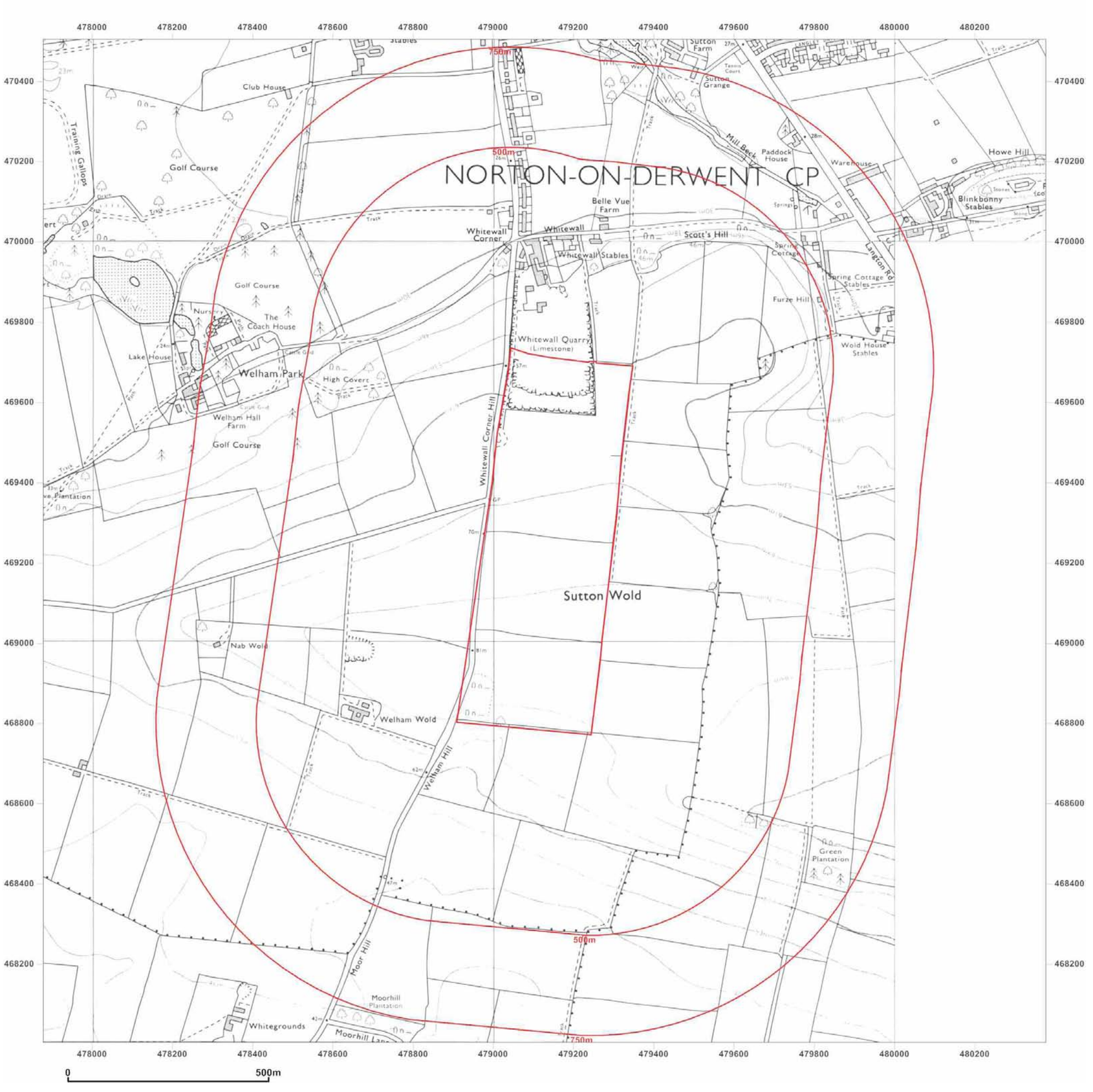

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: National Grid

Map date: **1974-1975**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

Surveyed 1972
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1972
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1972
Revised 1975
Edition N/A
Copyright N/A
Levelled N/A

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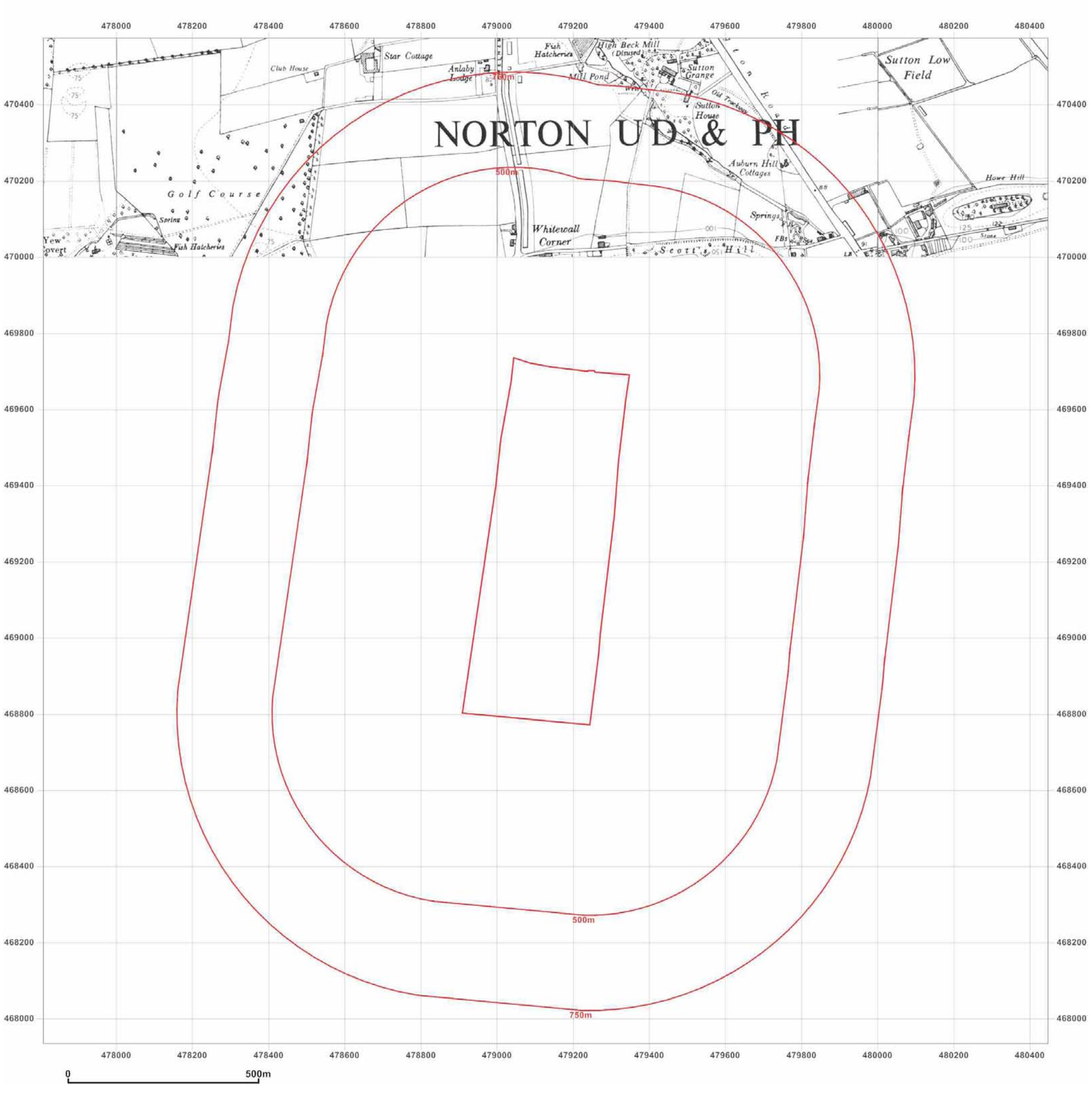
Production date: 03 March 2014

To view map legend click here *Legend*



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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: Provisional

Map date: **1957-1958**

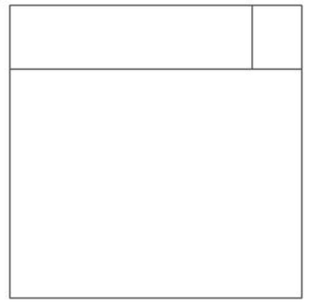
Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1950
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1950
Revised 1957
Edition N/A
Copyright 1958
Levelled N/A



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Production date: 03 March 2014

To view map legend click here *Legend*

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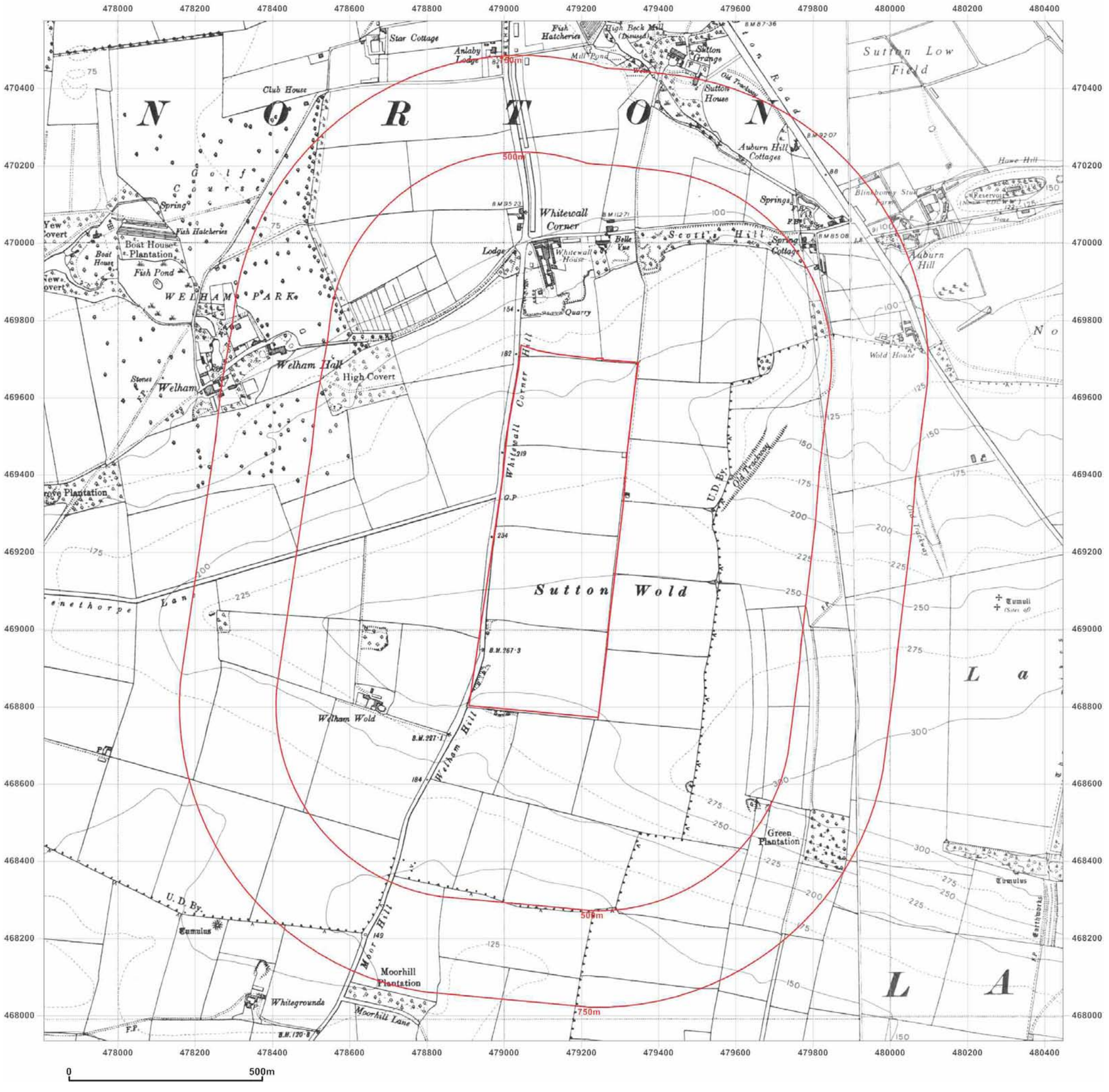


Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

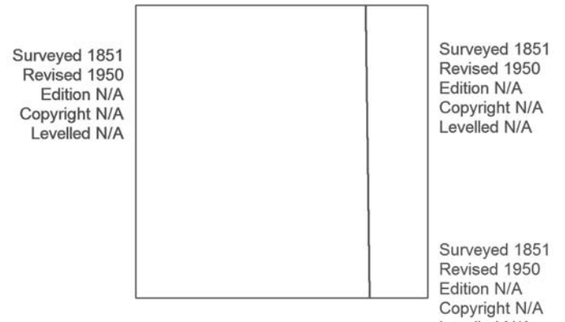
Map Name: County Series

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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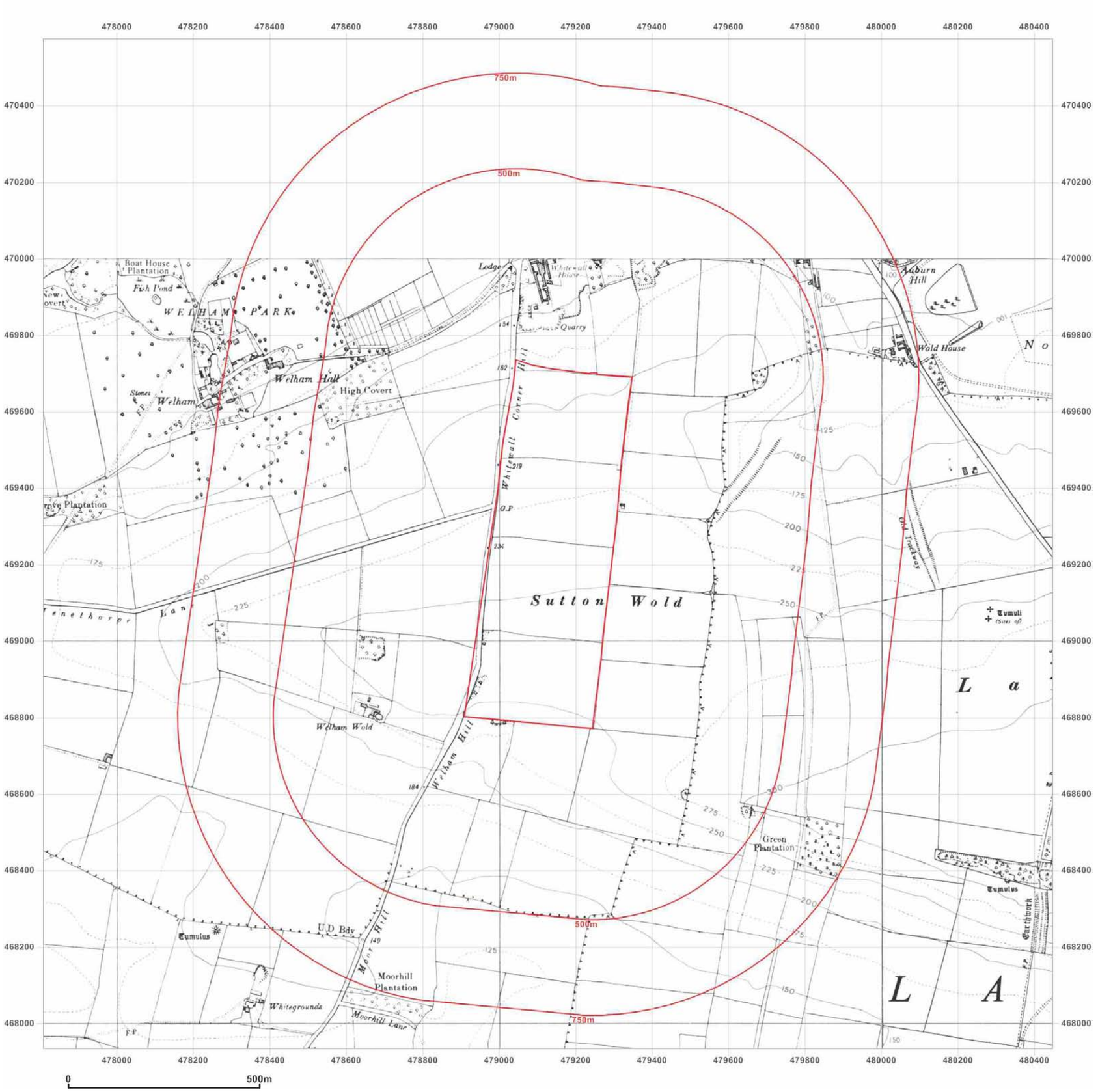
Production date: 03 March 2014

To view map legend click here *Legend*



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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: Provisional

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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Production date: 03 March 2014

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: County Series

Map date: **1926**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1851
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: County Series

Map date: **1909**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1851
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: County Series

Map date: **1892**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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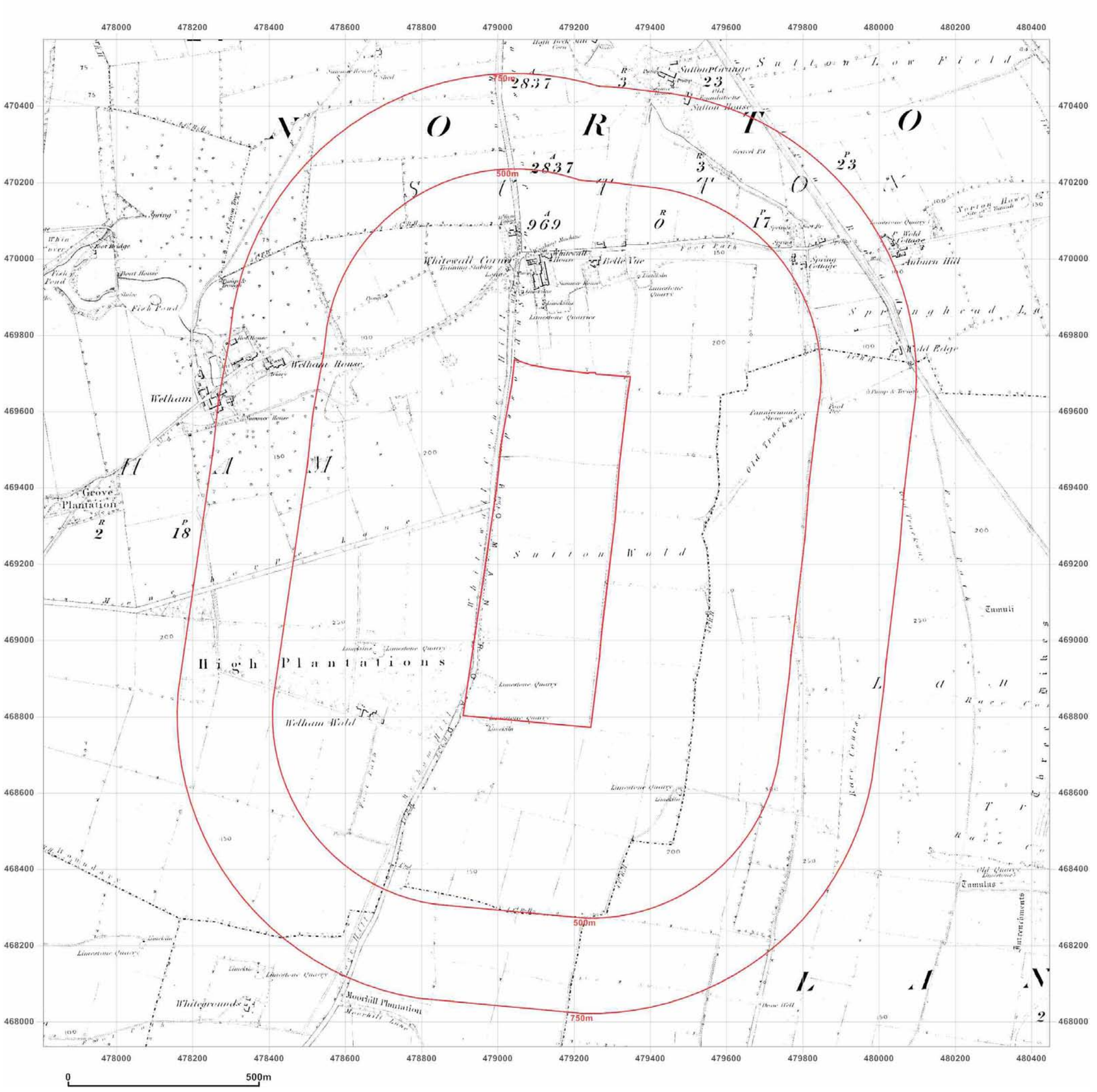

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Site Details:

Whitewall QUARRY

Client Ref: 4873
Report Ref: CMAPS-CM-302486-4873-030314HIS
Grid Ref: 479127, 469254

Map Name: County Series

Map date: **1851**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 03 March 2014

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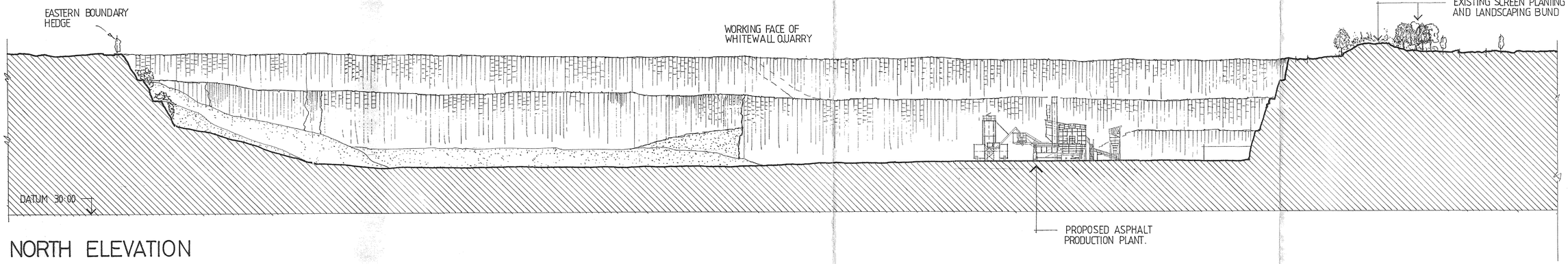
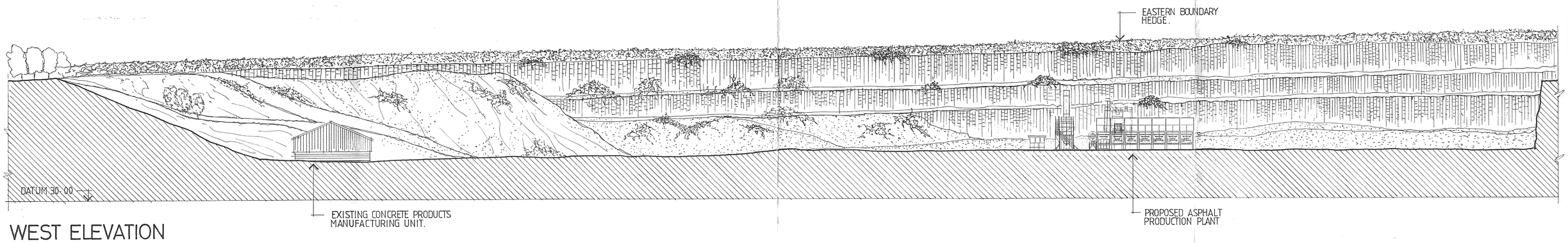
Appendix **B**

PHOTOGRAPHS

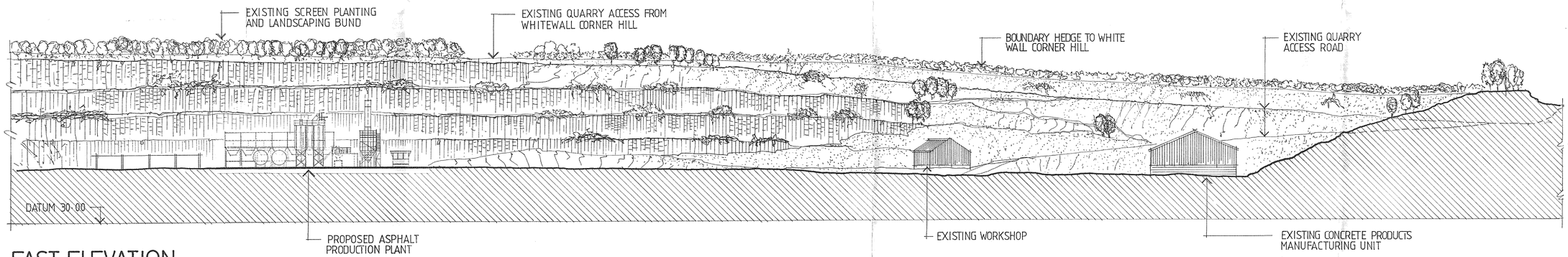
Appendix C



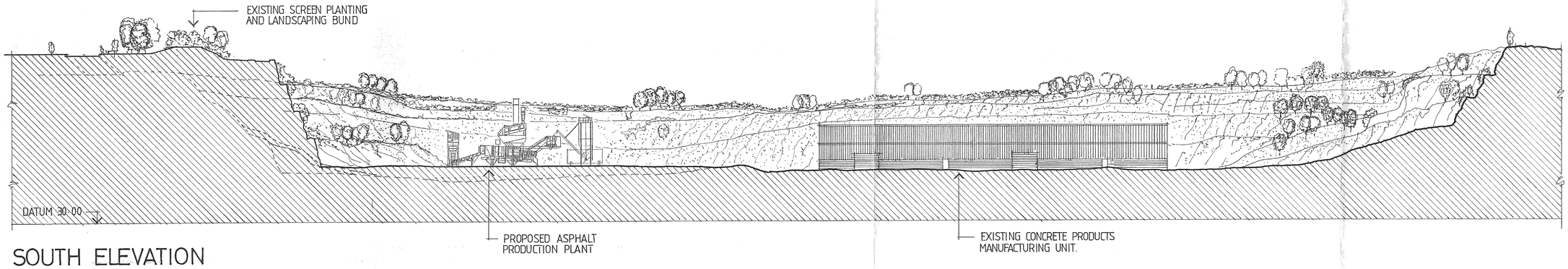
NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION



SOUTH ELEVATION

D		
C		
B		
A		

Revisions

PROPOSED SITING OF ASPHALT PRODUCTION PLANT WHITEWALL QUARRY NR. NORTON, NORTH YORKS.

FOR :
W. CLIFFORD WATTS LTD.

1:500 SCALE ELEVATIONS AS PROPOSED.

Terry Horton MBIAT
Incorporated Architectural Technologist
Building Design Consultant and Surveyor
16 Byass Avenue
Queensgate
Bridlington
East Yorkshire YO16 5JG
Tel. 01262 677941
Fax. 01262 401291

Scale	1:500
Date	SEPT. 2012
Drawn	TNH.

Drg. No.	CW WW	1115	7	

70 metre contour

75 metre contour

80 metre contour

PROFILE OF QUARRY FACE SURVEYED 8 MARCH 2011.

TO EXISTING QUARRYING OPERATIONAL AREA.

PROPOSED VEHICLE ACCESS ROUTE TO QUARRY AND ASPHALT PLANT.

PLANNING PERMISSION C3_07_00937_CPO reinstatement by 30 NOV 2023.

CAR PARK

PROPOSED MOBILE ASPHALT PRODUCTION PLANT. [see dwg.no.CW WW 1115_5A for details]

existg. road

existg.ramped access road

PROPOSED AGGREGATE STORAGE BINS.

WHITEWALL CORNER HILL

Menethorpe Lane

SITE LAYOUT AS PROPOSED SCALE 1:1000

KEY:

- area of land owned by W. Clifford Watts Ltd.
- area of land proposed for the siting of mobile asphalt plant.
- existing 10 metre wide tree belt to Northern margin.
- existing tree and shrub screen planting to Western margin.
- existing hedges to be retained.
- existing tarmac surfaced ramped quarry access road.
- access route to existg. quarry workings and proposed tarmac plant.
- area of land used for re-cycling operations. [see planning permission reference C3_01_00385_CPO dated 27 March 2002]
- area of existing quarry workings.
- existing sight screen landscaped bund to Western margin.
- 70.00 existing land contour levels prior to quarry workings, levels in metres above Ordnance Datum.

1. existing quarry access with 6 metre splays and 145 metre sight lines along Whitewall Corner Hill
2. existing wheel wash
3. existing workshop
4. existing staff facilities/ mess room
5. existing weigh bridge and bridge attendants office
6. existing wheel wash.
7. existing concrete batching plant [see planning permission reference C3_01_00385_CPO dated 27 Jan. 2003]
8. existing concrete products manufacturing and storage unit, area 1,748 sq.metres. permission C3_09_00077_CPO

D		
C		
B		
A	TITLE AMENDED SEPT. 2012	TH.

Revisions

PROPOSED SITING OF ASPHALT PRODUCTION PLANT. WHITEWALL QUARRY NR. NORTON, NORTH YORKS.

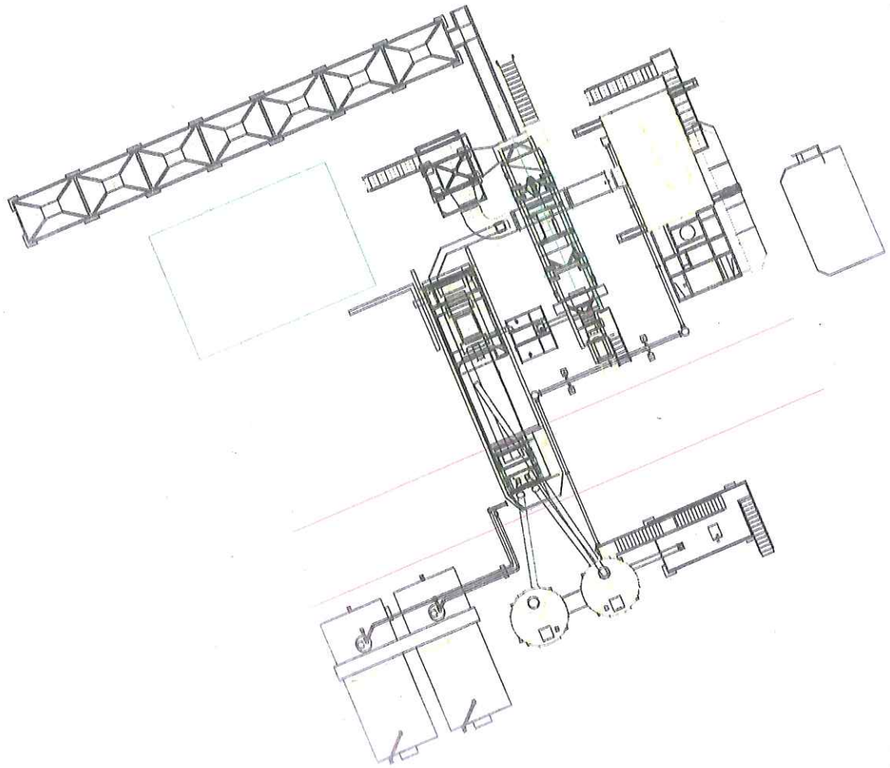
FOR: W. CLIFFORD WATTS LTD.

SITE LAYOUT AS PROPOSED

Terry Horton MBIAT
Incorporated Architectural Technologist
Building Design Consultant and Surveyor
16 Byass Avenue
Queensgate
Bridlington
East Yorkshire YO16 5JG
Tel. 01262 677941
Fax. 01262 401291

Scale	1:1000
Date	APRIL 2012
Drawn	T.N.H.

Drg. No.	CW WW	1115	4	A



PLAN AT SAME ORIENTATION
AS AERIAL VIEW n.t.s.

AERIAL VIEW.

SHOWING A SIMILAR INSTALLATION
PRESENTLY SITED IN SCOTLAND

D		
C		
B		
A		

Revisions

PROPOSED SITING OF
ASPHALT PRODUCTION PLANT,
WHITEWALL QUARRY,
NR. NORTON, NORTH YORKS.

FOR:
W. CLIFFORD WATTS LTD.

AERIAL VIEW AND SAME
ORIENTATION PLAN OF A
SIMILAR INSTALLATION.

Terry Horton MBIAT
Incorporated Architectural Technologist
Building Design Consultant and Surveyor
16 Hyans Avenue
Queensgate
Bridlington
East Yorkshire YO16 5JG
Tel. 01262 677941
Fax. 01262 401291

Scale	N.T.S.
Date	NOV. 2012
Drawn	TNH.

Drg. No.	CW WW	1115	11	

MJWP – Preferred Options Consultation – reference to option
Appendix C – Index and Flooding Photographs

15 January 2016

Dear Sirs

MJWP – Preferred Options Consultation – reference to options: MJP12, MJP13 and WJP09
Appendix C – Index and Flooding Photographs

Please find enclosed photographs indexed below, which further illustrate the unsuitability of these developments because of the flooding risks to both sites. These photographs were all taken in December 2015 following rain in the area (although this is not the first time this winter that this has happened, and happens throughout each winter to varying degrees).

Dec 2015 – A and C
Mill Beck from the north bank, south of waterlogged field, looking towards Langton Road.

Dec 2015 – G
Waterlogged paddocks at Spring Cottage Stables, Bazleys Lane, taken from Langton Road.

Dec 2015 – J
Flooding in Langton Road between Spring Cottage Stables and Auburn Hill, taken from north.

Dec 2015 – L
Waterlogged paddocks at Auburn Hill, east of Langton Road.

Dec 2015 – M
Waterlogged field from gate at Langton Road – waterlogged up to the Langton Road gate.

Dec 2015 – R and S
Flooded paddocks and road further west along Mill Beck, also on the flood plain, another area where flooding has been exacerbated also due to the faster runoff due to the size of the limestone quarry dug out of Whitewall Hill*.

Dec 2015 – T to V
River Derwent at County Bridge between Norton and Malton – closed due to height of river. This has been closed for several days at a time over the last 2-3 weeks, and Church Street remains closed (County Bridge reopened today).

Dec 2015 – W
Pumping water from Commercial Street into the Derwent.

Dec 2015 – X and Y
Flooding in Commercial Street, Norton, drains bursting and being pumped into the Derwent – road closed. To date, this has been now shut for the last 3 weeks, and pumping of water continues.

Yours faithfully

MJWP – Preferred Options Consultation – reference to options: MJP12, MJP13 and WJP09
Appendix C – Index and Flooding Photographs

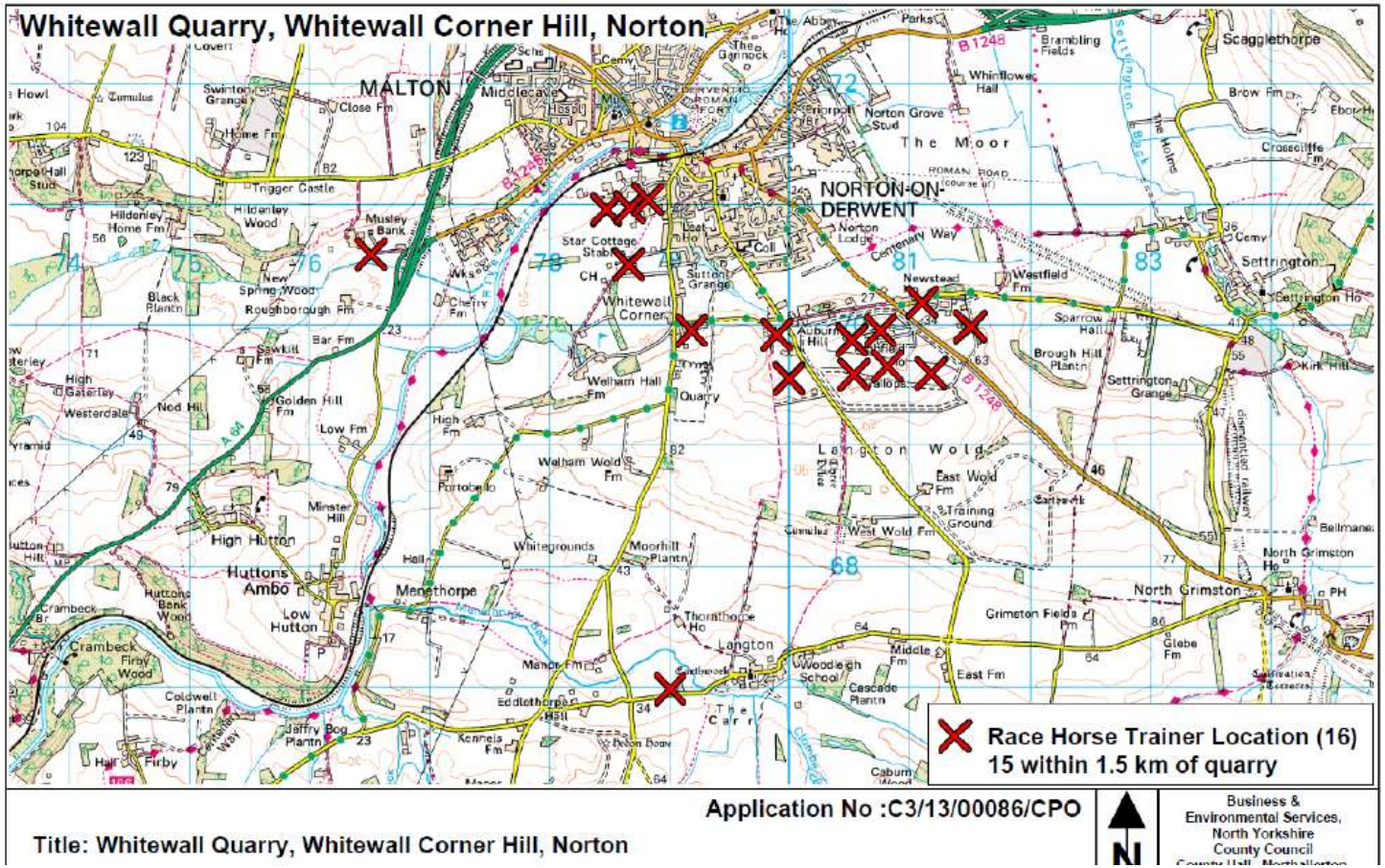
Fiona Campion

*Assuming average annual tonnage of 175,000 tonnes of limestone, between 5-6 million tonnes of Jurassic limestone have been quarried from Whitewall Quarry in its present location since 1974. Whitewall Hill is a significant part of the aquifer for Norton, and with the removal of such a substantial amount of porous limestone above Norton, it has contributed to the increased the speed in which rainwater reaches the lowest points (ie the floodplain which is Norton, as far as the River Derwent) and severely increased the pressure on the water table in the area. The incessant blasting in this quarry over the last 40 year has severely fractured the rock, and the natural fault which lies along the length of Whitewall/Bazleys Lane means that water flows increasingly fast to the springs at Spring Cottage and the surrounding area including the sites which are the subject of this Appeal. The springs at Spring Cottage are bubbling into Bazleys Lane as they have been for 3 weeks, and demonstrate the fullness of the water table and tendency to flooding in this area as these photographs demonstrate.


OPEN
7 DAYS
CAR


OPEN 7 DAYS
WASH
OPEN 7 DAYS
WASH

Appendix B – Committee Plan – Racehorse Trainers



Whitewall Quarry

04/10/2014

Traffic Survey

(North Bound Only)

Survey Location: Whitewall Corner
Survey Start 6.24 on 2nd October 2014
Survey Finish 17.40 on 2nd October 2014

No.	Time	Direction	Vehicle	Sheeted	Stone Load tonnes	Notes
1	6.32	S	Cloburn	Y		Lanarkshire Aggregates Company
2	6.45	N	Cloburn	Y	20	
3	6.58	N	CWQ	Y	20	Clifford Watts quarry lorry
4	7.03	N	CWQ	Y	20	
5	7.08	N	CWQ	Y	20	
6	7.12	S	RM(w)			White, non-branded ready-mix lorry
7	7.15	N	CWQ	Y	20	
8	7.15	N	CWQ	Y	20	
9	7.27	N	Bennett	Y	40	Ian Bennett Aggregates
10	7.36	N	RM(b)			Blue, non-branded ready-mix lorry
11	7.40	S	CWQ			
12	7.49	S	CWQ			
13	7.49	S	CWQ			
14	7.51	S	UMQ			Unmarked quarry lorry
15	7.52	N	CWRM			Clifford Watts ready-mix lorry
16	7.54	N	CWQ	Y	20	
17	8.12	N	UMQ	Y	20	
18	8.17	S	CWQ	Y	40	
19	8.25	S	CWRM			
20	8.33	N	CWQ	Y	40	
21	8.50	S	RM(b)			
22	8.56	N	Sweetings	Y	20	Sweetings of Leeds, haulage company
23	8.57	S	CWQ			
24	9.12	N	RM(b)			
25	9.18	S	CWQ			
26	9.23	N	CWRM			
27	9.25	S	CWRM			
28	9.27	S	CWQ			
29	9.37	N	RM(w)			
30	9.46	N	UMQ		20	
31	9.47	N	CWQ		20	
32	9.51	S	CWQ			
33	9.53	N	CWRM			
34	9.58	N	CWQ	Y	20	
35	10.02	S	CWGH	N		Clifford Watts grab hire - soil loaded
36	10.05	S	CWQ			
37	10.09	S	CWQ			
38	10.10	N	CWRM			
39	10.17	N	CWQ	Y	20	
40	10.25	S	CWQ			
41	10.25	S	CWQ			
42	10.34	S	CWRM			
43	10.40	N	CWQ	Y	20	
44	10.42	S	UMQ			
45	10.45	N	CWQ	Y	20	
46	10.46	S	CWQ			
47	10.47	N	CWQ	Y	20	
48	10.50	S	RM(b)			
49	10.51	N	CWRM			
50	10.55	N	CWGH	N	10	Clifford Watts grab hire - stone loaded
51	10.59	S	RM(w)			
52	11.12	N	UMQ	Y	20	
53	11.11	S	CWQ			
54	11.15	N	CWQ	Y	20	
55	11.20	S	CWRM			
56	11.27	N	CWQ	Y	20	
57	11.28	S	CWQ			
58	11.30	N	CWQ	Y	20	
59	11.45	N	CWCP			
60	11.47	S	CWQ			
61	11.48	N	RM(b)			
62	11.49	N	CWQ	Y	20	
63	11.56	N	RM(b)			
64	11.57	S	CWQ			
65	12.02	S	CWQ			

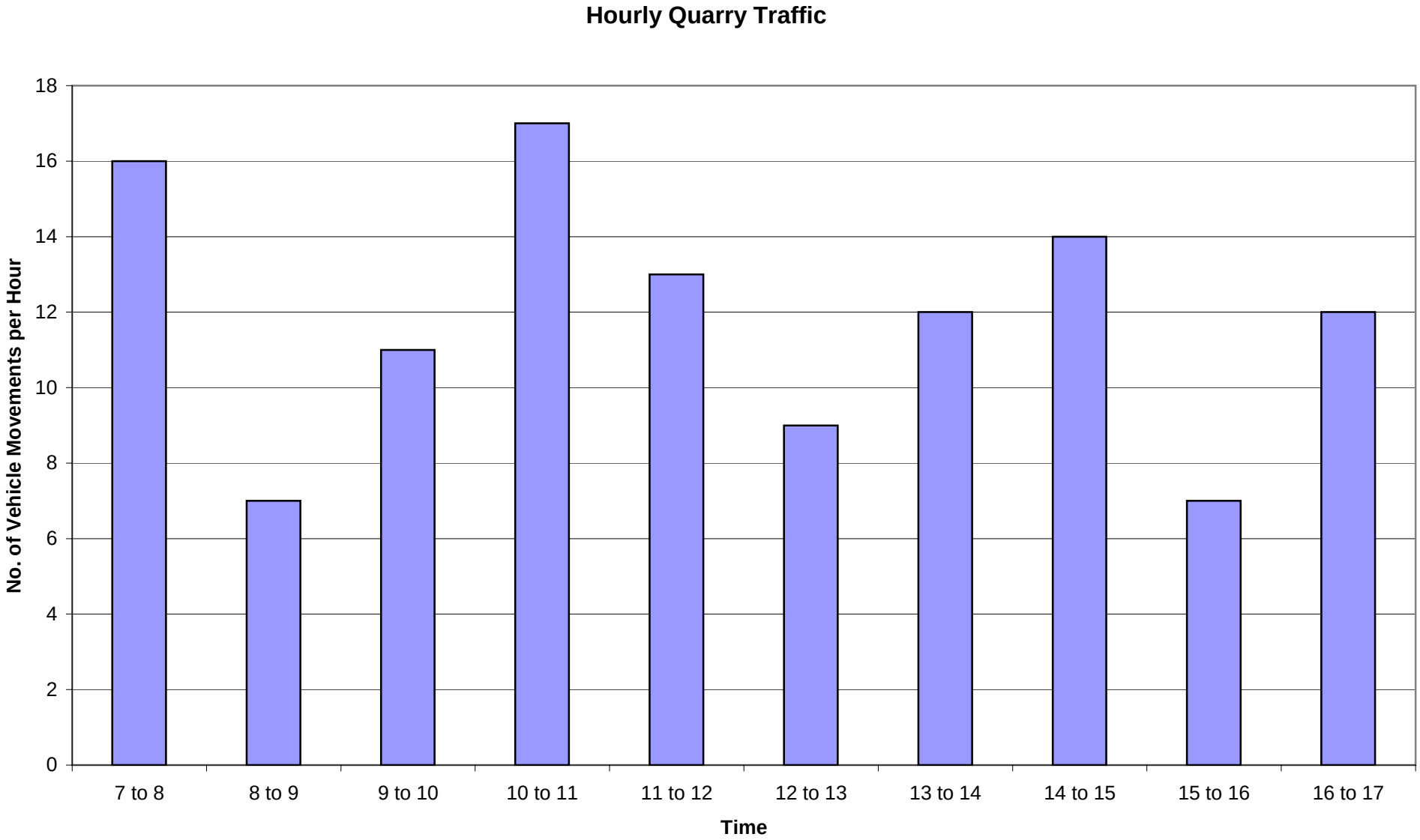
Whitewall Quarry

Traffic Survey

(North Bound Only)

No.	Time	Direction	Vehicle	Sheeted	Stone Load tonnes	Notes
66	12.04	S	CWRM			
67	12.06	N	CWQ	Y	20	
68	12.10	N	CWRM			
69	12.20	S	RM(w)			
70	12.38	S	CWQ			
71	12.52	N	CWRM			
72	12.53	N	CWQ	Y	20	
73	12.53	N	CWQ	Y	20	
74	13.02	S	Harker			Les Harker Leyburn - haulage company
75	13.02	S	Harker			
76	13.06	S	RM(b)			
77	13.17	N	RM(w)			
78	13.18	S	CWQ			
79	13.22	N	Harker	Y	20	
80	13.22	N	Harker	Y	20	
81	13.28	N	CWQ	Y	20	
82	13.31	N	CWQ	Y	20	
83	13.35	S	CWCP			
84	13.52	N	RM(b)			
85	13.54	S	CWQ			
86	14.05	S	CWQ			
87	14.05	S	CWQ			
88	14.07	S	CWRM			
89	14.08	S	CWRM			
90	14.13	N	CWQ	Y	20	
91	14.16	S	RM(w)			
92	14.18	N	CWQ	Y	20	
93	14.21	N	CWQ	Y	20	
94	14.37	S	CWQ			
95	14.40	N	RM(w)			
96	14.43	S	CWQ			
97	14.54	N	CWRM			
98	14.55	N	CWCP			
99	14.55	N	CWQ	Y	20	
100	15.05	S	Bennett			
101	15.08	N	CWQ	Y	20	
102	15.21	S	RM(b)			
103	15.25	N	CWRM			
104	15.26	S	RM(w)			
105	15.35	N	Bennett	Y	40	
106	15.50	N	RM(w)			
107	16.15	S	CWRM			
108	16.20	S	CWQ			
109	16.28	S	CWQ			
110	16.40	N	CWRM			
111	16.41	S	RM(w)			
112	16.42	S	CWCP			
113	16.47	S	CWRM			
114	16.47	S	CWQ			
115	16.57	N	RM(w)			
116	17.02	S	CWQ			
117	17.03	S	CWQ			
118	17.30	S	CWRM			

Estimated total annual tonnage of stone removed	830	per day
	4150	per 5 day week
	207500	per 50 week year
Total number of vehicle movements	118	
Total number of quarry movements	72	61%
Total number of ready-mix movements	40	34%
Total number of concrete products movements	4	3%
Total Number of grab hire movements	2	2%
Total Number of non Watts branded movements	35	30%


Hourly Quarry Traffic
No. of Vehicle Movements per Hour
0
2
4
6
8
10
12
14
16
18
7 to 8
8 to 9
9 to 10
10 to 11
11 to 12
12 to 13
13 to 14
14 to 15
15 to 16
16 to 17
Time

7 to 8	16
8 to 9	7
9 to 10	11
10 to 11	17
11 to 12	13
12 to 13	9
13 to 14	12
14 to 15	14
15 to 16	7
16 to 17	12

Client :	NYCC
Project :	140036 - Norton MCC
Site :	140036-01: B1248 Commercial Street, Norton
Date :	13 November 2014
AM Weather :	Mild/Cloudy
PM Weather :	Mild/Cloudy with some light rain

	Destination : Eastbound									Destination : Westbound								
	Car/Taxis	Lgv	Ogv1	Ogv2	Bus/Coach	Mc	Pc	Other	Total	Car/Taxis	Lgv	Ogv1	Ogv2	Bus/Coach	Mc	Pc	Other	Total
07:00	38	3	4	0	1	1	0	0	47	47	16	0	2	0	0	3	0	68
07:15	40	8	2	2	1	0	0	0	53	59	15	1	1	0	0	2	0	78
07:30	43	7	2	0	1	0	1	0	54	76	33	0	1	0	0	4	0	114
07:45	56	20	2	1	0	2	4	0	85	105	14	4	0	0	1	6	0	130
1 Hr	177	38	10	3	3	3	5	0	239	287	78	5	4	0	1	15	0	390
08:00	47	11	6	1	0	0	0	0	65	97	11	1	3	1	2	4	0	119
08:15	55	17	0	4	0	0	1	0	77	88	17	2	1	4	0	1	2	115
08:30	56	8	4	1	0	0	0	0	71	144	14	3	1	2	1	2	0	165
08:45	53	10	2	4	1	1	0	0	71	114	6	3	2	1	5	2	0	133
1 Hr	211	46	12	10	1	1	3	0	284	443	48	9	7	8	8	7	2	532
09:00	46	7	3	3	0	1	0	0	60	77	15	3	3	0	0	0	0	98
09:15	61	19	1	2	0	0	0	0	83	87	10	1	5	0	0	1	0	104
09:30	59	11	3	4	0	0	2	0	79	76	10	0	1	0	0	1	0	88
09:45	60	13	2	3	1	1	1	0	81	88	9	4	1	0	0	2	0	104
1 Hr	226	50	9	12	1	2	3	0	303	328	44	8	10	0	0	4	0	394
10:00	63	15	2	2	1	0	1	1	85	77	15	4	2	0	0	1	0	99
10:15	62	16	3	3	1	1	0	0	86	64	11	1	0	1	1	0	0	78
10:30	52	12	0	2	1	2	1	0	70	58	8	4	2	0	1	1	0	74
10:45	66	8	2	1	0	1	2	1	81	55	2	2	3	1	2	1	0	66
1 Hr	243	51	7	8	3	4	4	2	322	254	36	11	7	2	4	3	0	317
11:00	49	7	1	3	0	0	1	2	63	56	11	6	3	0	1	1	0	78
11:15	63	14	8	0	0	1	2	0	88	61	11	1	0	0	0	0	0	73
11:30	64	14	1	1	0	0	2	0	82	67	15	1	4	0	1	1	0	89
11:45	76	7	1	0	0	1	0	0	85	73	10	1	3	1	1	1	0	90
1 Hr	252	42	11	4	0	2	5	2	318	257	47	9	10	1	3	3	0	330
12:00	62	8	1	1	0	1	6	0	79	70	12	3	2	0	1	2	0	90
12:15	67	13	1	5	0	3	1	1	91	69	9	3	0	1	1	2	1	86
12:30	78	7	4	1	2	0	2	0	94	72	11	3	4	0	1	1	0	92
12:45	69	12	2	3	1	2	0	0	89	63	17	2	1	2	2	2	0	89
1 Hr	276	40	8	10	3	6	9	1	353	274	49	11	7	3	5	7	1	357
6 Hrs	1385	267	57	47	11	18	29	5	1819	1843	302	53	45	14	21	39	3	2320

	Destination : Eastbound									Destination : Westbound								
	Car/Taxis	Lgv	Ogv1	Ogv2	Bus/Coach	Mc	Pc	Other	Total	Car/Taxis	Lgv	Ogv1	Ogv2	Bus/Coach	Mc	Pc	Other	Total
13:00	53	14	2	0	0	0	0	0	69	71	16	2	1	0	2	2	0	94
13:15	82	14	1	0	0	0	2	0	99	54	20	2	3	0	0	0	0	79
13:30	70	16	3	4	1	0	5	0	99	60	10	0	5	0	3	2	0	80
13:45	72	11	0	2	0	2	0	0	87	56	12	2	1	0	2	3	0	76
1 Hr	277	55	6	6	1	2	7	0	354	241	58	6	10	0	7	7	0	329
14:00	68	15	1	1	0	1	0	0	86	63	16	2	2	0	1	3	0	87
14:15	94	12	0	0	0	2	0	0	108	71	15	1	1	0	1	2	0	91
14:30	75	10	3	4	0	2	2	0	96	79	12	1	0	0	1	2	0	95
14:45	77	18	1	2	0	1	1	1	101	74	13	3	2	1	0	0	0	93
1 Hr	314	55	5	7	0	6	3	1	391	287	56	7	5	1	3	7	0	366
15:00	62	13	0	5	0	0	4	0	84	82	14	2	1	0	0	2	0	101
15:15	110	16	3	1	8	1	2	0	141	72	9	3	2	0	0	0	0	86
15:30	95	19	0	0	1	1	0	0	116	88	13	2	1	1	0	0	0	105
15:45	95	9	0	1	0	2	0	0	107	77	15	0	1	0	1	0	0	94
1 Hr	362	57	3	7	9	4	6	0	448	319	51	7	5	1	1	2	0	386
16:00	67	17	2	2	0	1	1	1	91	51	9	1	0	2	0	1	0	64
16:15	106	13	2	0	0	3	1	0	125	73	13	1	1	1	0	1	0	90
16:30	92	10	1	1	1	0	1	0	106	81	8	3	2	0	1	2	0	97
16:45	106	15	0	0	1	1	1	0	124	72	9	0	2	1	0	3	0	87
1 Hr	371	55	5	3	2	5	4	1	446	277	39	5	5	4	1	7	0	338
17:00	106	12	0	1	0	0	8	0	127	100	5	1	2	1	0	9	0	118
17:15	80	7	0	0	1	0	4	0	92	88	7	1	0	0	2	2	0	100
17:30	119	12	0	0	0	3	2	0	136	82	7	0	2	1	4	3	0	99
17:45	101	12	0	0	0	2	2	0	117	86	7	2	1	1	2	3	0	102
1 Hr	406	43	0	1	1	5	16	0	472	356	26	4	5	3	8	17	0	419
18:00	70	8	0	0	1	0	0	0	79	77	4	0	0	1	0	1	0	83
18:15	85	7	0	0	0	3	0	0	95	69	5	0	1	0	0	4	0	79
18:30	91	3	0	0	0	2	2	0	98	60	5	0	0	1	1	1	0	68
18:45	78	5	0	0	1	0	0	0	82	68	4	0	1	1	0	1	0	75
1 Hr	322	23	0	0	2	5	2	0	354	274	18	0	2	3	1	7	0	305
6 Hrs	2052	288	19	24	15	27	38	2	2465	1754	248	29	32	12	21	47	0	2143
Total	3437	555	76	71	26	45	67	7	4284	3597	550	82	77	26	42	86	3	4463

Table 2.1 Commercial Vehicle Classes and Categories

Commercial vehicle (cv)	cv class*	cv category
	Buses and Coaches	PSV
	2-axle rigid	OGV1
	3-axle rigid	
	3-axle articulated	OGV2
	4-axle rigid	
	4-axle articulated	
	5-axle articulated	
	6 (or more) -axle articulated	

* Classed by axles in contact with the road
PSV = Public Service Vehicle
OGV = Other Goods Vehicle

Example

Count data converted to AADF using COBA 11 classification.

Buses and Coaches	32	PSV
2 axle Rigid	467	OGV1
3 axle Rigid	67	”
3 and 4 axle Articulated	274	OGV2
4 axle Rigid	49	”
5 axle Articulated	938	”
6 or more axle	530	”
Total Flow	2,357	cv/d
Total OGV2 Flow	1,791	cv/d
Percentage OGV2	76%	

2.11 Typical average commercial vehicle flow compositions are given in Table 2.2 (Department for Transport, 2003). There is a wide variation in the values for the proportion of commercial vehicles on the trunk road network and the values in the table may be exceeded in many cases.

Table 2.2 Typical Commercial Vehicle Flow Compositions

Road Type	Motorway or Trunk	Principal
Percentage of Commercial Vehicles (% cv) within AADF	11	4
% OGV2	65	38

2.12 For new road designs, the percentage of OGV2 vehicles shall be obtained by calculation or modelling but shall not be less than the percentage given in Figure 2.1.