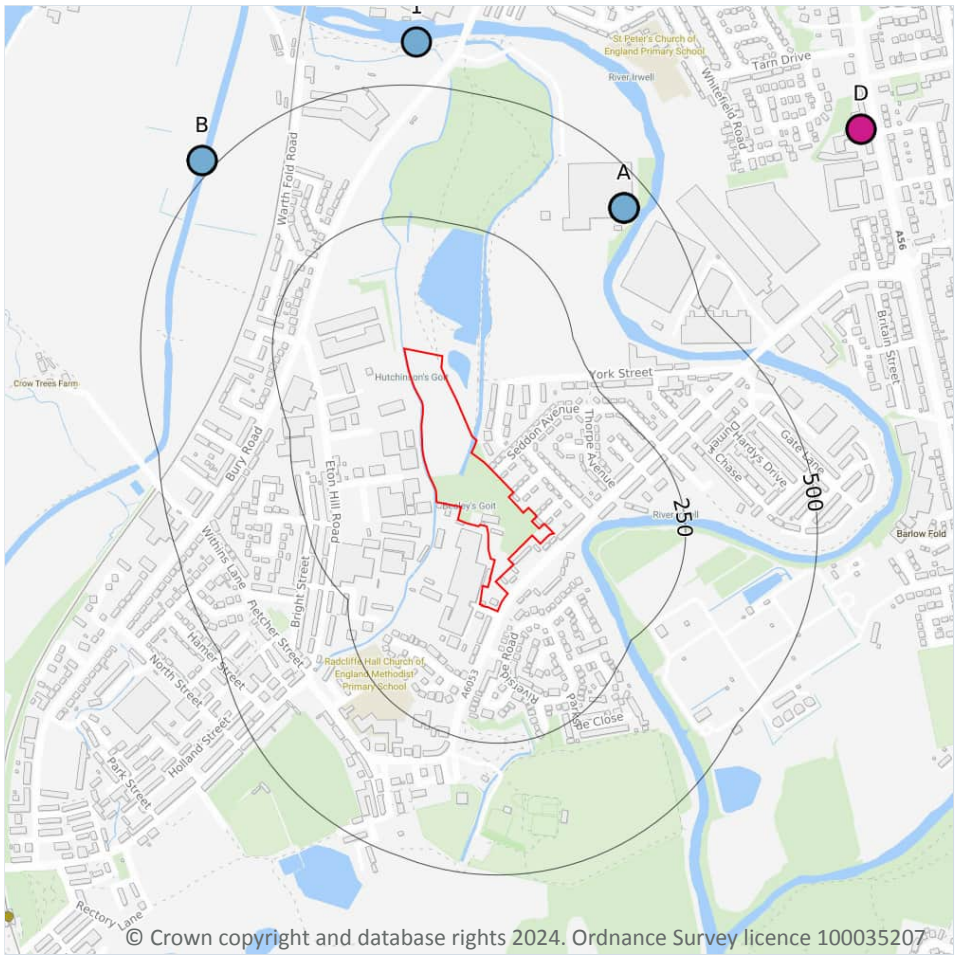
Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	17

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
D	903m NE	Status: Historical Licence No: 2569001258 Details: Pollution Remediation Direct Source: Ground Water - North West Region Point: "WELL POINT SYSTEM AT MANCHESTER ROAD, BURY" Data Type: Point Name: TOTALFINAELF UK LTD Easting: 380450 Northing: 408850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/06/2002 Expiry Date: - Issue No: 1 Version Start Date: 12/06/2002 Version End Date: -
D	903m NE	Status: Historical Licence No: 2569001258 Details: Pollution Remediation Direct Source: Ground Water - North West Region Point: WELL POINT SYSTEM AT MANCHESTER ROAD, BURY Data Type: Point Name: TOTALFINAELF UK LTD Easting: 380450 Northing: 408850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/06/2002 Expiry Date: - Issue No: 1 Version Start Date: 12/06/2002 Version End Date: -
-	1169m SE	Status: Active Licence No: 2569002264R02 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: Bury Golf Club Limited Easting: 380963 Northing: 407673	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: NPS/WR/016967 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -
-	1169m SE	Status: Historical Licence No: 2569002264R1 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380963 Northing: 407673	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 01/06/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -

ID	Location	Details	
-	1177m SE	Status: Historical Licence No: 2569002264 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY" Data Type: Point Name: BURY GOLF CLUB Easting: 380970 Northing: 407670	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/04/1997 Expiry Date: 16-Apr-07 Issue No: 100 Version Start Date: 17/04/1997 Version End Date: -
-	1177m SE	Status: Historical Licence No: 2569002264 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380970 Northing: 407670	Annual Volume (m^3): 9000 Max Daily Volume (m^3): 55 Original Application No: - Original Start Date: 17/04/1997 Expiry Date: 16/04/2007 Issue No: 101 Version Start Date: 27/01/2004 Version End Date: 16/04/2007
-	1177m SE	Status: Historical Licence No: 2569002264R1 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380970 Northing: 407670	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 01/06/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "WELLPOINT SYSTEM AT PREMISES, RADCLIFFE" Data Type: Point Name: JAMES HALSTEAD LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/01/1995 Version End Date: -

ID	Location	Details	
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: WELLPOINT SYSTEM AT PREMISES, RADCLIFFE Data Type: Point Name: POLYFLOR LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: WELL POINT SYSTEM AT PREMISES RADCLIFFE Data Type: Point Name: POLYFLOR LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): 68200 Max Daily Volume (m^3): 382 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
-	1699m S	Status: Historical Licence No: NW/069/0004/004 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT WHITEFIELD, MANCHESTER Data Type: Point Name: Total Fitness Health Clubs Limited Easting: 380450 Northing: 406381	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 29/01/2014 Expiry Date: 31/03/2020 Issue No: 1 Version Start Date: 29/01/2014 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS, BURY NEW ROAD, WHITEFIELD, BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -

ID	Location	Details	
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS BURY NEW ROAD WHITEFIELD BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 17/02/2005 Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1992m SE	Status: Active Licence No: 2569004042 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, STANLEY ROAD, WHITEFIELD Data Type: Point Name: DANISH CROWN UK LIMITED Easting: 380900 Northing: 406300	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 21 Original Application No: 2396B Original Start Date: 18/07/1973 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2008 Version End Date: -

ID	Location	Details	
-	1992m SE	Status: Historical Licence No: 2569004042 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, STANLEY ROAD, WHITEFIELD" Data Type: Point Name: DANISH BACON INDEPENDENT DBI LTD Easting: 380900 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1986 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**22**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
A	444m NE	Status: Historical Licence No: 2569001245 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -

ID	Location	Details	
A	444m NE	Status: Historical Licence No: 2569001245 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -

ID	Location	Details	
B	524m NW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY" Data Type: Point Name: BRITISH WATERWAYS Easting: 379200 Northing: 408790	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
B	524m NW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY Data Type: Point Name: BRITISH WATERWAYS BOARD Easting: 379200 Northing: 408790	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
1	582m N	Status: Historical Licence No: NW/069/0001/004 Details: Hydroelectric Power Generation Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BEALEY'S WEIR Data Type: Point Name: Resolution Hydro Limited Easting: 379607 Northing: 409015	Annual Volume (m^3): 80000000 Max Daily Volume (m^3): 259200 Original Application No: NPS/WR/004482 Original Start Date: 20/12/2010 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2019 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	691m N	Status: Historical Licence No: 2569001158 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): 3636800 Max Daily Volume (m^3): 14183.52 Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): 3636800 Max Daily Volume (m^3): 14183.52 Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	911m SW	Status: Historical Licence No: 2569004004 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY SURFACE DRAINAGE ATRADCLIFFE Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378800 Northing: 407800	Annual Volume (m^3): 40004.8 Max Daily Volume (m^3): 109.104 Original Application No: - Original Start Date: 28/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOR FED BY UNNAMED TRIBUTARY OF RIVER IRWELL Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): 270000 Max Daily Volume (m^3): 8728.32 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOR FED BY UNNAMED TRIBUTARY OF RIVER IRWELL Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): 270000 Max Daily Volume (m^3): 8728.32 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1423m N	Status: Historical Licence No: 2569001056 Details: Dust suppression Direct Source: "Surface, Non-Tidal - North West Region" Point: "THE RIVER IRWELL AT HINDS LANE, BURY" Data Type: Point Name: J B SKIPS & SERVICES LTD Easting: 379450 Northing: 409850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1997 Version End Date: -
-	1423m N	Status: Historical Licence No: 2569001056 Details: Dust suppression Direct Source: Surface, Non-Tidal - North West Region Point: THE RIVER IRWELL AT HINDS LANE, BURY Data Type: Point Name: J B SKIPS & SERVICES LTD Easting: 379450 Northing: 409850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1997 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	5

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
-	1699m S	Status: Historical Licence No: NW/069/0004/004 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT WHITEFIELD, MANCHESTER Data Type: Point Name: Total Fitness Health Clubs Limited Easting: 380450 Northing: 406381	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 29/01/2014 Expiry Date: 31/03/2020 Issue No: 1 Version Start Date: 29/01/2014 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS, BURY NEW ROAD, WHITEFIELD, BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS BURY NEW ROAD WHITEFIELD BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 17/02/2005 Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -

ID	Location	Details	
-	1914m E	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

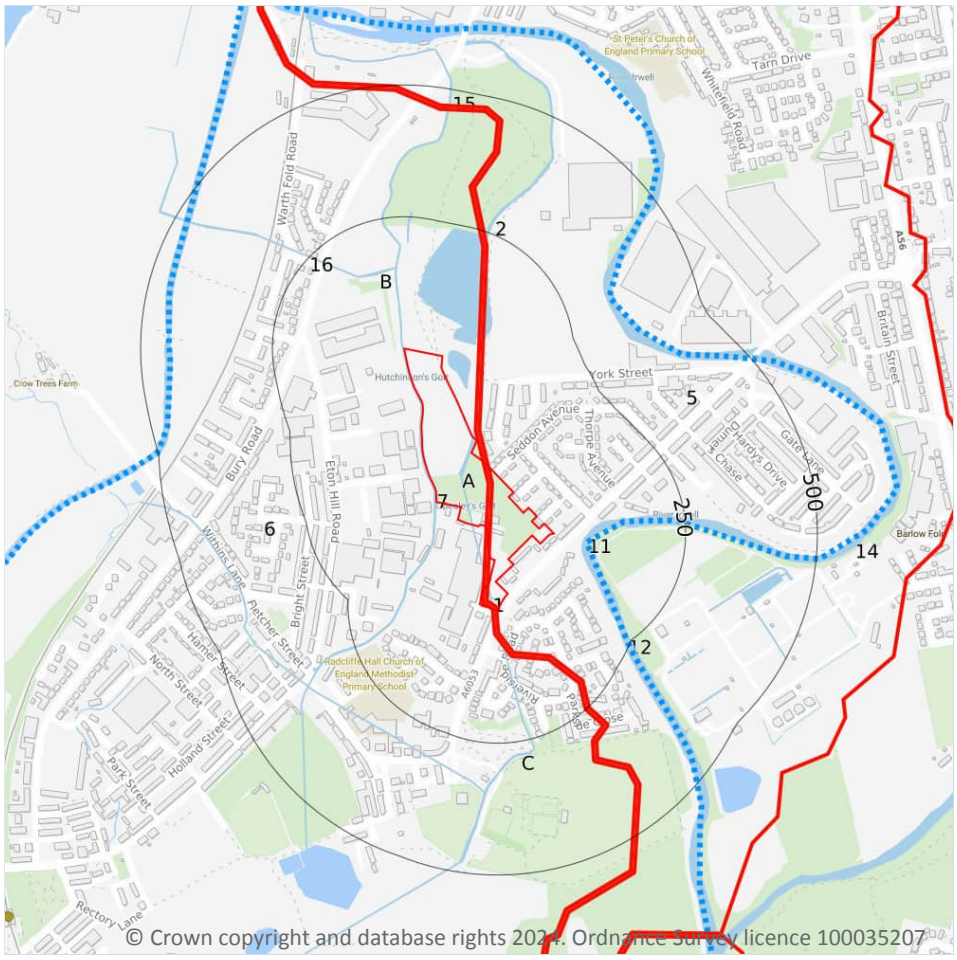
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	12

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bealey's Goit

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Bealey's Goit**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Bealey's Goit**
7	1m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hutchinson's Goit
11	57m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	64m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Irwell
14	65m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Irwell
B	150m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
15	153m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hutchinson's Goit
16	161m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
C	208m S	Manmade watercourse for water transfer.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bealey's Goit

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	7

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 112 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	2

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
5	**On site**	**River**	**Irwell (Rossendale STW to Roch)**	**GB112069064620**	**Croal Irwell**	**Irwell**
6	**On site**	**River**	**Irwell (Roch to Croal)**	**GB112069060840**	**Croal Irwell**	**Irwell**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	2

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
13	64m SE	River	Irwell (Rossendale STW to Roch)	GB112069064620 ↗	Moderate	Fail	Moderate	2019
-	766m SE	River	Irwell (Roch to Croal)	GB112069060840 ↗	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

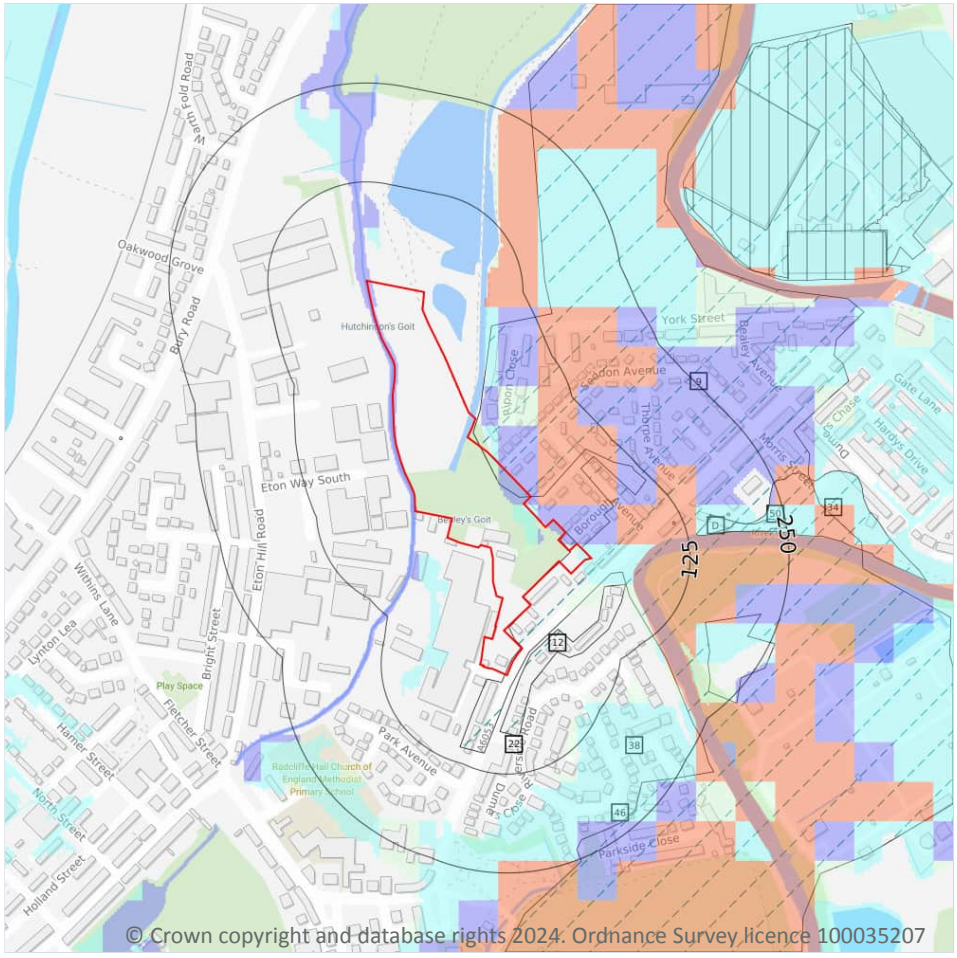
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Northern Manchester Carboniferous Aquifers**	**GB41202G101800 ↗**	**Poor**	**Poor**	**Good**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



7.1 Risk of flooding from rivers and the sea

Records within 50m	19

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 116 >**

Distance	Flood risk category
On site	**Medium**
0 - 50m	High

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	**10**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

Features are displayed on the River and coastal flooding map on **page 116 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
9	**On site**	**Radcliffe And Redvales**	**2015-12-26 2015-12-26**	**Main river**	**Channel capacity exceeded (no raised defences)**	**Fluvial**
12	13m S	Radcliffe And Redvales	2015-12-26 2015-12-26	Main river	Channel capacity exceeded (no raised defences)	Fluvial
22	85m S	Ea01313_21 January 2008_Bealey's Goyt_Blackford Br	2008-01-21 2008-01-22	Main river	Unknown	Fluvial
B	112m E	Ea01313_14 June 2002_River Irwell_Clavergateltd	2002-06-14 2002-06-15	Ordinary watercourse	Channel capacity exceeded (no raised defences)	No data
D	136m E	Irwe	2002-06-14 2002-06-15	Main river	Channel capacity exceeded (no raised defences)	Fluvial
34	154m E	Ea01313_22_June_2012_Morris street	2012-06-22 2012-06-22	Main river	Channel capacity exceeded (no raised defences)	Fluvial
D	180m E	Irwe	1991-12-21 1991-12-22	Unknown	Other	No data
38	182m SE	Ea01313_21 January 2008_River Irwell_Blackford Bri	2008-01-21 2008-01-22	Main river	Unknown	Fluvial
46	223m SE	Ea01313_21 January 2008_Bealey's Goyt_Blackford Br	2008-01-21 2008-01-22	Main river	Unknown	Fluvial
50	238m E	Irwe	1995-01-28 1995-01-29	Unknown	Other	No data

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

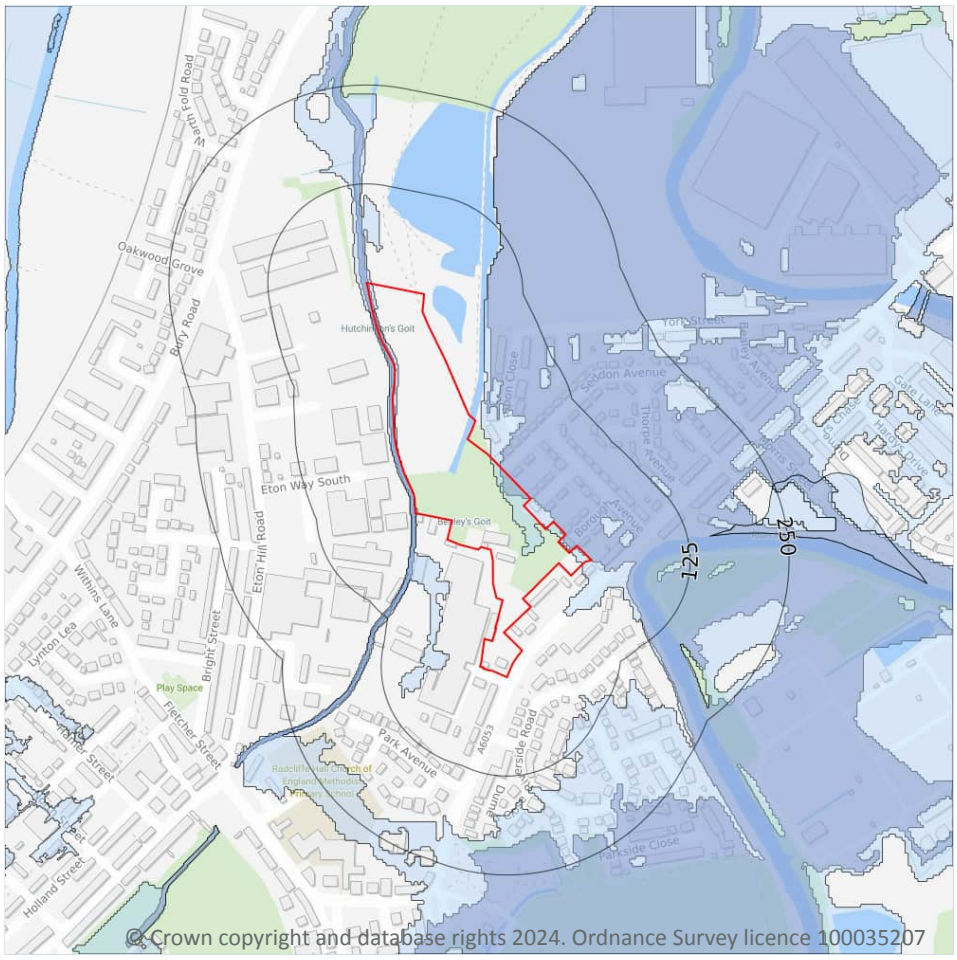
7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 116 >**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	1

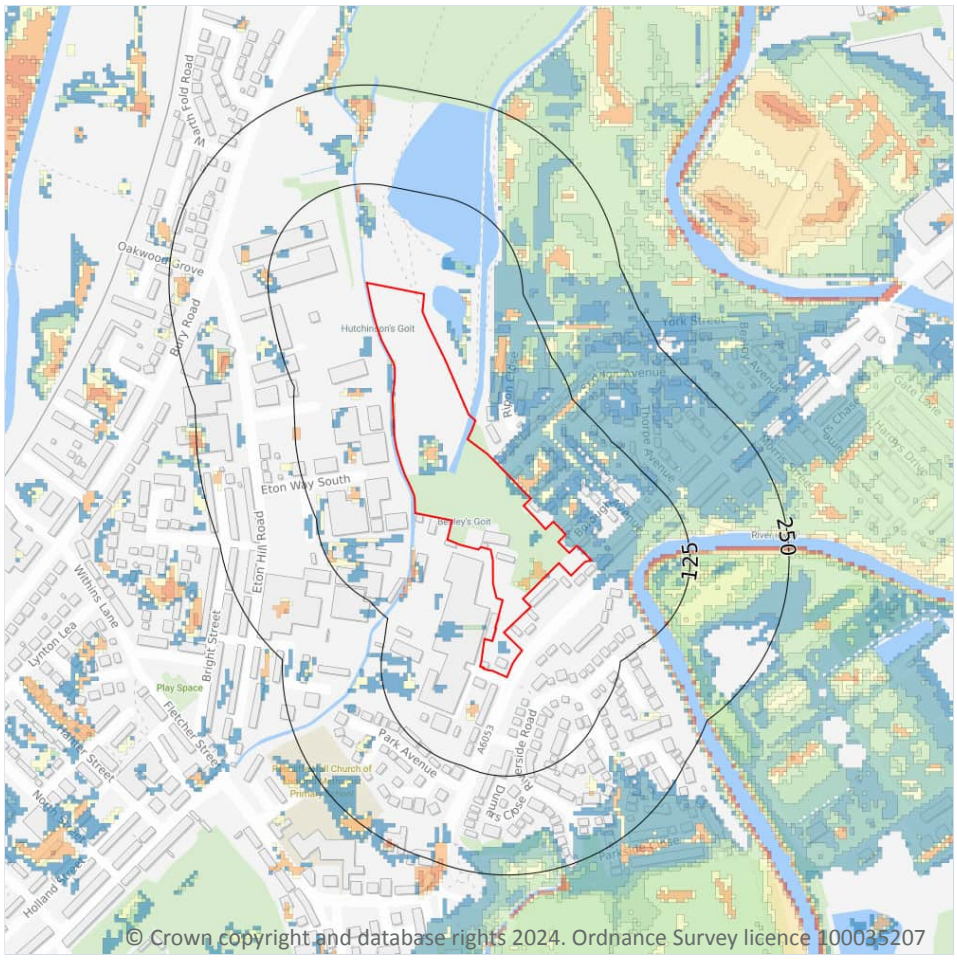
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 116 >**

Location	Type
On site	**Zone 3 - (Fluvial Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 121 >**

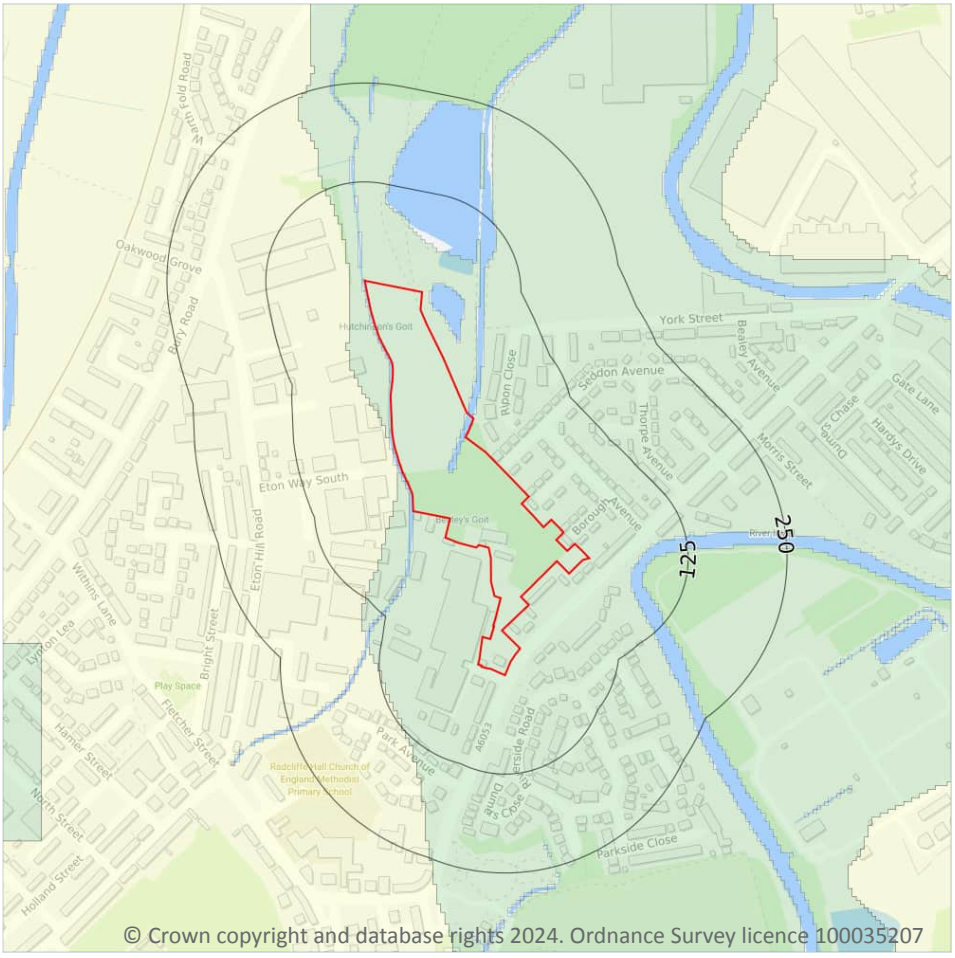
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site	**Low**
Highest risk within 50m	**Moderate**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 123 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	4

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 124 >**

ID	Location	Name	Data source
-	1532m E	Hollins Vale	Natural England
-	1703m SW	Chapelfield	Natural England
-	1721m SW	Chapelfield	Natural England
-	1753m SW	Chapelfield	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	6

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 124 >**

ID	Location	Name	Local Authority name
1	56m SE	Merseyside and Greater Manchester	Bury
2	303m NW	Merseyside and Greater Manchester	Bury
3	975m SE	Merseyside and Greater Manchester	Bury
-	1591m S	Merseyside and Greater Manchester	Bury
6	1671m NW	Merseyside and Greater Manchester	Bury
8	1823m NW	Merseyside and Greater Manchester	Bury

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

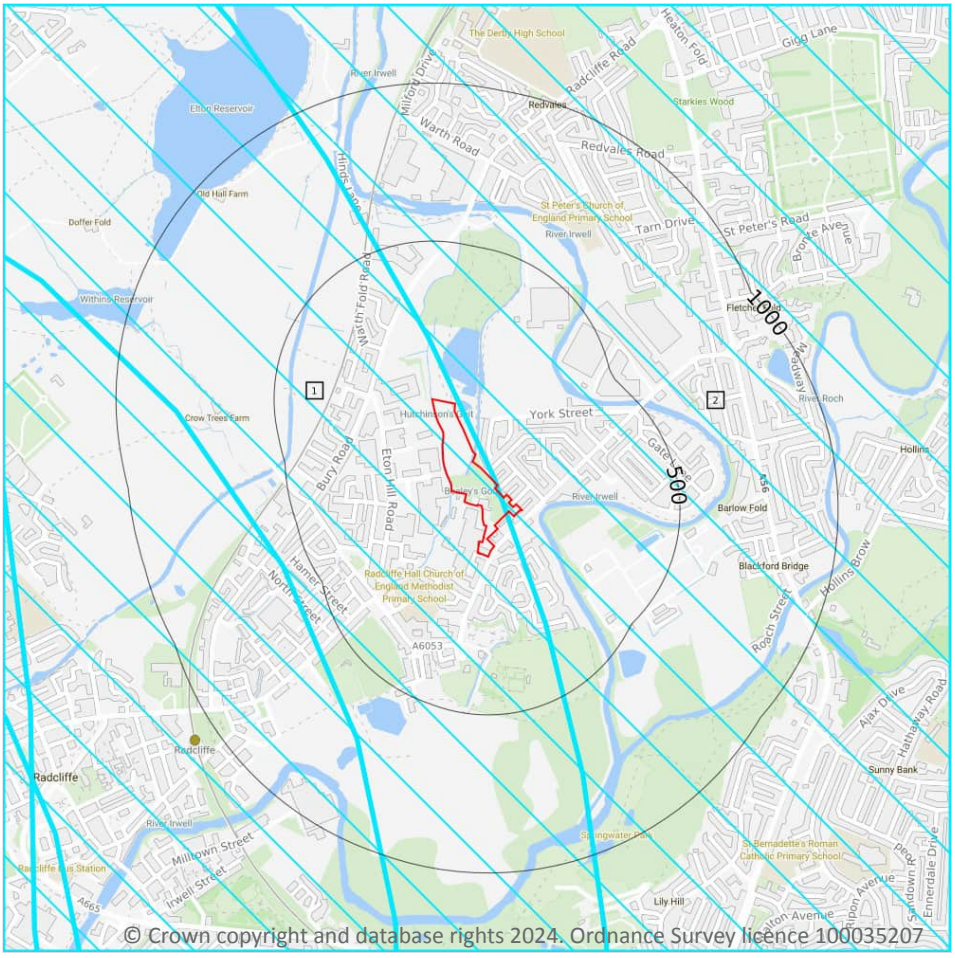
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 129 >**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**
2	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

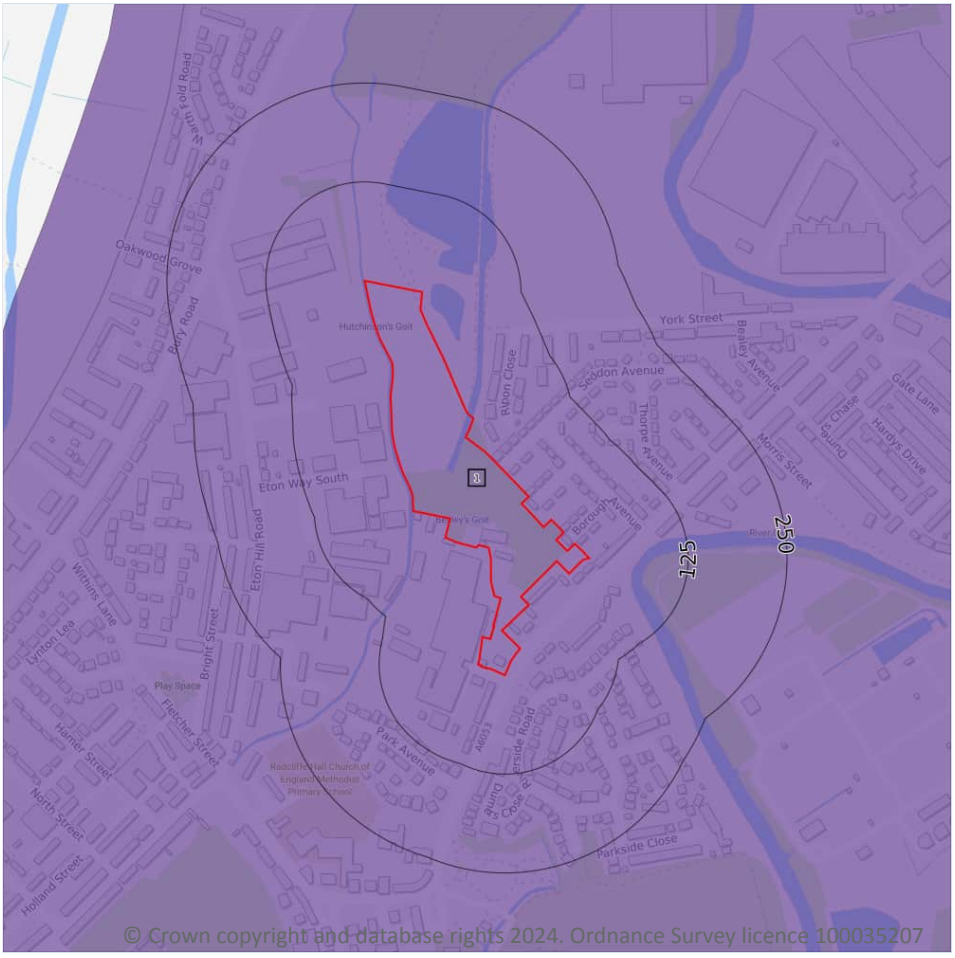
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 133 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

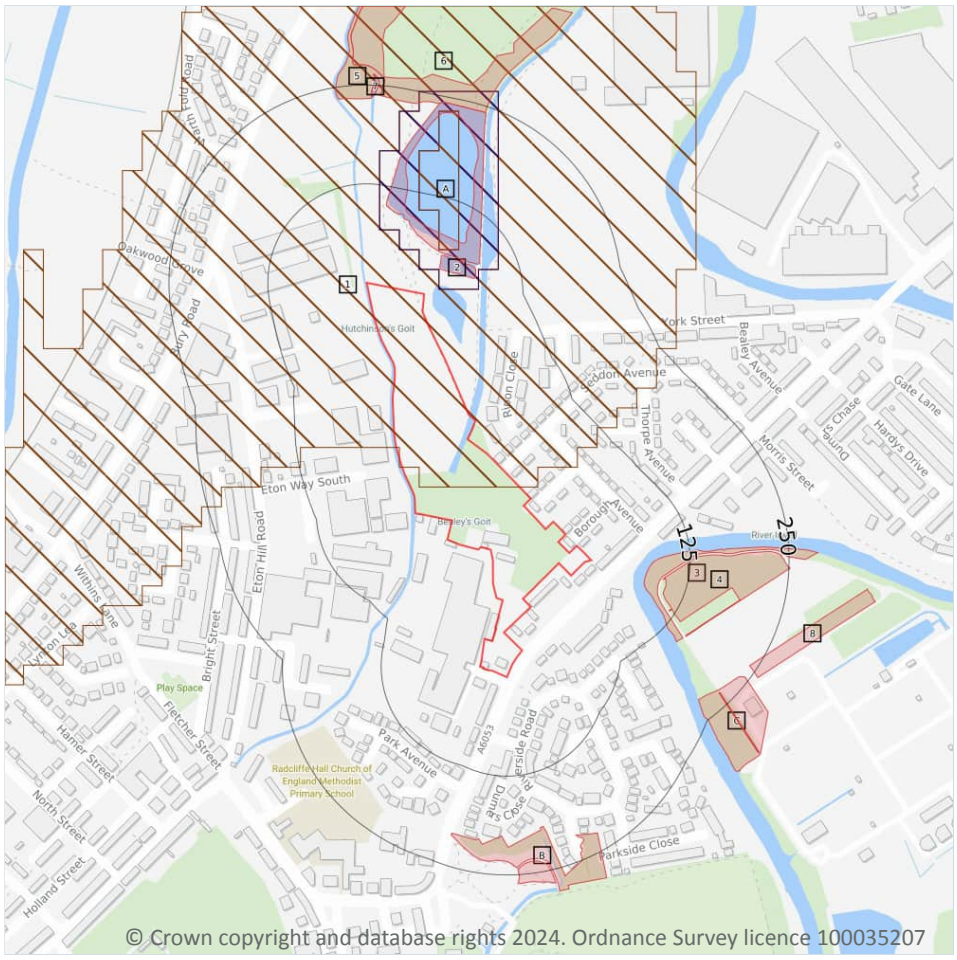
12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



13.1 Priority Habitat Inventory

Records within 250m	12

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 135 >**

ID	Location	Main Habitat	Other habitats
2	38m N	Lowland fens	Main habitat: LFENS (INV > 50%)
A	57m N	Lowland fens	Main habitat: LFENS (INV > 50%)
3	72m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	94m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
B	194m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	222m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	233m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	233m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	234m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	234m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	235m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	241m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**3**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 135 >**

ID	Location	Type	Habitat
1	**On site**	**Network Enhancement Zone 2**	**Not specified**
A	20m N	Primary Habitat	Lowland fens
A	59m N	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

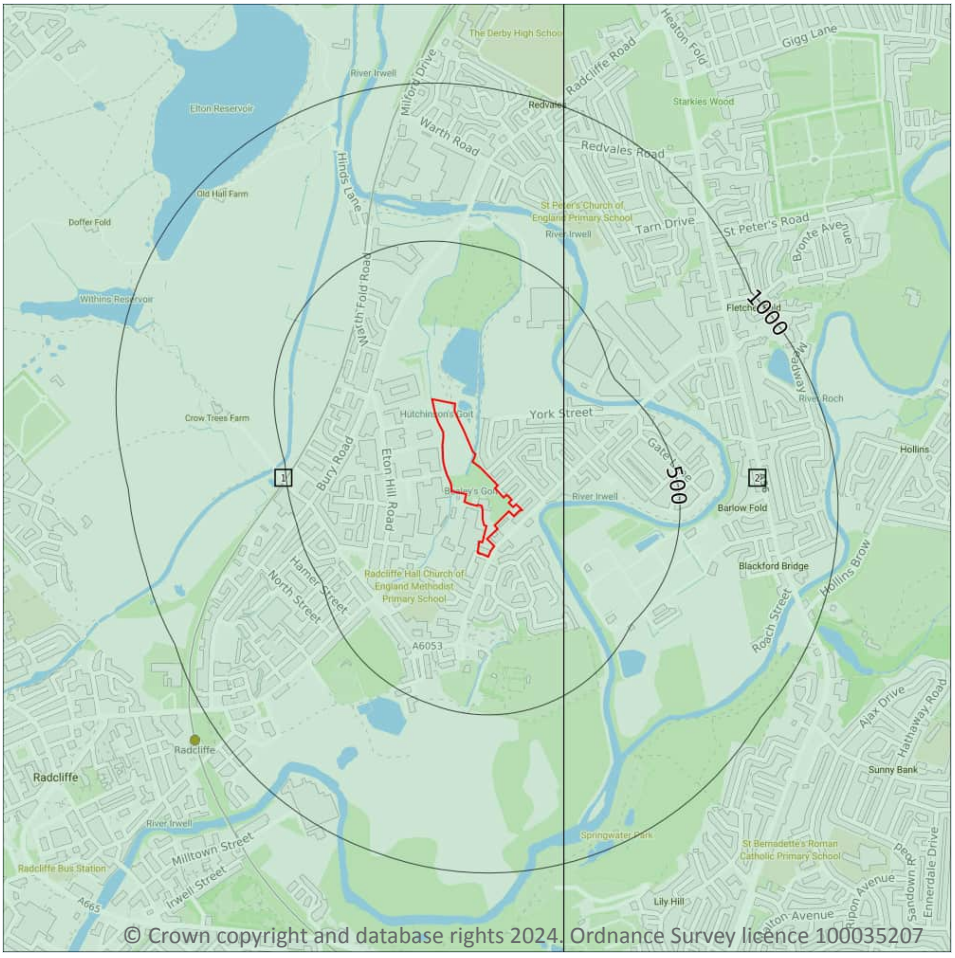
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	2

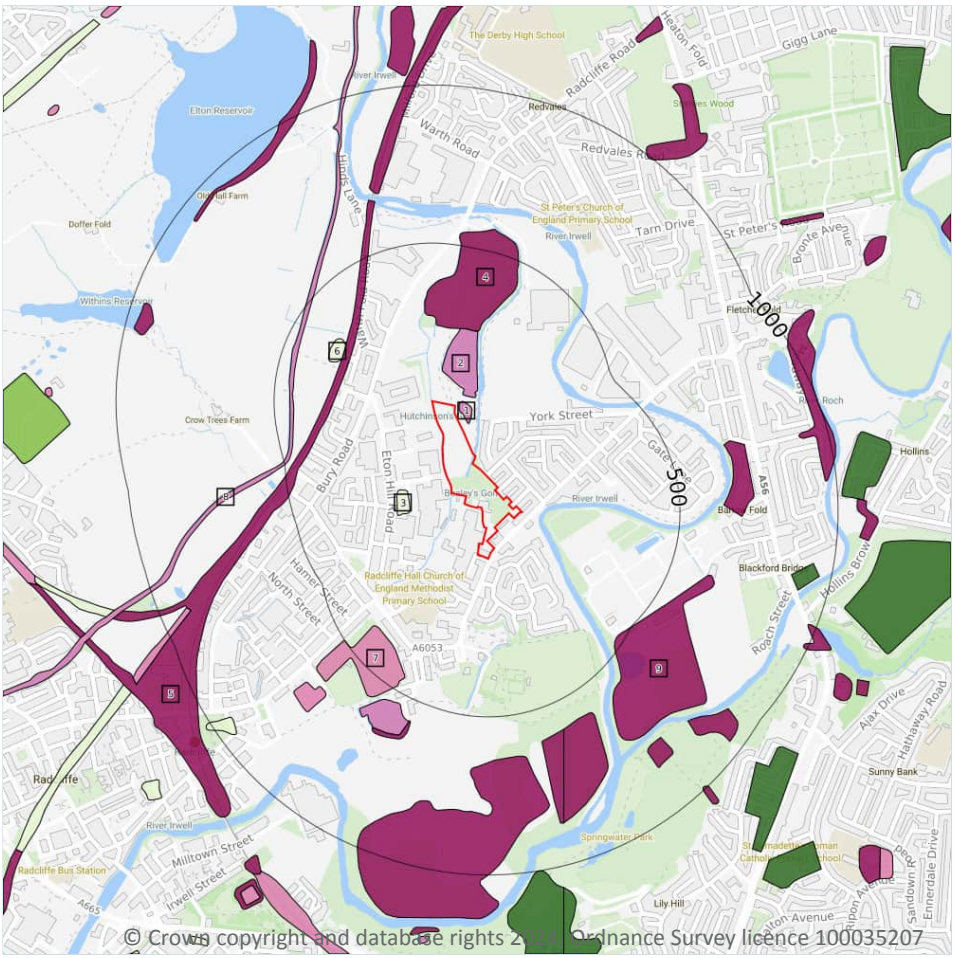
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 138 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SD70NE**
2	132m E	Full	Full	Full	Full	SD80NW

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



14.2 Artificial and made ground (10k)

Records within 500m	9

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

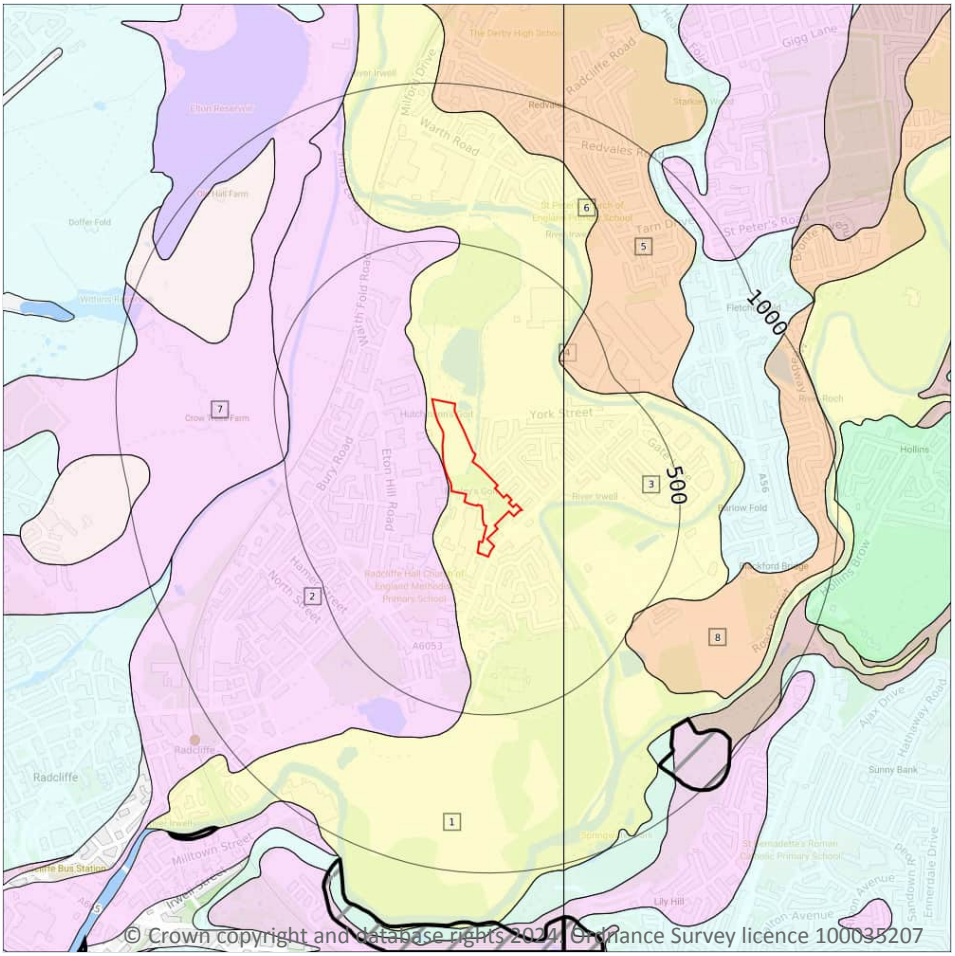
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 139 >**

ID	Location	LEX Code	Description	Rock description
1	13m N	WGR-VOID	Worked Ground (Undivided)	Void
2	43m N	WGR-VOID	Worked Ground (Undivided)	Void
3	133m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	237m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

ID	Location	LEX Code	Description	Rock description
5	289m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	315m NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
7	388m SW	WGR-VOID	Worked Ground (Undivided)	Void
8	438m W	WGR-VOID	Worked Ground (Undivided)	Void
9	476m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **8**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 141 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**ALV-XCZSV**	**Alluvium - Clay, Silt, Sand And Gravel**	**Clay, Silt, Sand And Gravel**
2	4m W	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	132m E	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	356m NE	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
5	362m NE	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
6	385m NE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
7	455m W	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
8	487m SE	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

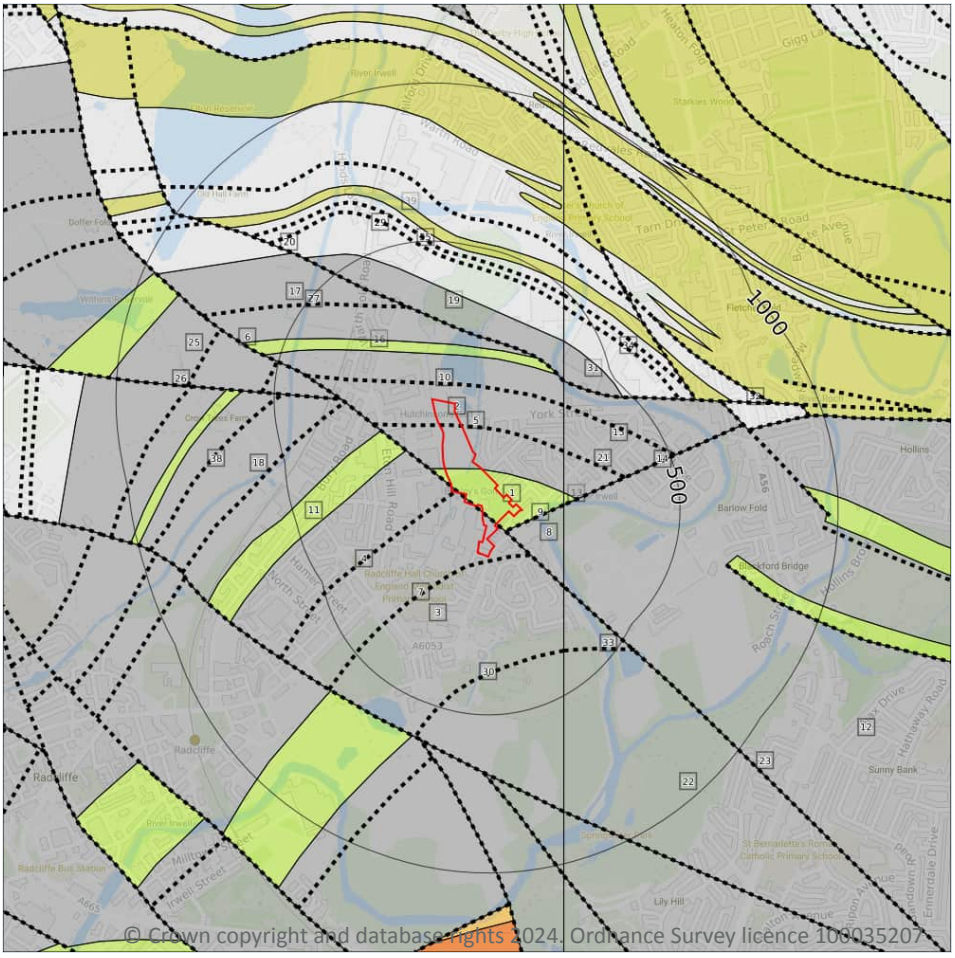
14.4 Landslip (10k)

Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **18**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 143 >**

ID	Location	LEX Code	Description	Rock age
1	On site	PR-SDST	Peel Hall Rock - Sandstone	Duckmantian Sub-age
2	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
3	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age

ID	Location	LEX Code	Description	Rock age
8	25m SE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
11	116m W	PR-SDST	Peel Hall Rock - Sandstone	Duckmantian Sub-age
12	132m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
13	133m E	PR-SDST	Peel Hall Rock - Sandstone	Duckmantian Sub-age
15	143m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
16	144m N	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
17	177m N	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
18	180m NW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
19	225m N	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
22	254m SE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
25	287m NW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
29	320m N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
31	351m NE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
34	397m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
39	479m N	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**22**

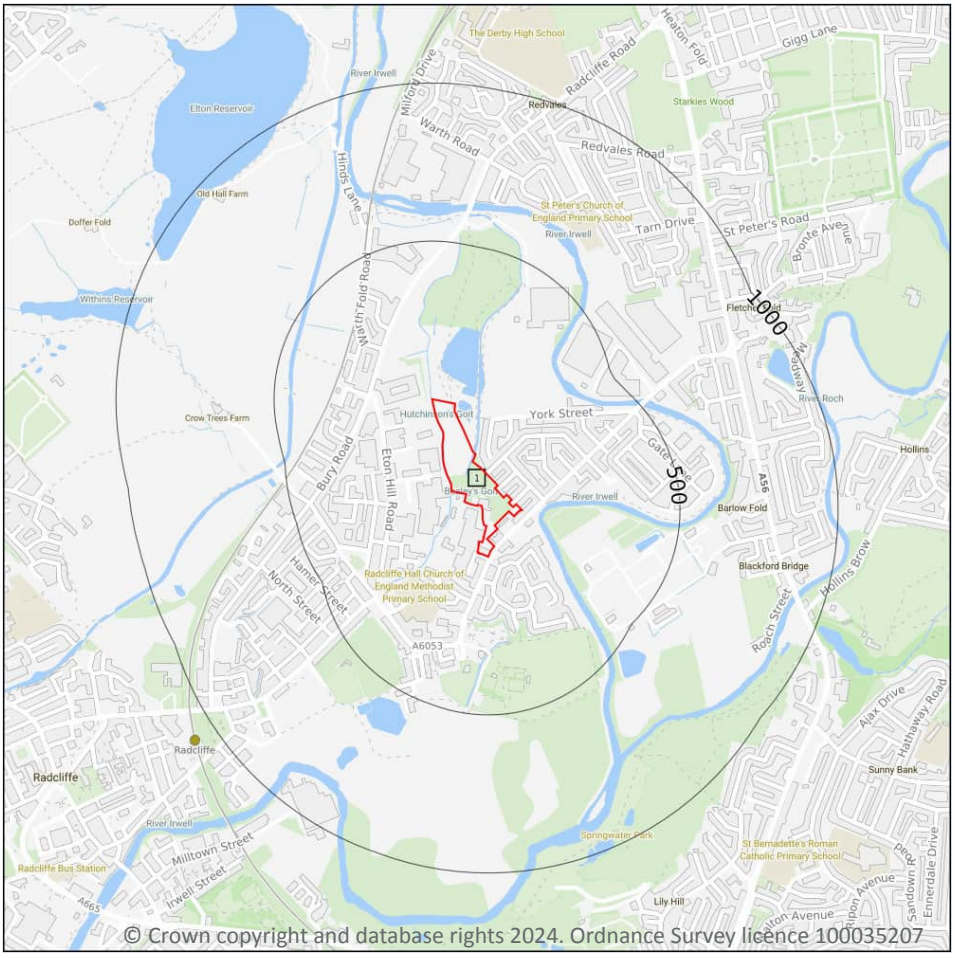
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 143 >**

ID	Location	Category	Description
4	**On site**	**ROCK**	**Coal seam, inferred**
5	**On site**	**ROCK**	**Coal seam, inferred**
6	**On site**	**FAULT**	**Normal fault, inferred; crossmarks on downthrow side**
7	14m S	ROCK	Coal seam, inferred
9	25m SE	FAULT	Normal fault, inferred; crossmarks on downthrow side
10	51m N	ROCK	Coal seam, inferred
14	133m E	FAULT	Normal fault, inferred; crossmarks on downthrow side
20	225m N	FAULT	Normal fault, inferred; crossmarks on downthrow side
21	226m E	ROCK	Coal seam, inferred
23	254m SE	FAULT	Normal fault, inferred; crossmarks on downthrow side
24	276m NW	ROCK	Coal seam, inferred
26	287m NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
27	302m N	ROCK	Coal seam, inferred
28	319m NE	ROCK	Coal seam, inferred
30	347m S	ROCK	Coal seam, inferred
32	351m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
33	381m SE	ROCK	Coal seam, inferred
35	431m N	ROCK	Coal seam, inferred
36	455m N	ROCK	Coal seam, inferred
37	461m NE	ROCK	Coal seam, inferred
38	473m NW	ROCK	Coal seam, inferred
40	487m NE	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

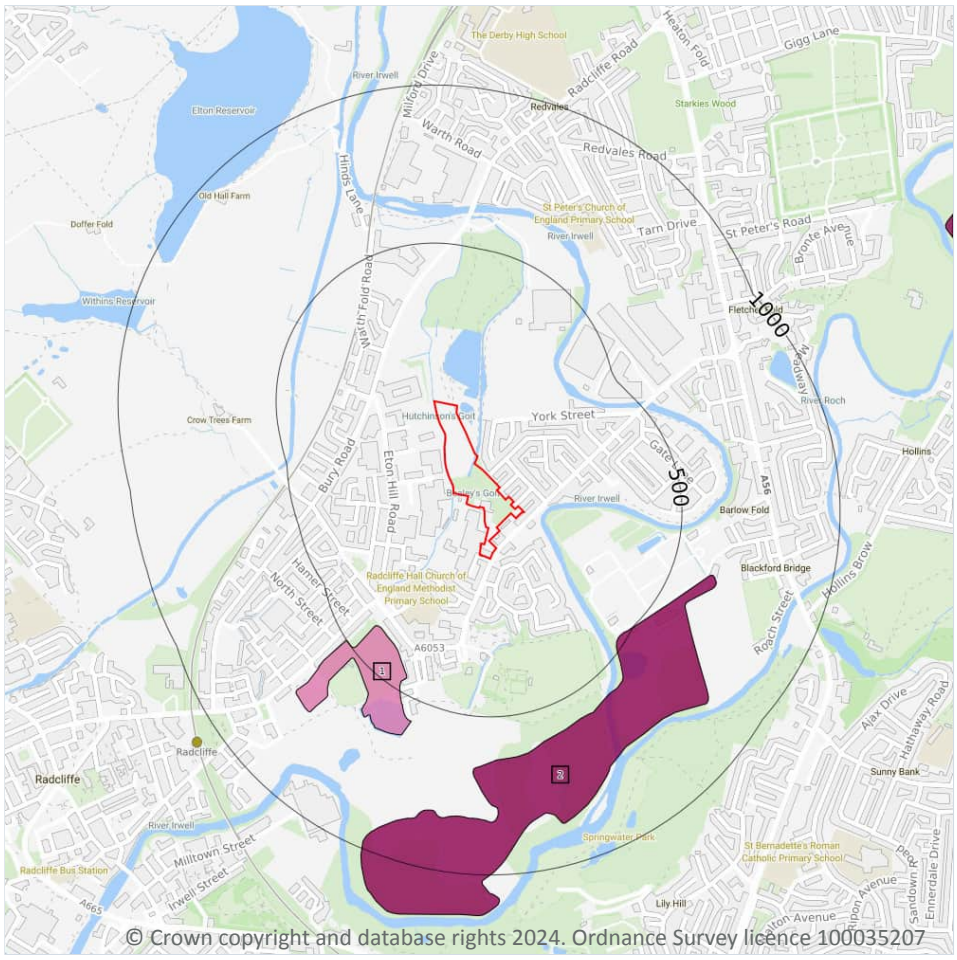
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 146 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**EW085_manchester_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



15.2 Artificial and made ground (50k)

Records within 500m	2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 147 >**

ID	Location	LEX Code	Description	Rock description
1	388m SW	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	476m SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

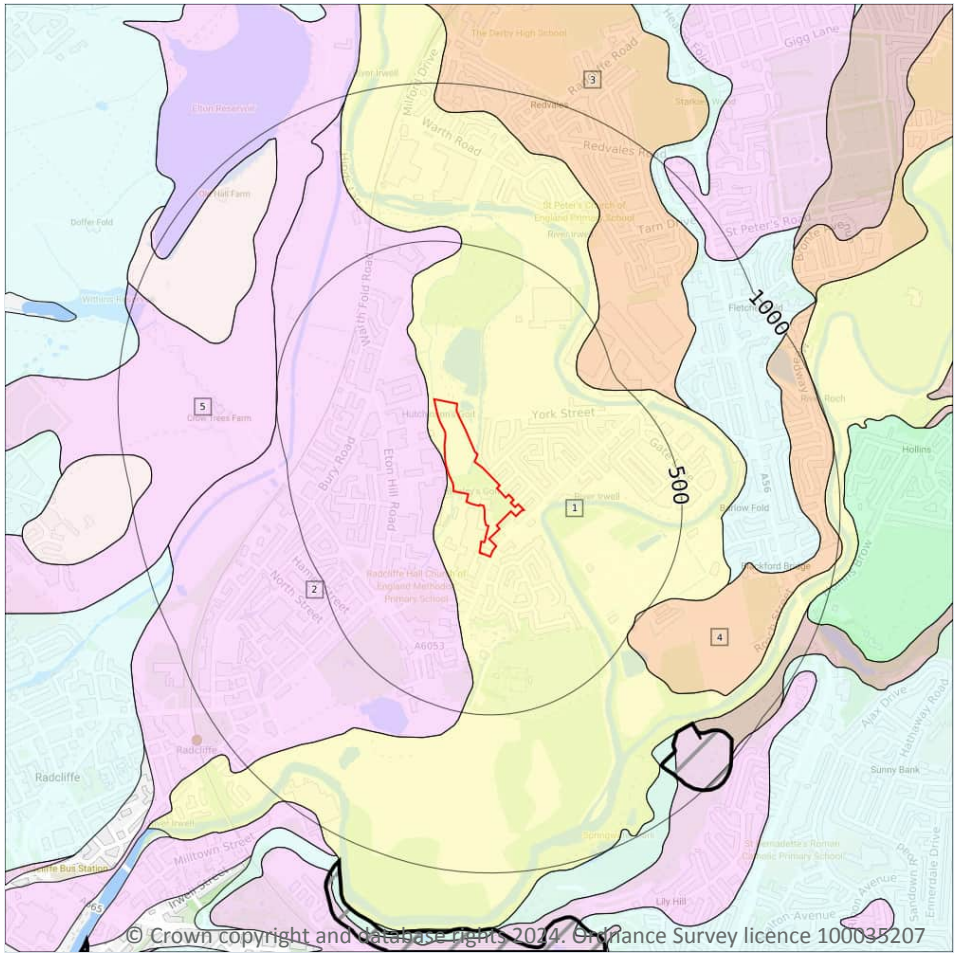
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **5**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 149 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**ALV-XCZSV**	**ALLUVIUM**	**CLAY, SILT, SAND AND GRAVEL**
2	3m W	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL
3	392m NE	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
4	488m SE	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
5	497m W	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	**2**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**Very Low**
3m W	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

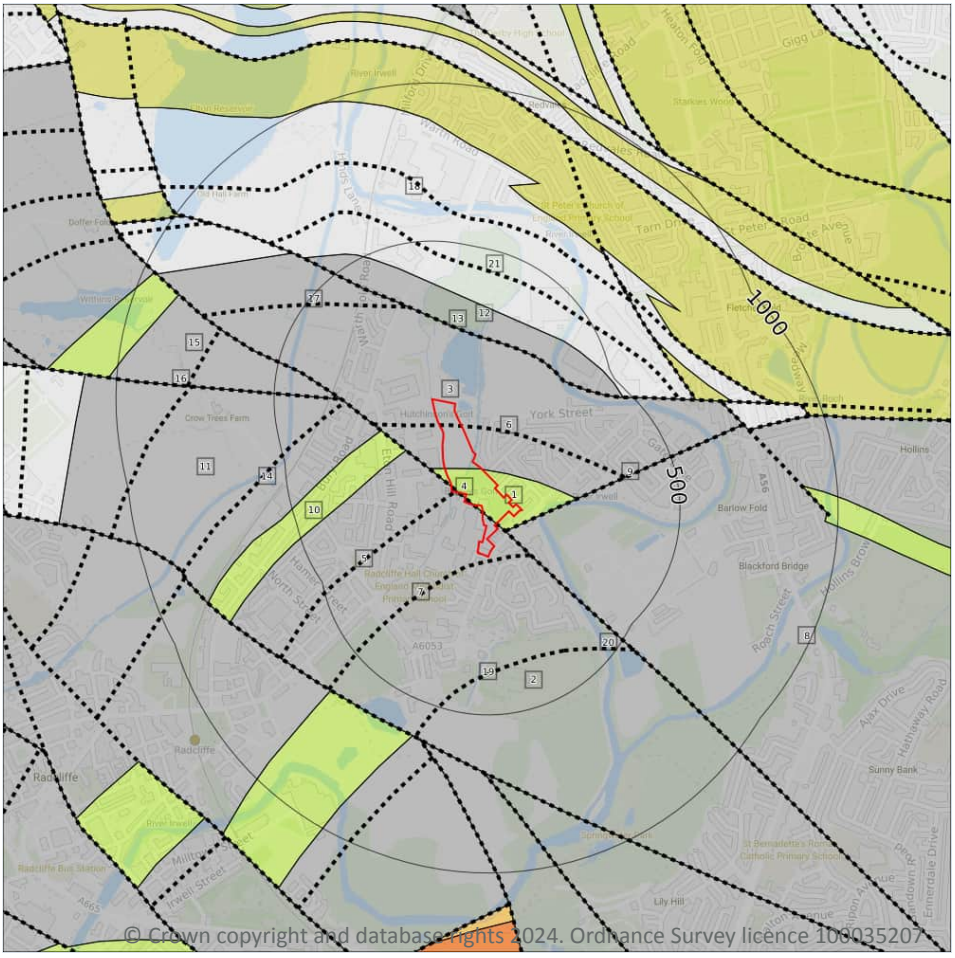
15.7 Landslip permeability (50k)

Records within 50m	**0**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



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15.8 Bedrock geology (50k)

Records within 500m **9**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 151 >**

ID	Location	LEX Code	Description	Rock age
1	On site	PR-SDST	PEEL HALL ROCK - SANDSTONE	WESTPHALIAN
2	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
8	25m SE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	116m W	PR-SDST	PEEL HALL ROCK - SANDSTONE	WESTPHALIAN
11	180m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
12	225m N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	287m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
18	320m N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m **2**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Moderate**	**Low**
On site	**Fracture**	**High**	**Moderate**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m **12**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

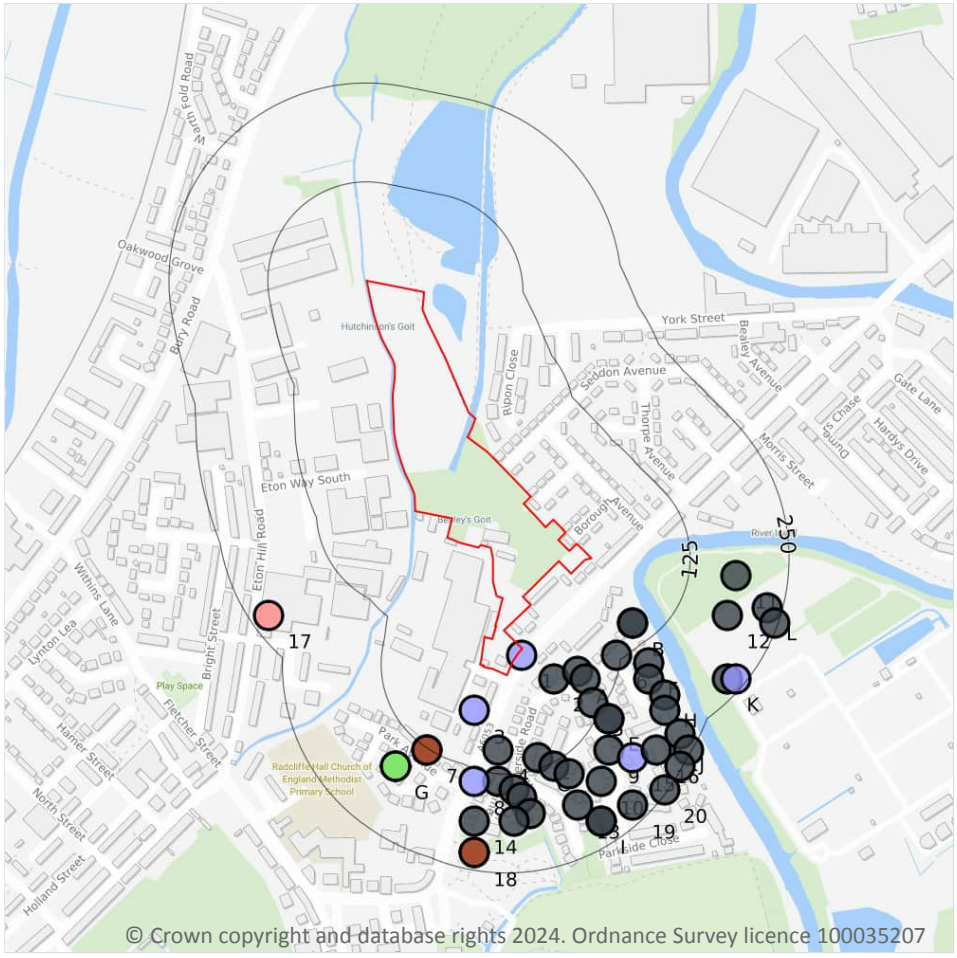
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 151 >**

ID	Location	Category	Description
4	**On site**	**FAULT**	**Fault, inferred**
5	**On site**	**ROCK**	**Coal seam, inferred**

ID	Location	Category	Description
6	**On site**	**ROCK**	**Coal seam, inferred**
7	14m S	ROCK	Coal seam, inferred
9	25m SE	FAULT	Fault, inferred
13	225m N	FAULT	Fault, inferred
14	277m NW	ROCK	Coal seam, inferred
16	287m NW	FAULT	Fault, inferred
17	302m N	ROCK	Coal seam, inferred
19	348m S	ROCK	Coal seam, inferred
20	381m SE	ROCK	Coal seam, inferred
21	431m N	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



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16.1 BGS Boreholes

Records within 250m	50

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 154 >**

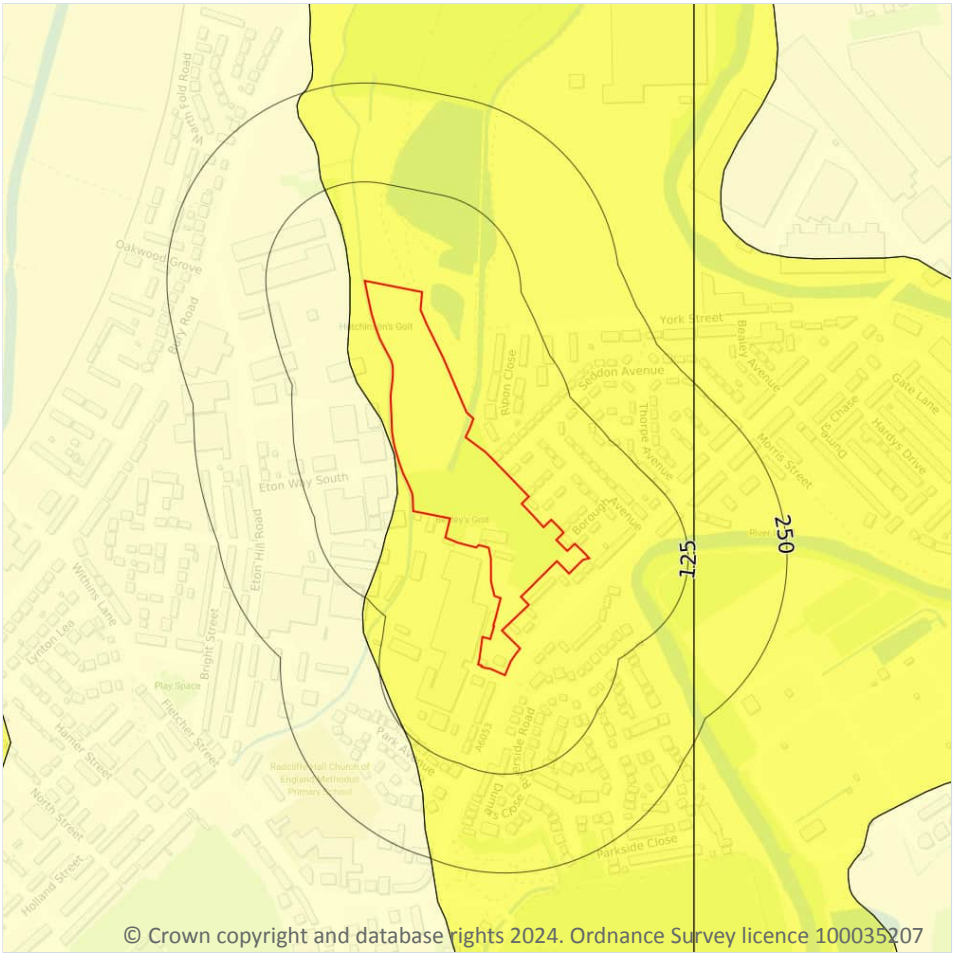
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	5m S	379780 407960	RADCLIFFE BLEACHWORKS	9.14	N	18767 ↗
2	55m SE	379820 407930	DUMERS LANE RADCLIFFE 14	-	Y	N/A
3	56m S	379720 407890	DUMERS LANE BH4	3.5	N	18756 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	75m SE	379850 407940	DUMERS LANE RADCLIFFE TP 12	-	Y	N/A
A	89m SE	379860 407930	DUMERS LANE RADCLIFFE 18	-	Y	N/A
4	95m S	379750 407840	DUMERS LANE RADCLIFFE TP 20	-	Y	N/A
B	98m SE	379920 408000	DUMERS LANE RADCLIFFE 3A	-	Y	N/A
B	98m SE	379920 408000	DUMERS LANE RADCLIFFE 3	-	Y	N/A
C	112m S	379800 407830	DUMERS LANE RADCLIFFE 13	-	Y	N/A
5	113m SE	379870 407900	DUMERS LANE RADCLIFFE TP 14	-	Y	N/A
6	118m SE	379900 407960	DUMERS LANE RADCLIFFE TP 13	-	Y	N/A
7	127m S	379660 407840	RADCLIFFE BLEACHWORKS	-1.0	N	18771 ↗
C	129m S	379820 407820	DUMERS LANE RADCLIFFE 11	-	Y	N/A
D	135m S	379750 407800	DUMERS LANE RADCLIFFE TP 19	-	Y	N/A
E	140m SE	379890 407880	DUMERS LANE RADCLIFFE 15	-	Y	N/A
E	140m SE	379890 407880	DUMERS LANE RADCLIFFE 15A	-	Y	N/A
8	141m S	379720 407800	DUMERS LANE BH3	3.5	N	18755 ↗
D	145m S	379770 407790	DUMERS LANE RADCLIFFE TP 18	-	Y	N/A
C	148m S	379840 407810	DUMERS LANE RADCLIFFE TP 21	-	Y	N/A
F	150m SE	379940 407950	DUMERS LANE RADCLIFFE TP 11	-	Y	N/A
D	156m S	379780 407780	DUMERS LANE RADCLIFFE 12	-	Y	N/A
9	160m SE	379890 407840	DUMERS LANE RADCLIFFE TP 15	-	Y	N/A
F	164m SE	379940 407930	DUMERS LANE RADCLIFFE 17	-	Y	N/A
G	167m S	379620 407820	DUMMERS LANE RADCLIFFE 1	42.0	N	18757 ↗
G	167m S	379620 407820	DUMMERS LANE RADCLIFFE 2	34.0	N	18758 ↗
G	167m S	379620 407820	DUMMERS LANE RADCLIFFE 3	30.0	N	18759 ↗
D	177m S	379790 407760	DUMERS LANE RADCLIFFE TP 17	-	Y	N/A
10	180m SE	379880 407800	DUMERS LANE RADCLIFFE 10	-	Y	N/A
11	184m E	380050 408060	PROPOSED SLUDGE DIGESTION PLANTS BURY AND ROCHDALE BPB7	-	Y	N/A
D	185m S	379770 407750	DUMERS LANE RADCLIFFE TP 1	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
12	187m SE	380040 408010	PROPOSED SLUDGE DIGESTION PLANTS BURY AND ROCHDALE BPB2	-	Y	N/A
13	187m S	379850 407770	DUMERS LANE RADCLIFFE 21	-	Y	N/A
H	189m SE	379960 407910	DUMERS LANE RADCLIFFE TP 10	-	Y	N/A
14	189m S	379720 407750	DUMERS LANE RADCLIFFE 1	-	Y	N/A
15	190m SE	379920 407830	RADCLIFFE BLEACHWORKS	9.14	N	18768 ↗
H	196m SE	379960 407890	DUMERS LANE RADCLIFFE 16	-	Y	N/A
16	211m SE	379950 407840	DUMERS LANE RADCLIFFE 19	-	Y	N/A
I	220m S	379880 407750	DUMERS LANE RADCLIFFE 4	-	Y	N/A
I	220m S	379880 407750	DUMERS LANE RADCLIFFE 6	-	Y	N/A
17	227m SW	379460 408010	ELTON HILL DYEING CO ELTON HILL LANE	76.2	N	18403 ↗
J	227m SE	379980 407860	DUMERS LANE RADCLIFFE TP 9	-	Y	N/A
18	228m S	379720 407710	RADCLIFFE BLEACHWORKS	-1.0	N	18783 ↗
19	229m SE	379920 407770	DUMERS LANE RADCLIFFE 9	-	Y	N/A
K	230m SE	380040 407930	PROPOSED SLUDGE DIGESTION PLANTS BURY AND ROCHDALE BPB1	-	Y	N/A
L	231m SE	380090 408020	PROPOSED SLUDGE DIGESTION PLANTS BURY AND ROCHDALE BPD2	-	Y	N/A
K	238m SE	380050 407930	RADCLIFFE BLEACH WORKS NO. 6	9.14	N	27572 ↗
J	246m SE	379990 407840	DUMERS LANE RADCLIFFE TP 7	-	Y	N/A
20	246m SE	379960 407790	DUMERS LANE RADCLIFFE 8	-	Y	N/A
L	247m SE	380100 408000	PROPOSED SLUDGE DIGESTION PLANTS BURY AND ROCHDALE BPB4	-	Y	N/A
J	247m SE	379980 407820	DUMERS LANE RADCLIFFE TP 5	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	2

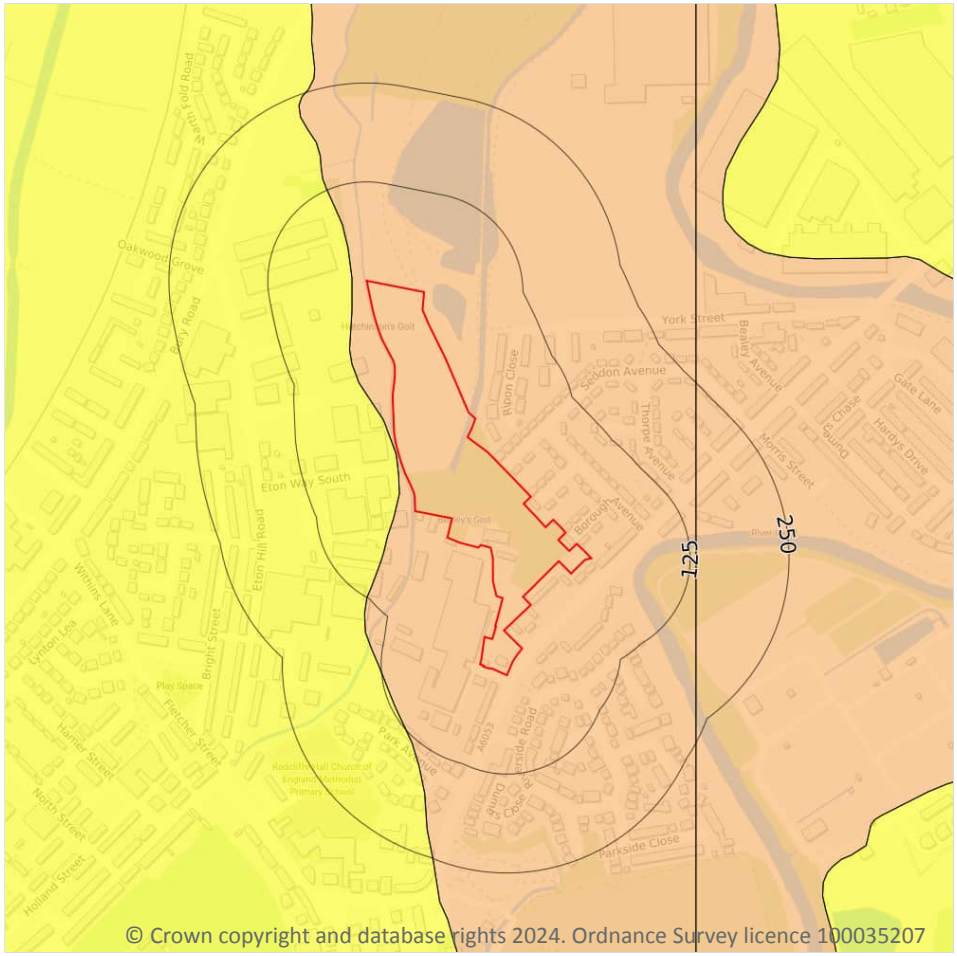
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 157 >**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**
3m W	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

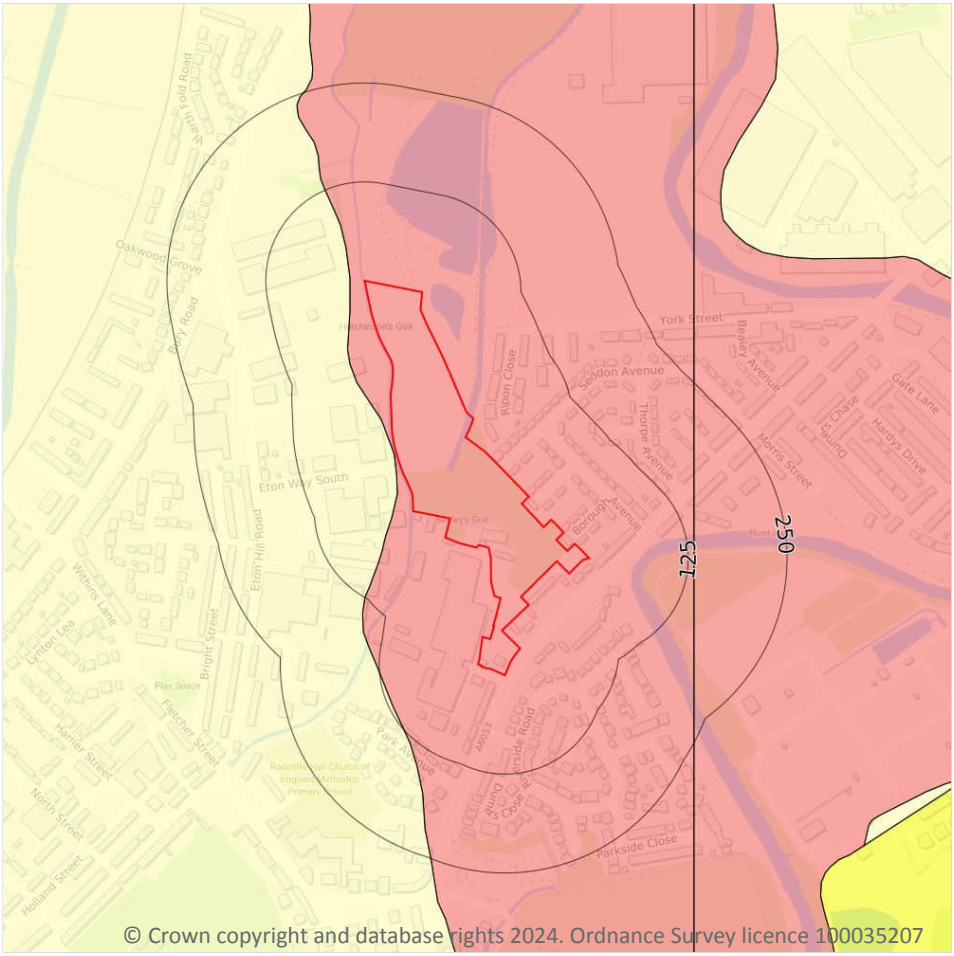
Features are displayed on the Natural ground subsidence - Running sands map on **page 158 >**

Location	Hazard rating	Details
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

Location	Hazard rating	Details
3m W	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	2

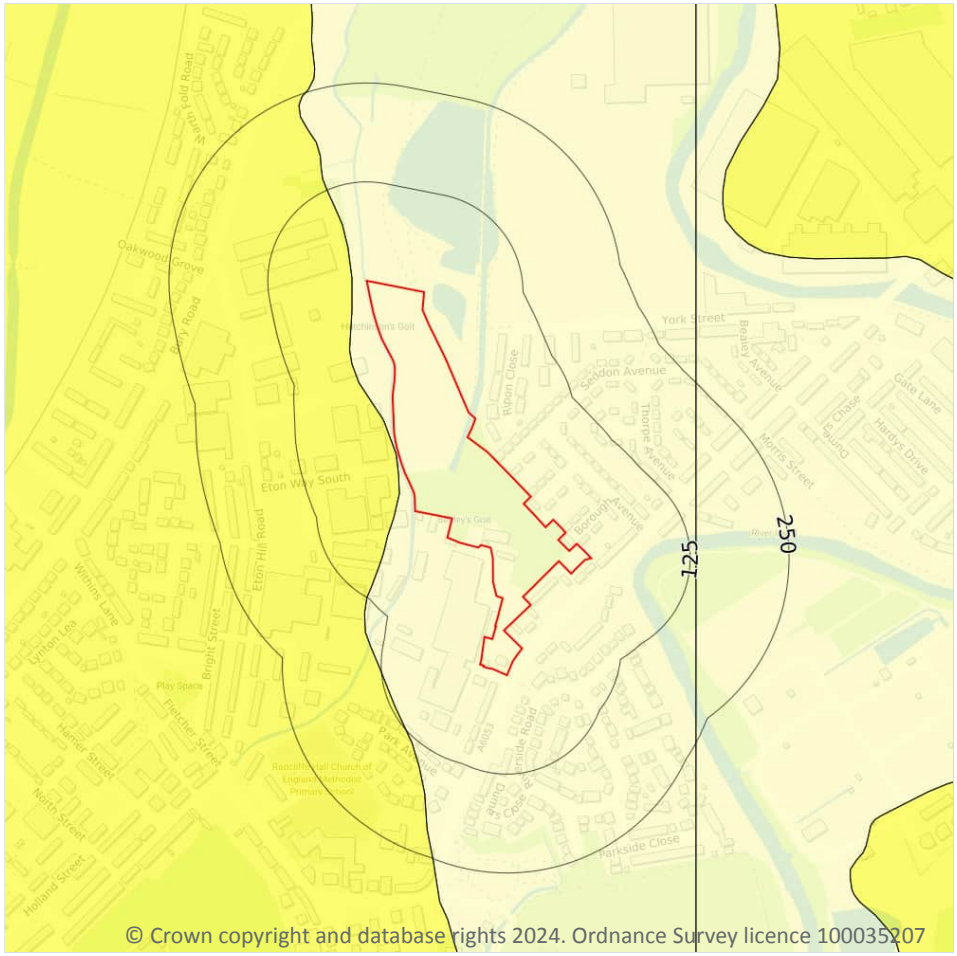
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 160 >**

Location	Hazard rating	Details
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**
3m W	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	2

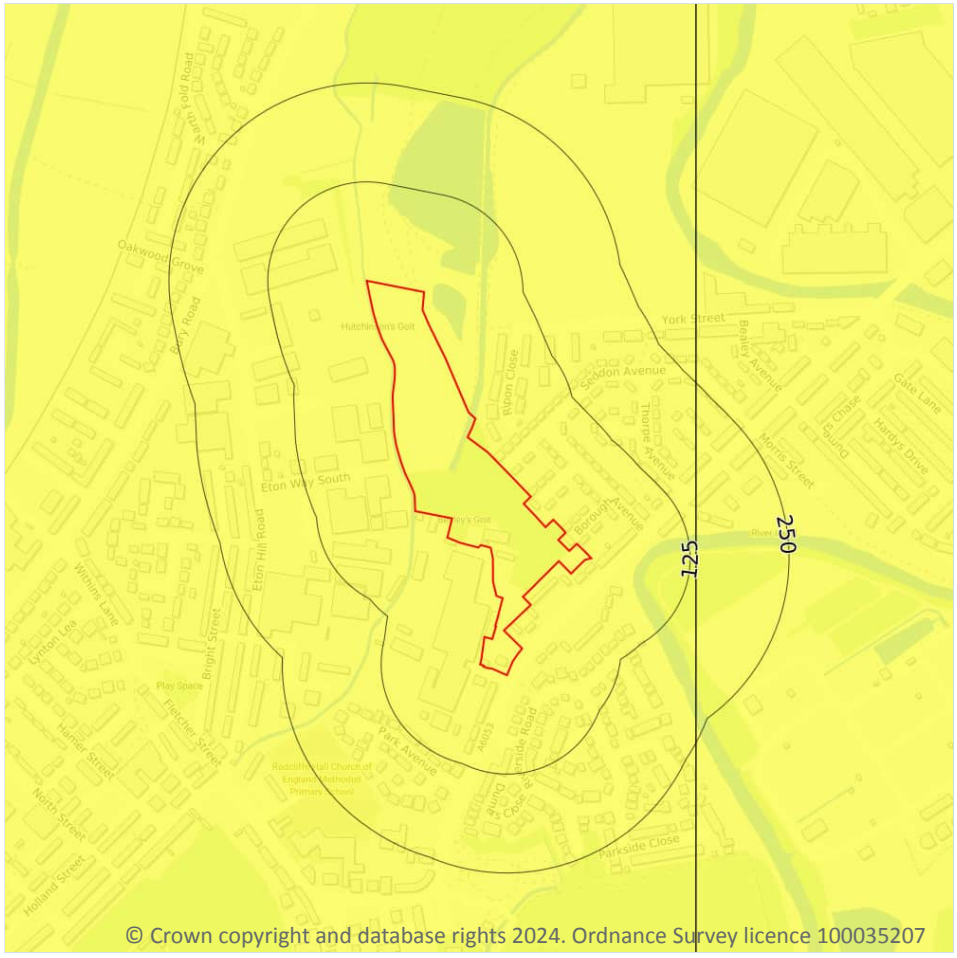
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 162 >**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
3m W	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 163 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

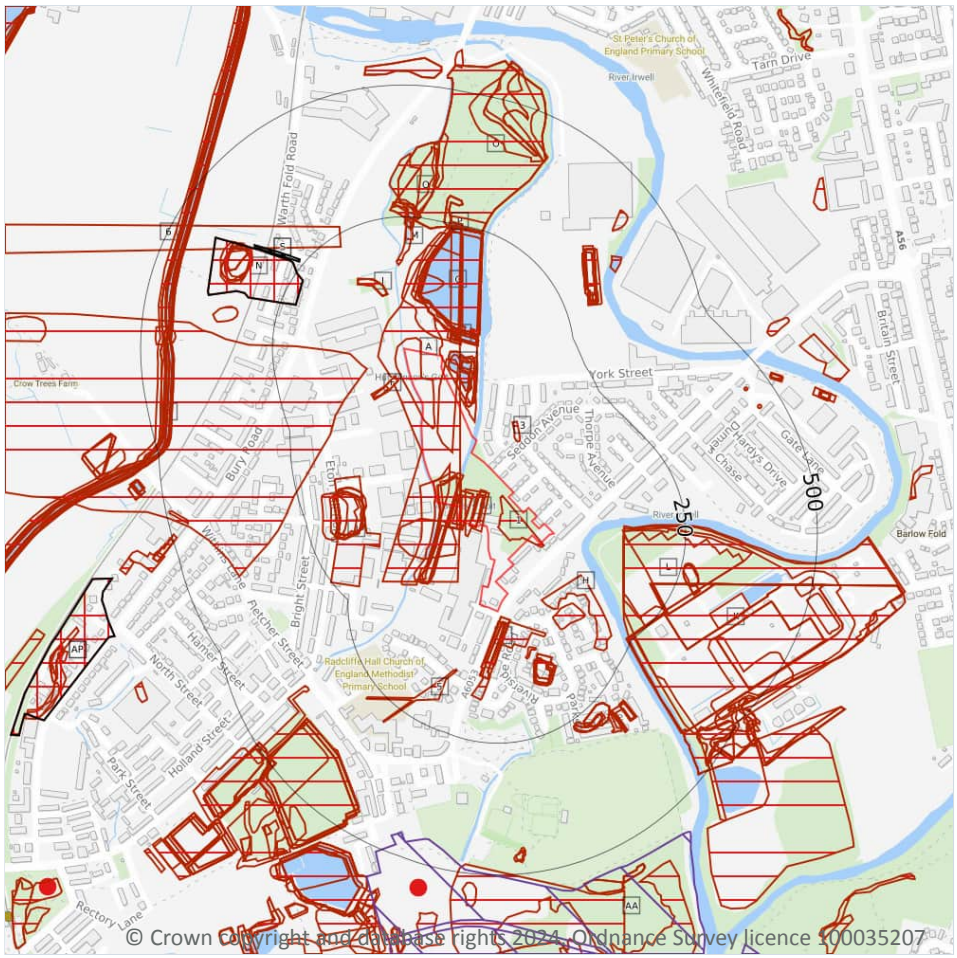
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 164 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	110

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on **page 166 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Filter Beds**	**1908**	**1:10560**
2	**On site**	**Pond**	**1890**	**1:10560**
A	**On site**	**Colliery**	**1890**	**1:10560**
A	**On site**	**Refuse Heap**	**1890**	**1:10560**
B	**On site**	**Filter Beds**	**1928**	**1:10560**
B	**On site**	**Filter Beds**	**1928**	**1:10560**
B	**On site**	**Reservoir**	**1977**	**1:10000**
B	**On site**	**Pond**	**1965**	**1:10560**
B	**On site**	**Pond**	**1955**	**1:10560**
B	**On site**	**Pond**	**1891**	**1:10560**
B	**On site**	**Pond**	**1938**	**1:10560**
B	**On site**	**Water Body**	**1938**	**1:10560**
B	**On site**	**Water Body**	**1927**	**1:10560**
B	**On site**	**Pond**	**1927**	**1:10560**
B	**On site**	**Ponds**	**1908**	**1:10560**
B	**On site**	**Water Body**	**1890**	**1:10560**
B	**On site**	**Filter Beds**	**1955**	**1:10560**
B	**On site**	**Pond**	**1908**	**1:10560**
B	**On site**	**Filter Beds**	**1938**	**1:10560**
B	**On site**	**Pond**	**1851**	**1:10560**
C	**On site**	**Ponds**	**1977**	**1:10000**
D	12m N	Pond	1991	1:10000
D	12m N	Pond	1988	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
E	12m S	Ponds	1977	1:10000
E	12m S	Ponds	1965	1:10560
D	13m N	Pond	1965	1:10560
D	14m N	Pond	1938	1:10560
D	14m N	Pond	1928	1:10560
D	14m N	Reservoir	1955	1:10560
E	19m S	Ponds	1932	1:10560
E	19m S	Pond	1891	1:10560
E	19m S	Pond	1938	1:10560
E	20m S	Ponds	1915	1:10560
E	20m S	Ponds	1907	1:10560
B	21m S	Refuse Heap	1890	1:10560
E	22m S	Ponds	1923	1:10560
F	25m NW	Unspecified Ground Workings	1991	1:10000
F	25m NW	Unspecified Ground Workings	1988	1:10000
E	25m S	Ponds	1851	1:10560
C	32m N	Pond	1851	1:10560
G	32m N	Reservoir	1938	1:10560
G	32m N	Reservoir	1927	1:10560
C	36m N	Reservoirs	1890	1:10560
G	38m N	Reservoir	1955	1:10560
C	41m N	Reservoir	1991	1:10000
C	41m N	Reservoir	1988	1:10000
C	44m N	Pond	1965	1:10560
F	47m NW	Unspecified Ground Workings	1977	1:10000
C	51m N	Reservoir	1938	1:10560
C	51m N	Reservoir	1927	1:10560
C	51m N	Reservoir	1908	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
C	55m N	Water Body	1851	1:10560
C	58m N	Reservoir	1955	1:10560
H	65m SE	Refuse Heap	1965	1:10560
3	72m NE	Pond	1891	1:10560
4	77m NW	Colliery	1890	1:10560
E	90m S	Unspecified Ground Workings	1851	1:10560
H	97m SE	Ponds	1851	1:10560
C	108m N	Pond	1890	1:10560
I	108m NW	Unspecified Ground Workings	1991	1:10000
I	108m NW	Unspecified Ground Workings	1977	1:10000
I	108m NW	Unspecified Ground Workings	1965	1:10560
I	108m NW	Unspecified Ground Workings	1988	1:10000
E	111m S	Reservoir	1977	1:10000
E	111m S	Pond	1965	1:10560
E	116m S	Reservoir	1955	1:10560
E	117m S	Reservoir	1932	1:10560
E	117m S	Water Body	1891	1:10560
E	117m S	Reservoir	1938	1:10560
E	118m S	Reservoir	1915	1:10560
E	118m S	Pond	1907	1:10560
E	118m S	Reservoir	1923	1:10560
E	118m S	Pond	1851	1:10560
J	122m SW	Pond	1988	1:10000
J	129m W	Reservoir	1955	1:10560
5	130m S	Filter Beds	1891	1:10560
K	131m E	Sewage Works	1955	1:10560
K	132m E	Sewage Works	1974	1:10000
L	132m E	Sludge Beds	1974	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
J	132m W	Reservoir	1977	1:10000
J	132m W	Pond	1965	1:10560
J	132m W	Reservoir	1988	1:10000
K	133m E	Sewage Works	1981	1:10000
L	133m E	Sludge Beds	1981	1:10000
J	136m W	Reservoir	1938	1:10560
J	136m W	Reservoir	1927	1:10560
J	142m W	Reservoir	1908	1:10560
J	147m W	Reservoir	1890	1:10560
M	159m N	Refuse Heap	1908	1:10560
J	165m W	Pond	1851	1:10560
K	207m SE	Sewage Works	1938	1:10560
K	207m SE	Sewage Works	1932	1:10560
M	208m N	Unspecified Ground Workings	1965	1:10560
K	209m SE	Sewage Works	1923	1:10560
K	209m SE	Sewage Works	1915	1:10560
K	209m SE	Sewage Works	1907	1:10560
N	222m NW	Colliery	1890	1:10560
M	227m N	Pond	1991	1:10000
M	227m N	Pond	1988	1:10000
6	227m NW	Cuttings	1890	1:10560
O	233m N	Unspecified Disused Tip	1991	1:10000
O	233m N	Refuse Heap	1977	1:10000
O	233m N	Unspecified Disused Tip	1988	1:10000
P	235m N	Unspecified Ground Workings	1938	1:10560
P	235m N	Unspecified Ground Workings	1927	1:10560
P	235m N	Unspecified Ground Workings	1908	1:10560
Q	246m N	Unspecified Heap	1938	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
Q	246m N	Unspecified Heap	1927	1:10560
Q	246m N	Refuse Heap	1908	1:10560
P	246m N	Unspecified Pit	1965	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**5**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining and ground workings map on **page 166 >**

ID	Location	Land Use	Year of mapping	Mapping scale
N	222m NW	Colliery	1890	1:10560
S	258m NW	Tunnel	1908	1:10560
S	287m NW	Air Shafts	1908	1:10560
S	311m NW	Air Shaft	1908	1:10560
AP	632m W	Colliery	1891	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	1

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining and ground workings map on **page 166 >**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
AA	452m S	Close Park	Sand and gravel	Surface mineral working	Valid	23/1/51

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	1

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

Location	Details
On site	**In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.**

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	**The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.**

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

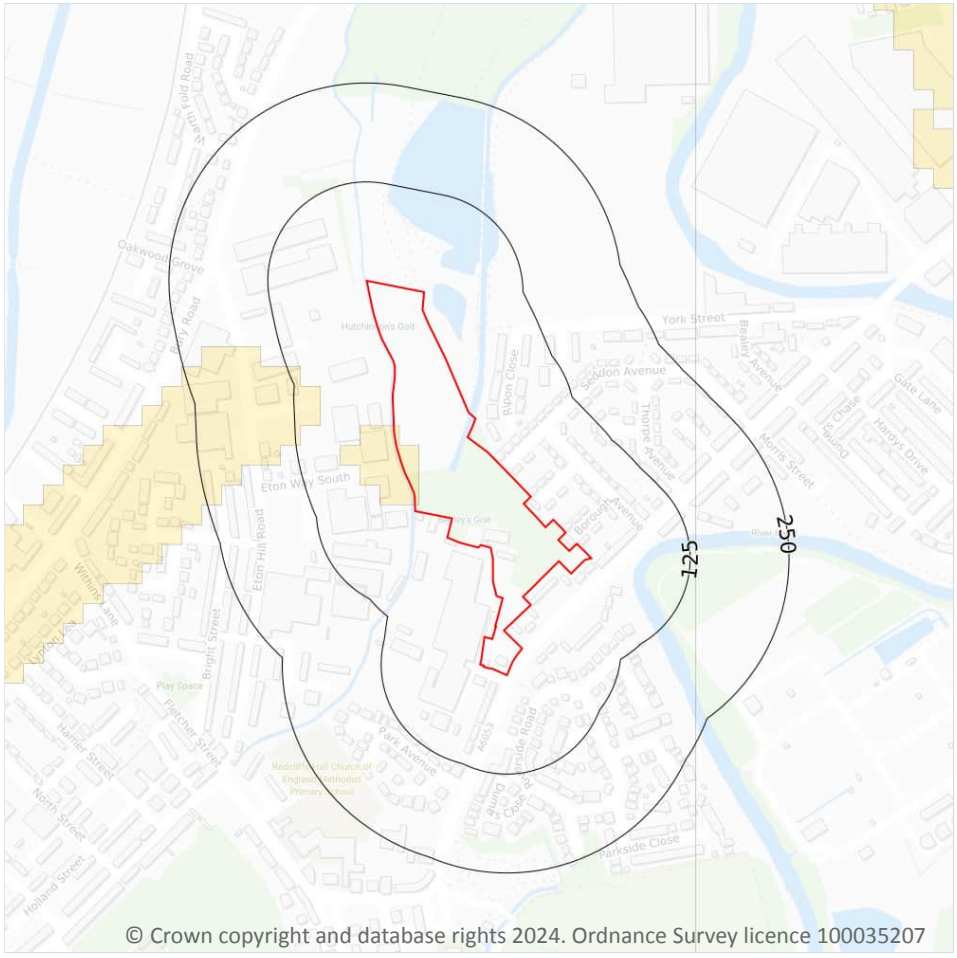
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	2

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 177 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 1% and 3%**	**None**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	11

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
7m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
19m SE	15 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
19m SE	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
28m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
31m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
32m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

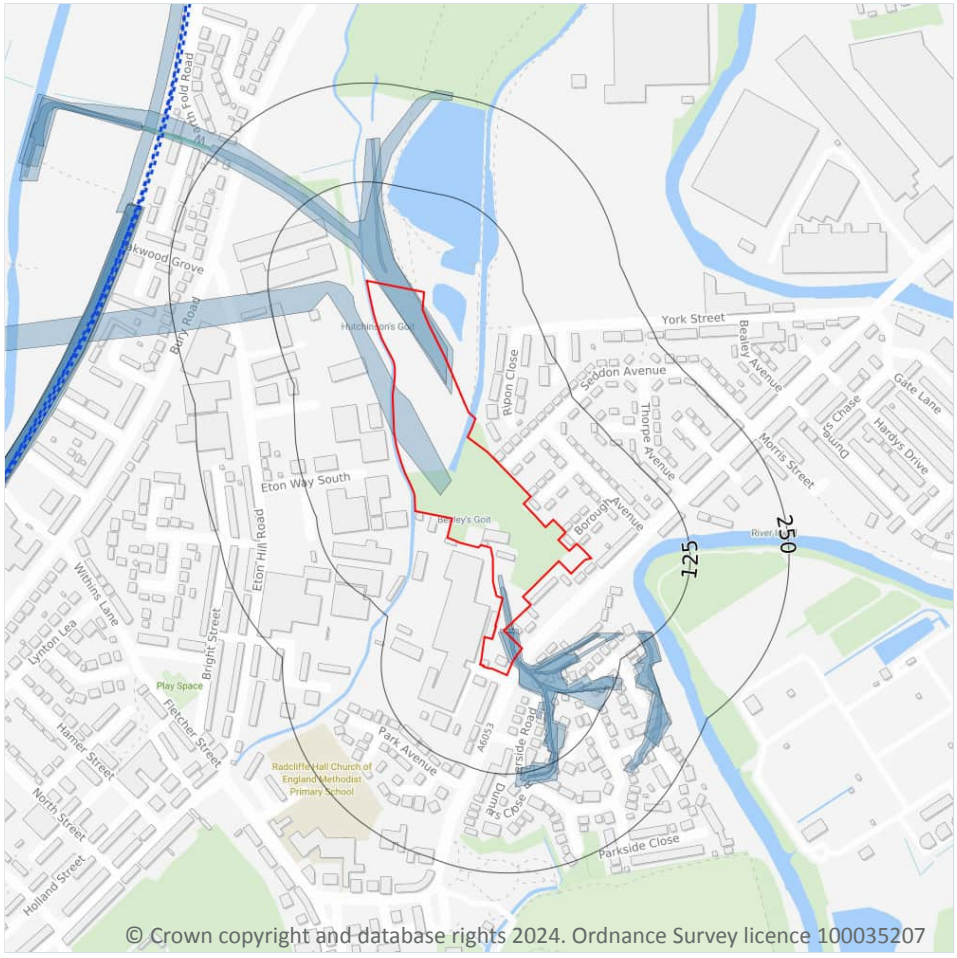
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	12

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 181 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Tramway Sidings**	**1890**	**2500**
On site	**Tramway Sidings**	**1910**	**2500**
On site	**Tramway Sidings**	**1893**	**2500**
On site	**Railway Sidings**	**1909**	**2500**
On site	**Railway Sidings**	**1907**	**10560**
On site	**Railway Sidings**	**1891**	**10560**
On site	**Tramway Sidings**	**1908**	**10560**
On site	**Tramway Sidings**	**1890**	**10560**
14m N	Tramway Sidings	1910	2500
109m SE	Railway Sidings	1891	10560
110m SE	Railway Sidings	1907	10560
114m SE	Railway Sidings	1909	2500

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

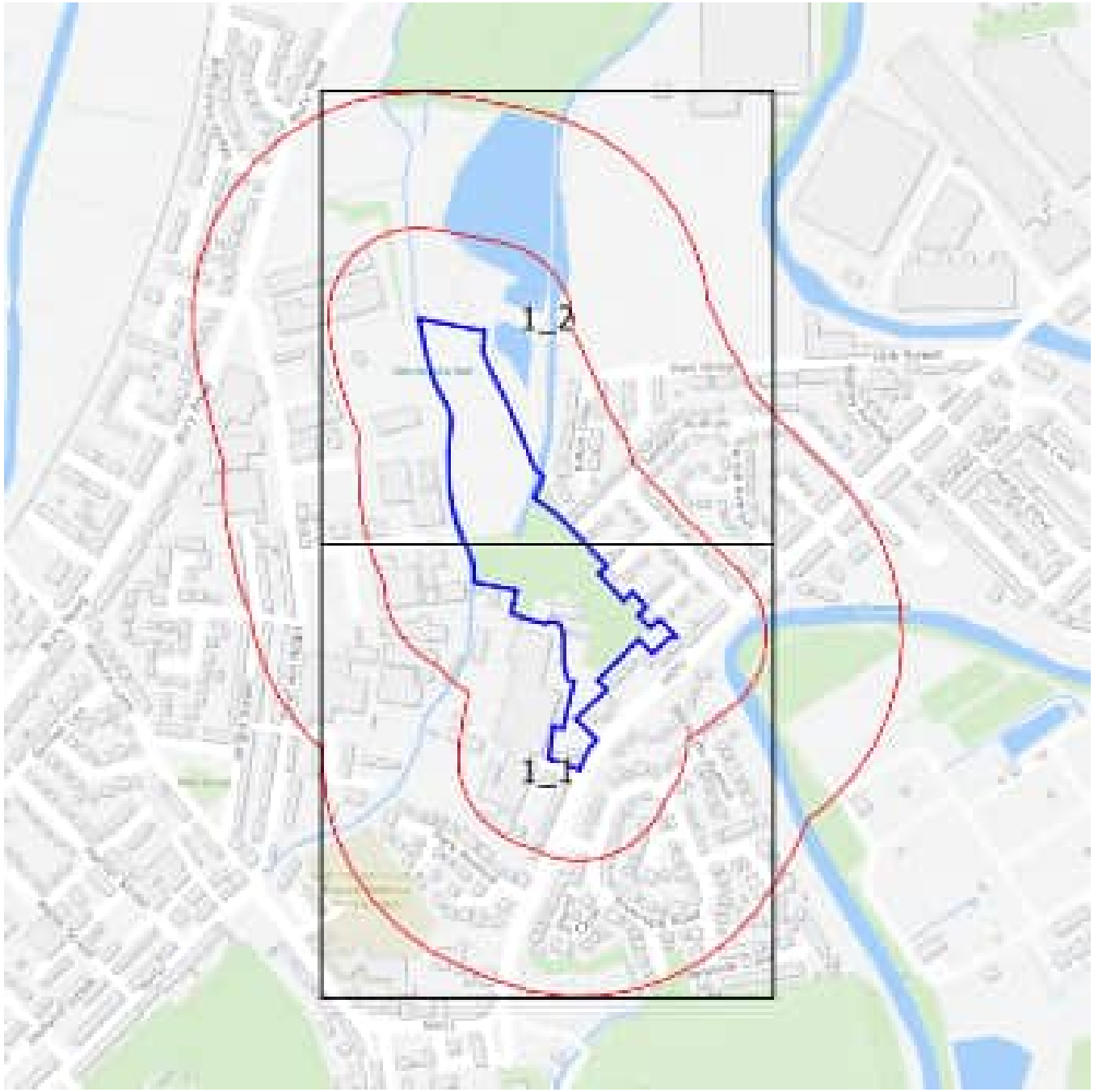
Terms and conditions

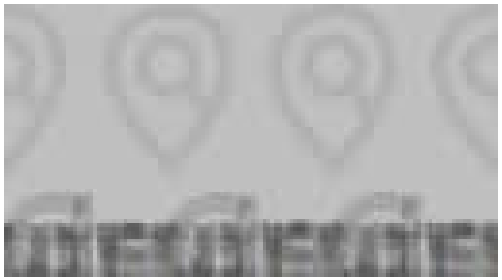
Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

Appendix 3

Groundsure Historical Maps

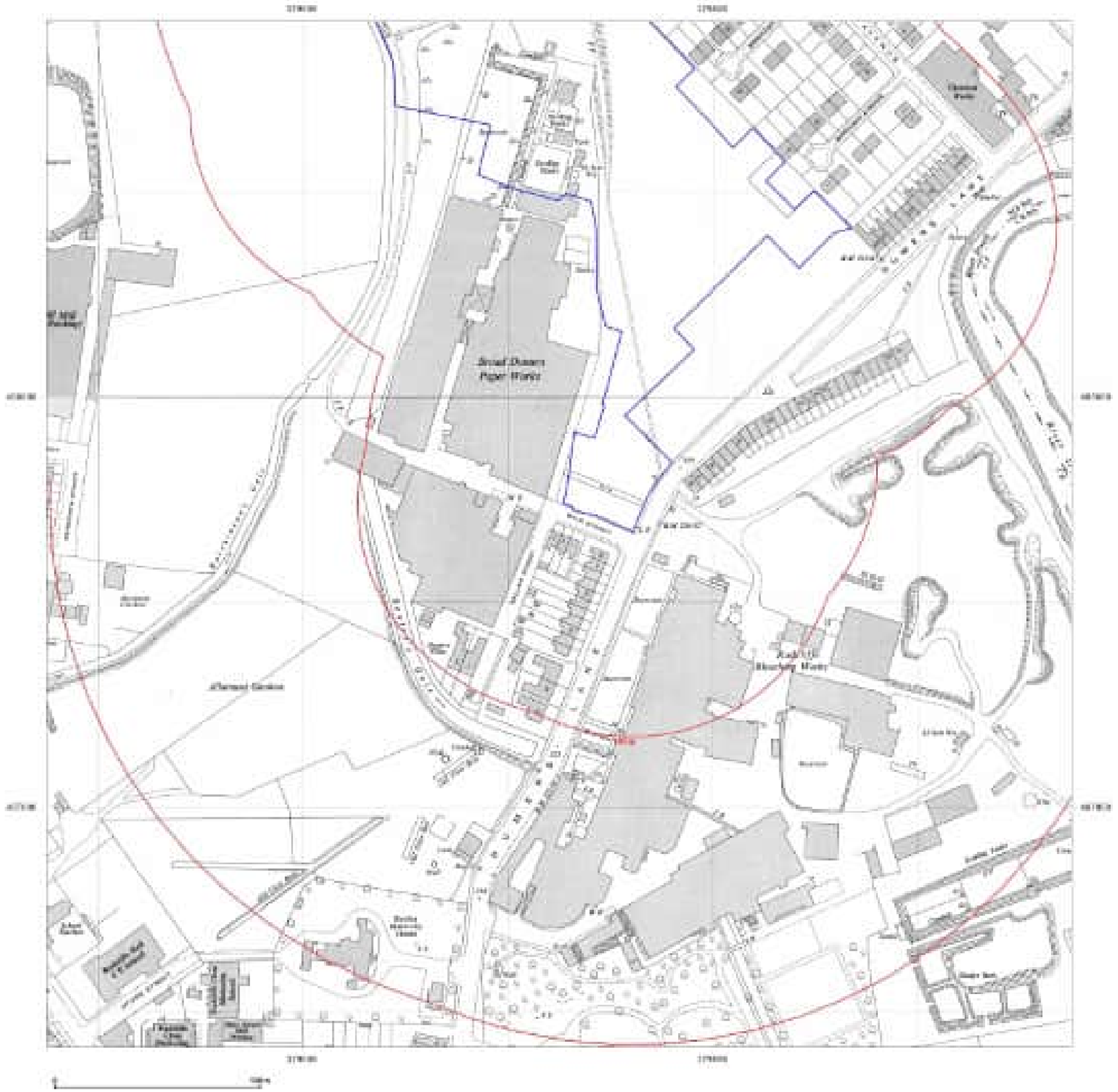
Historic England – Aerial Photograph List





1:1,250 Scale Grid Index





Groundsure INSIGHTS

Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_1250_1_1
Grid Ref: 379725, 407933

Map Name: National Grid

Map date: **1956**

Scale: 1:1,250

Printed at: 1:2,000

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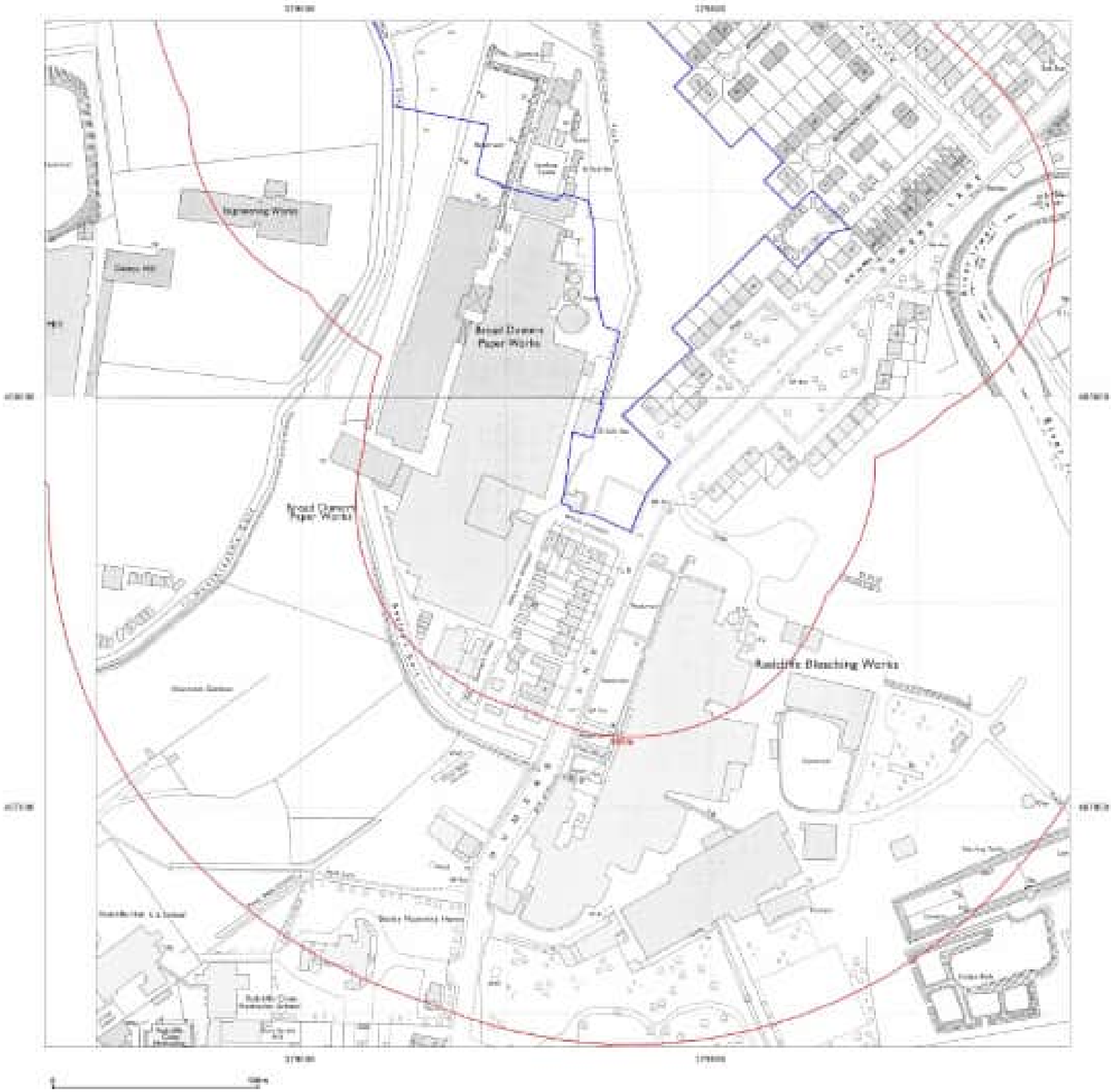
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_1250_1_1
Grid Ref: 379725, 407933

Map Name: National Grid

Map date: **1972-1975**

Scale: 1:1,250

Printed at: 1:2,000

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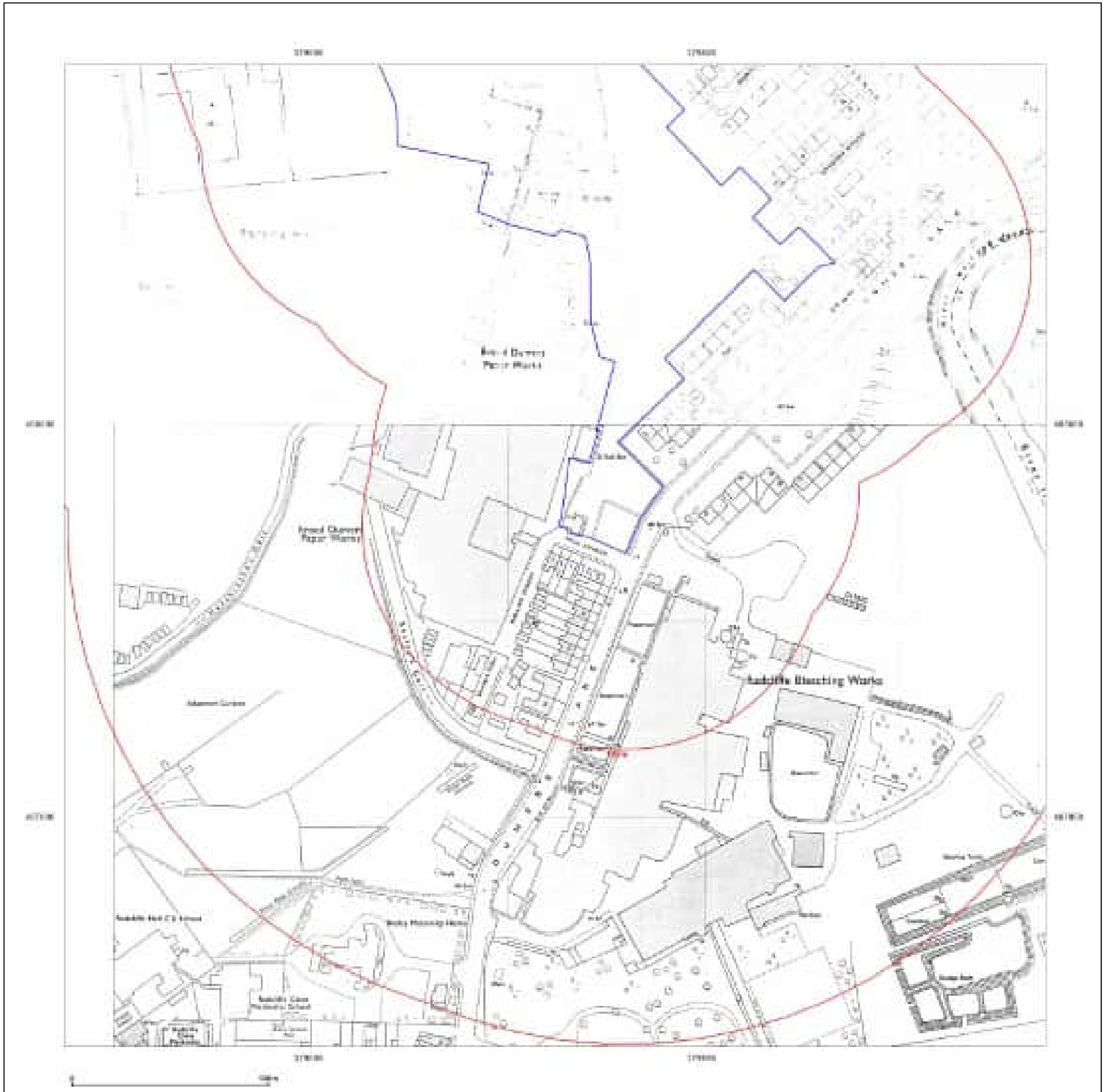
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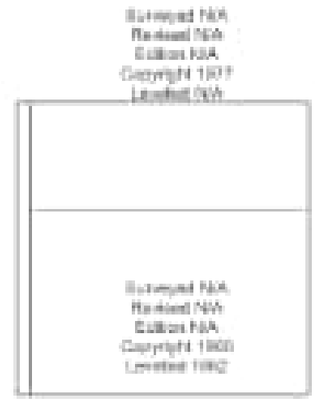
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Report Ref: GS-HMJ-3VX-27B-I11_1250_1_1
Grid Ref: 379725, 407933

Map Name: National Grid
Map date: **1977-1980**
Scale: 1:1,250
Printed at: 1:2,000

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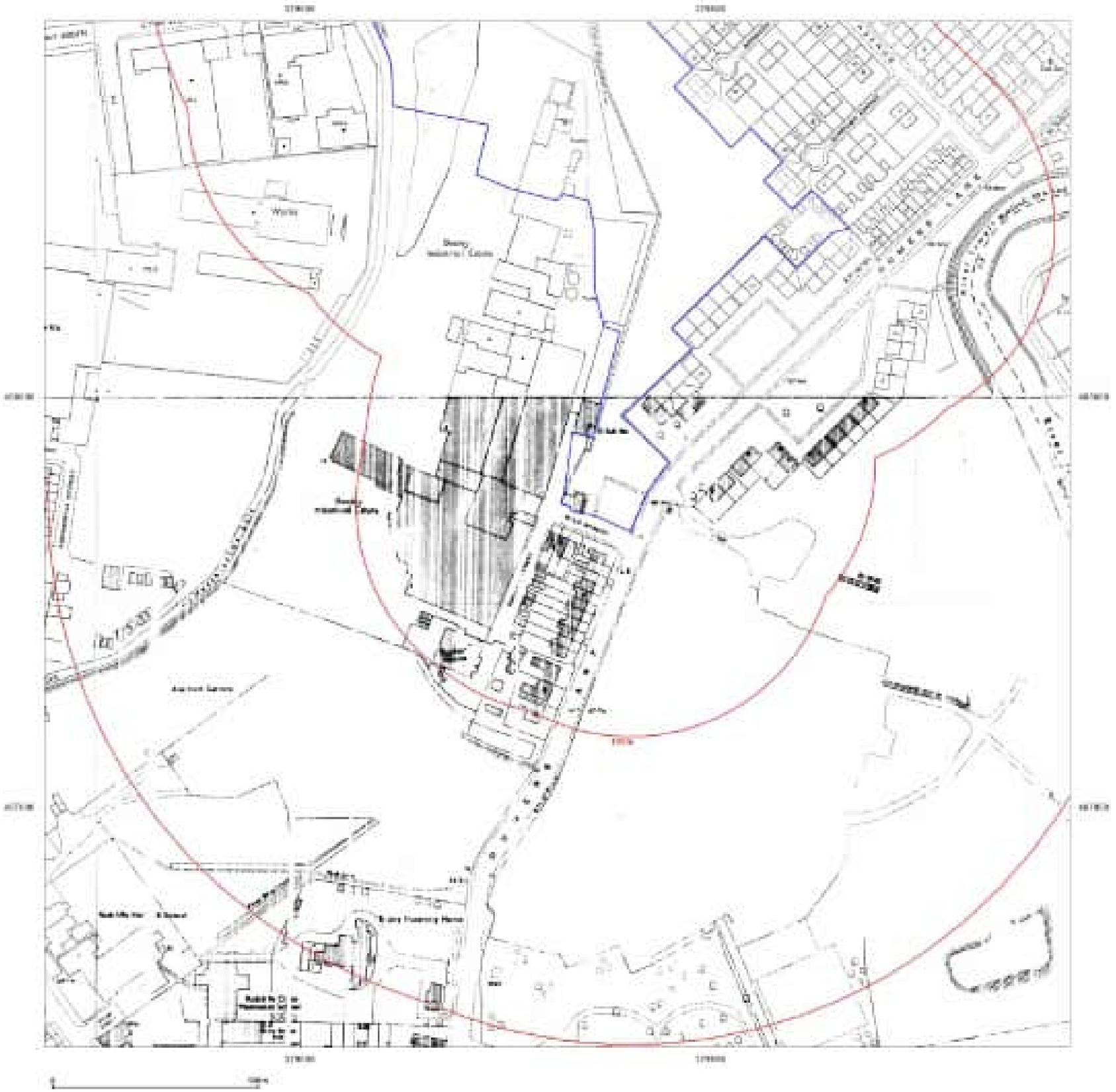
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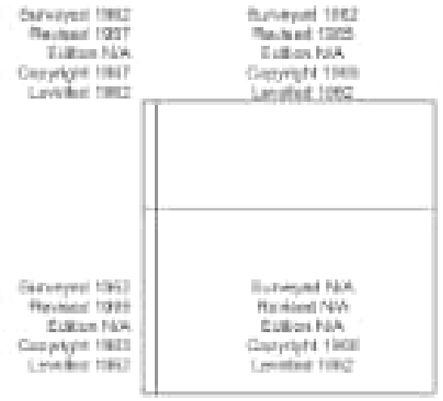
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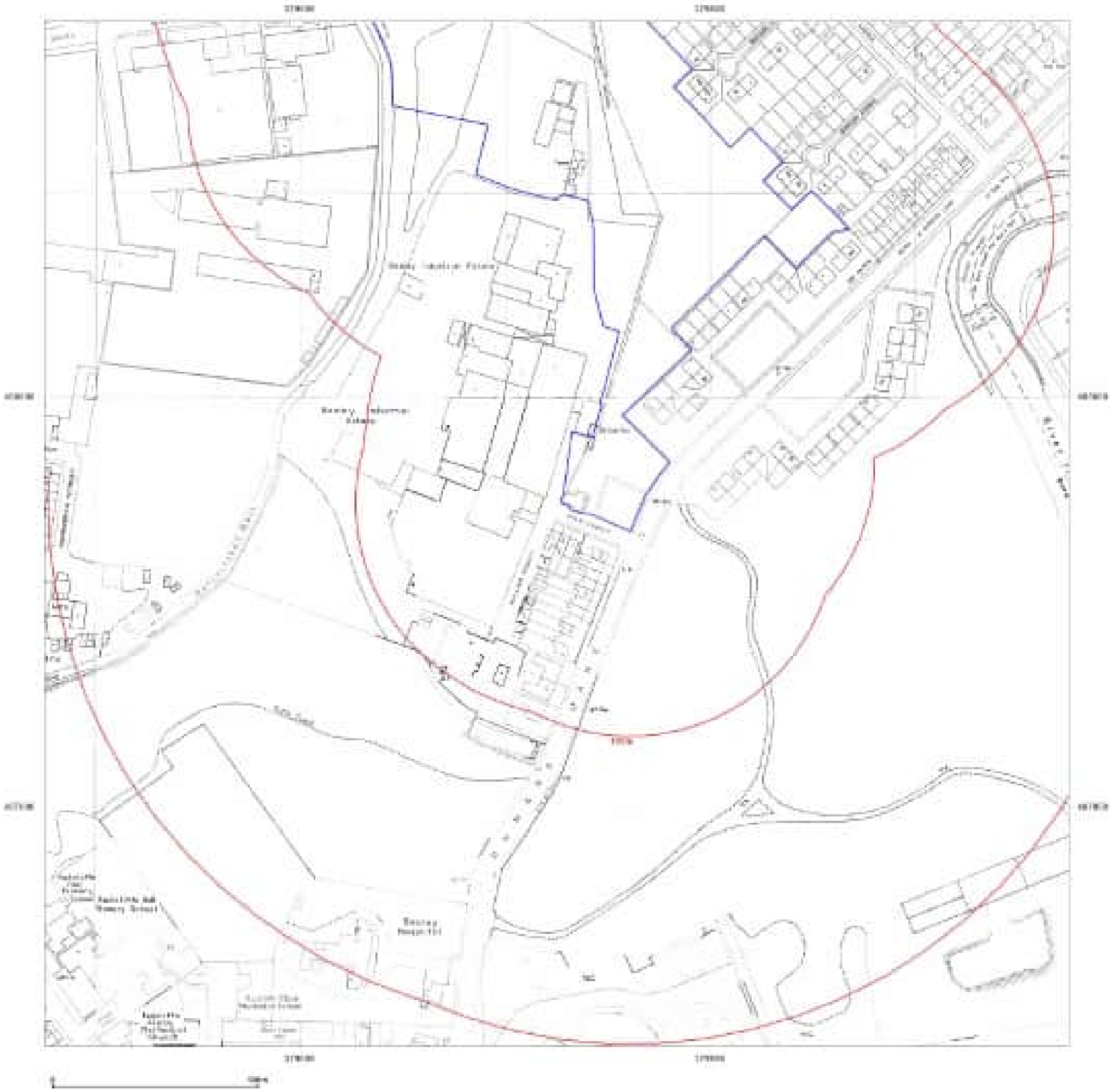
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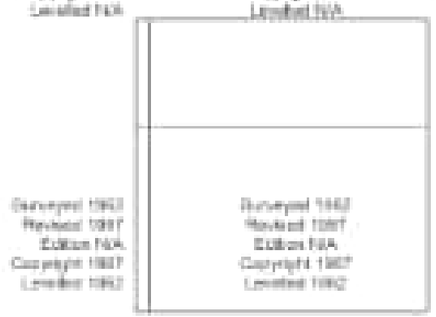
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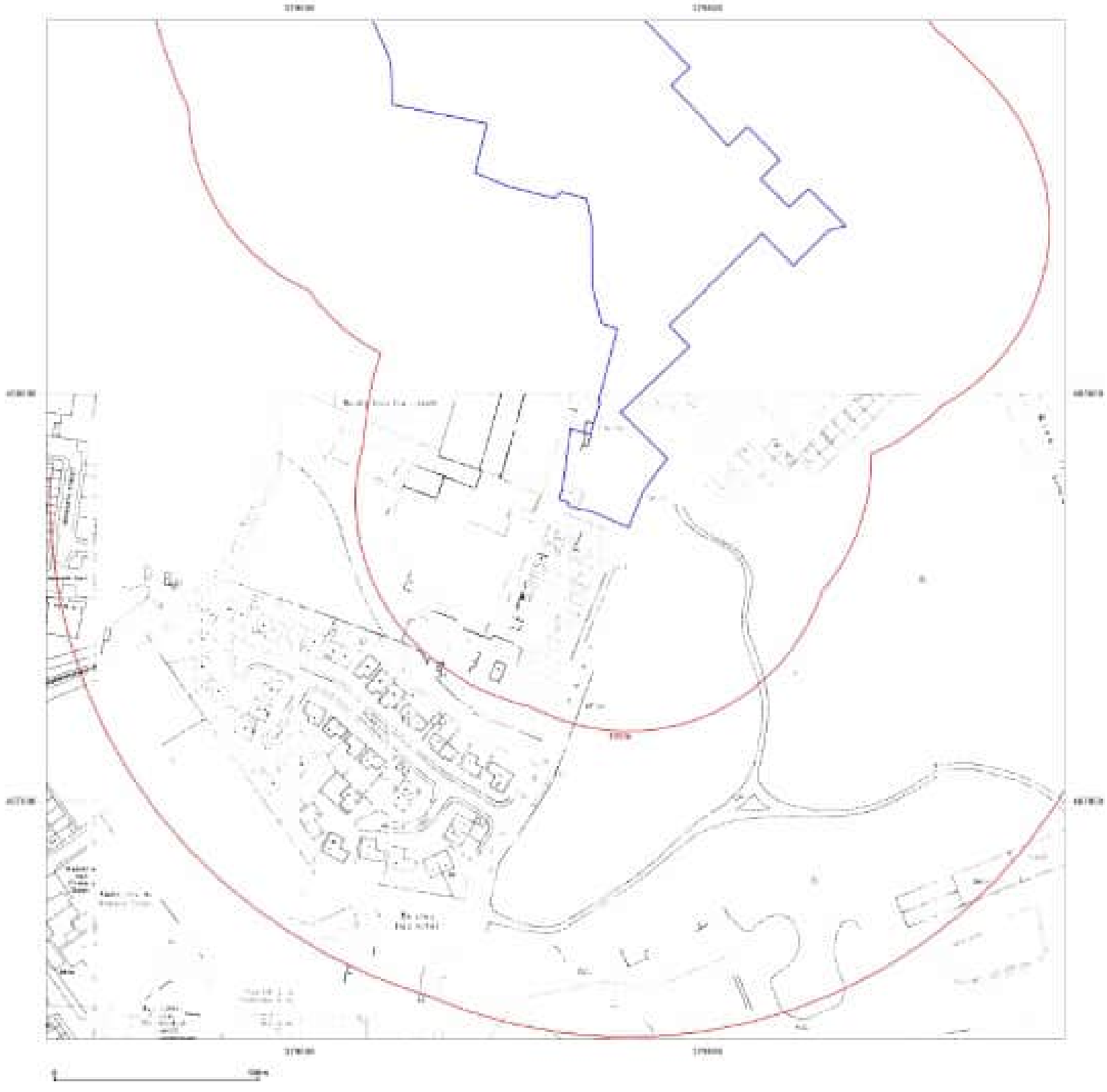
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Report Ref: GS-HMJ-3VX-27B-I11_1250_1_1
Grid Ref: 379725, 407933

Map Name: National Grid
Map date: **1991-1992**
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Grid Ref: 379725, 407933

Map Name: National Grid

Map date: **1994**

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Report Ref: GS-HMJ-3VX-27B-I11_1250_1_1
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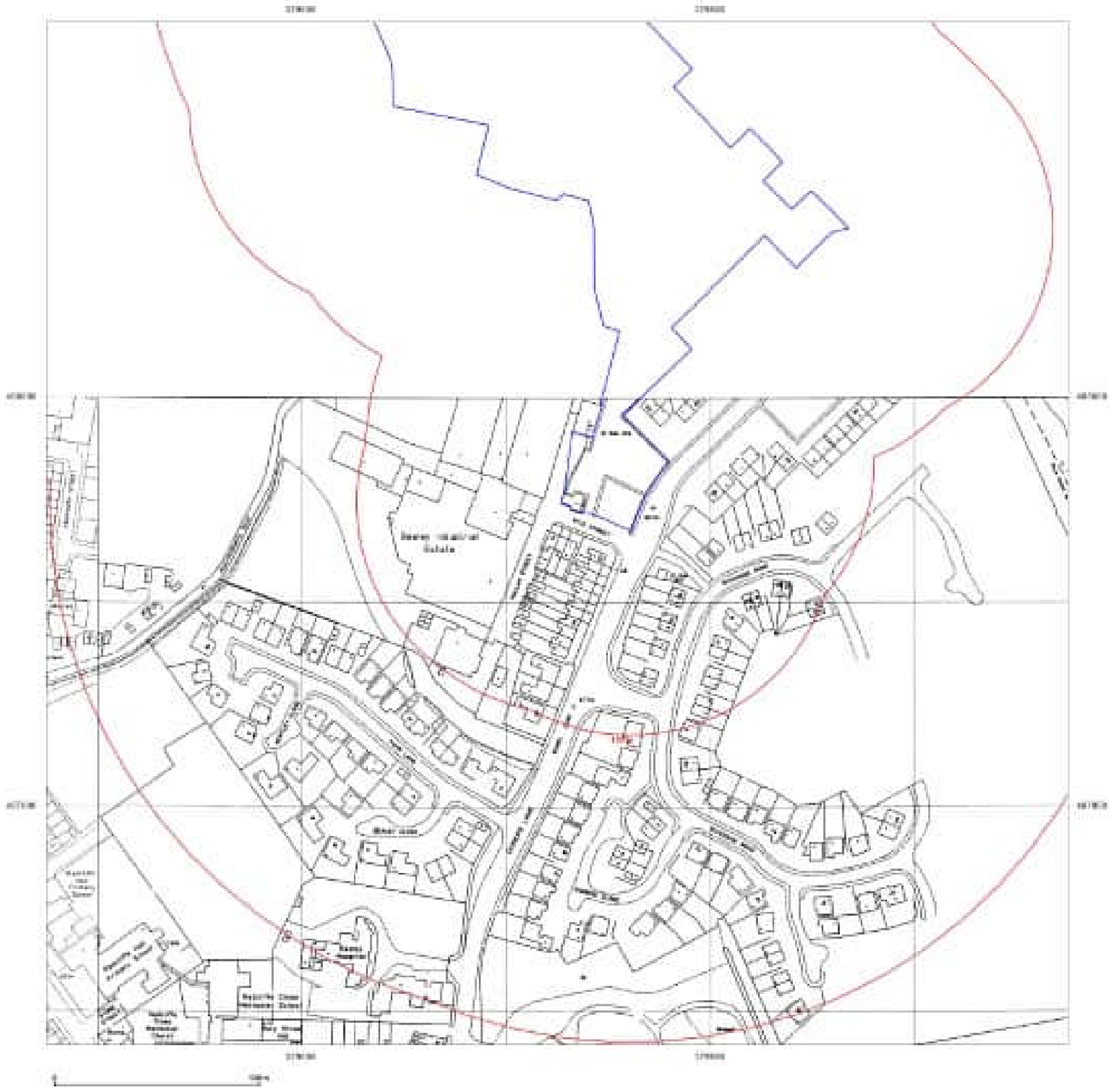
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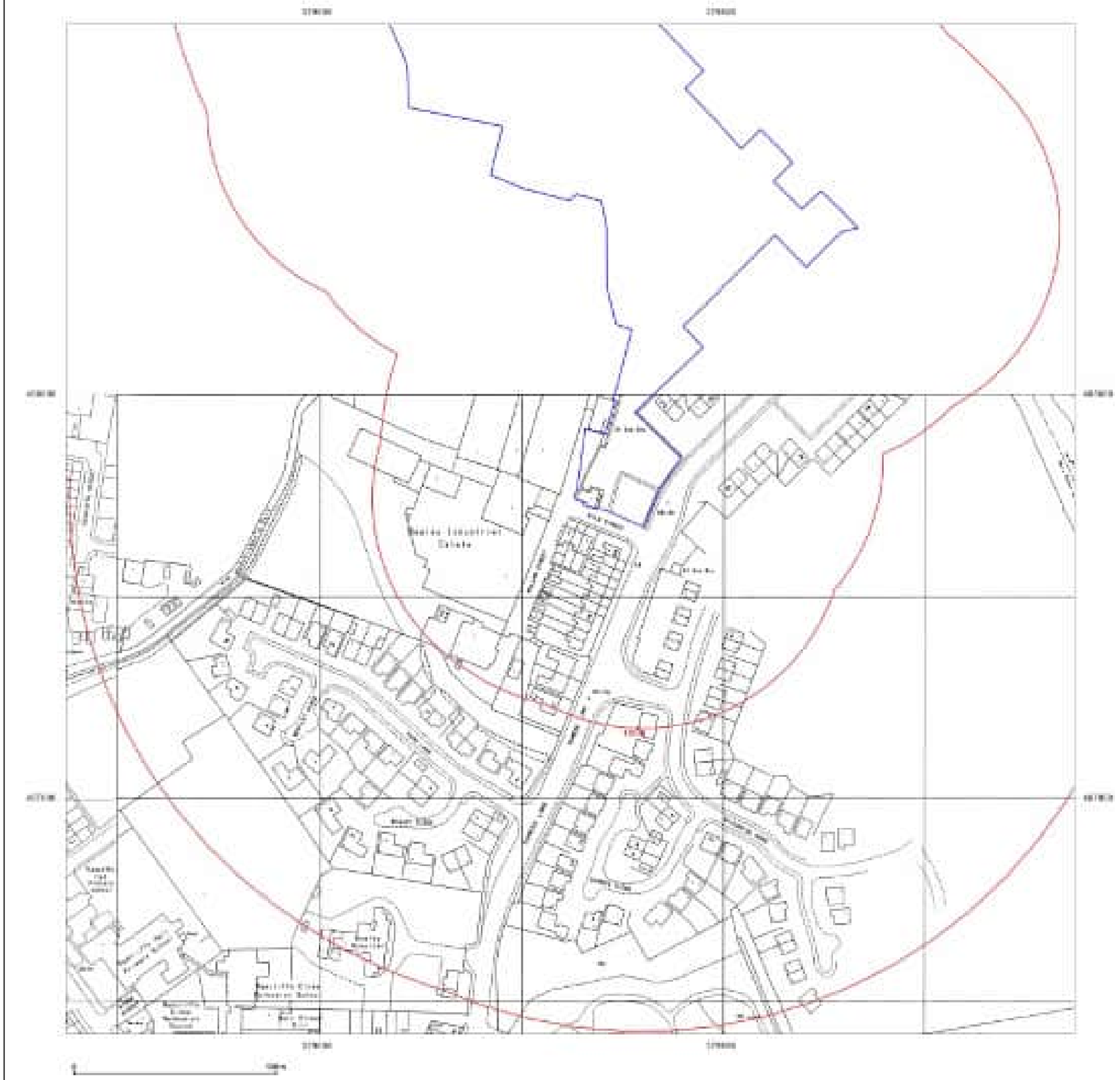
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Grid Ref: 379725, 407933

Map Name: National Grid
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Map Name: National Grid
Map date: **1994-1995**
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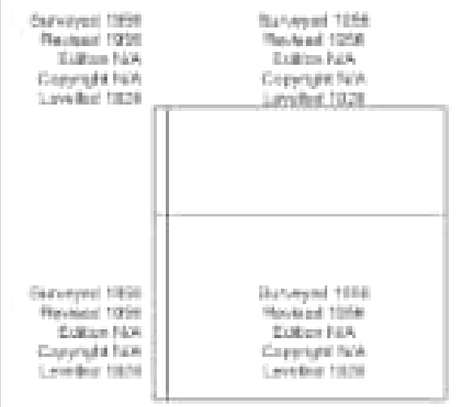
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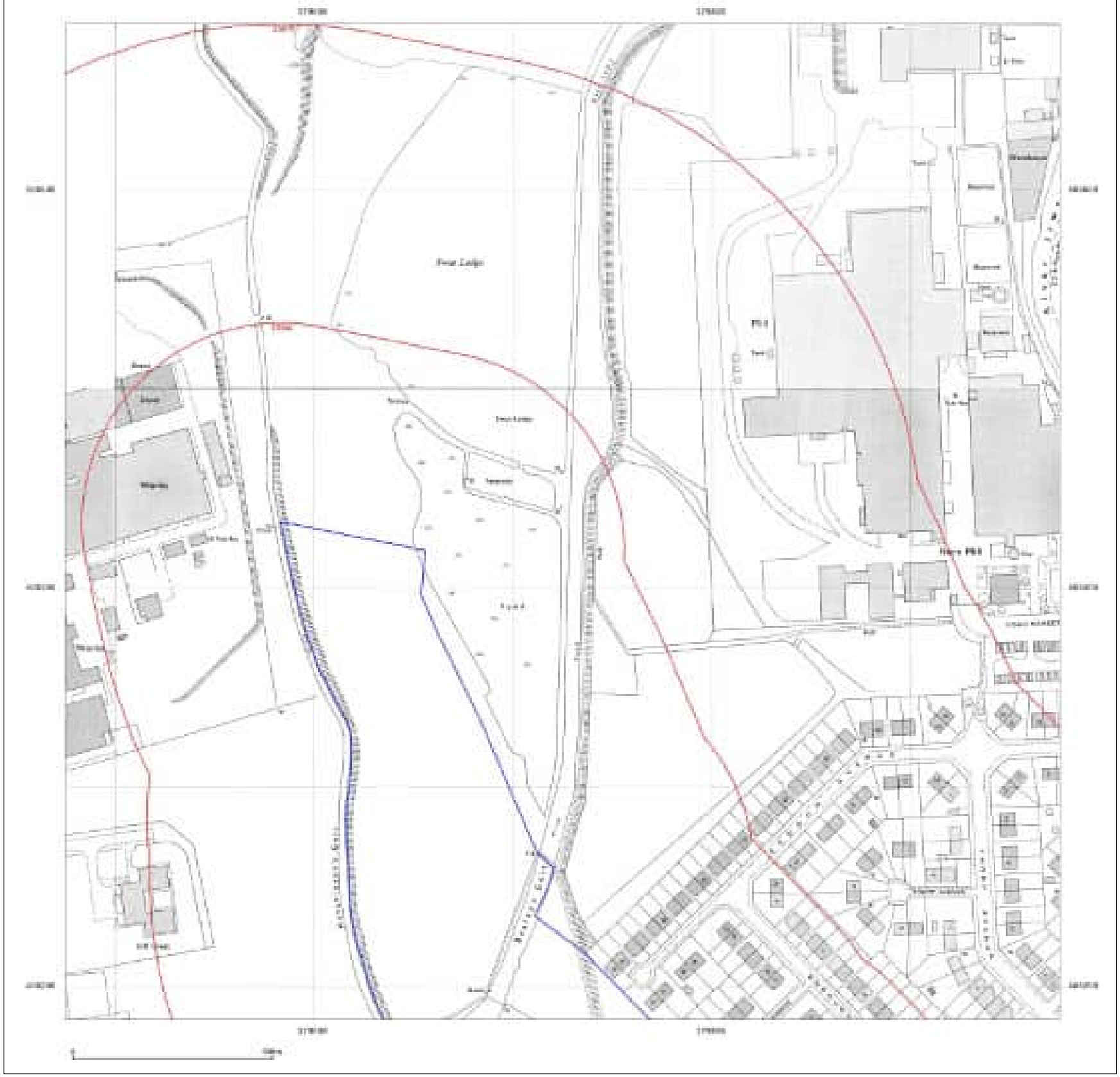
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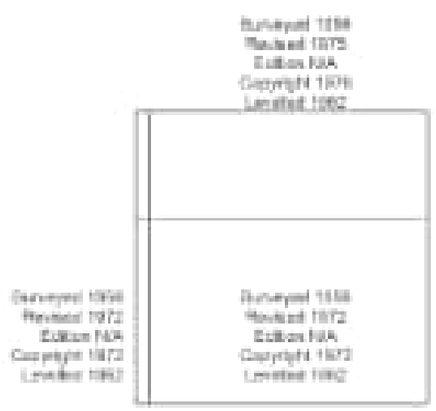
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Grid Ref: 379725, 408433

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Scale: 1:1,250
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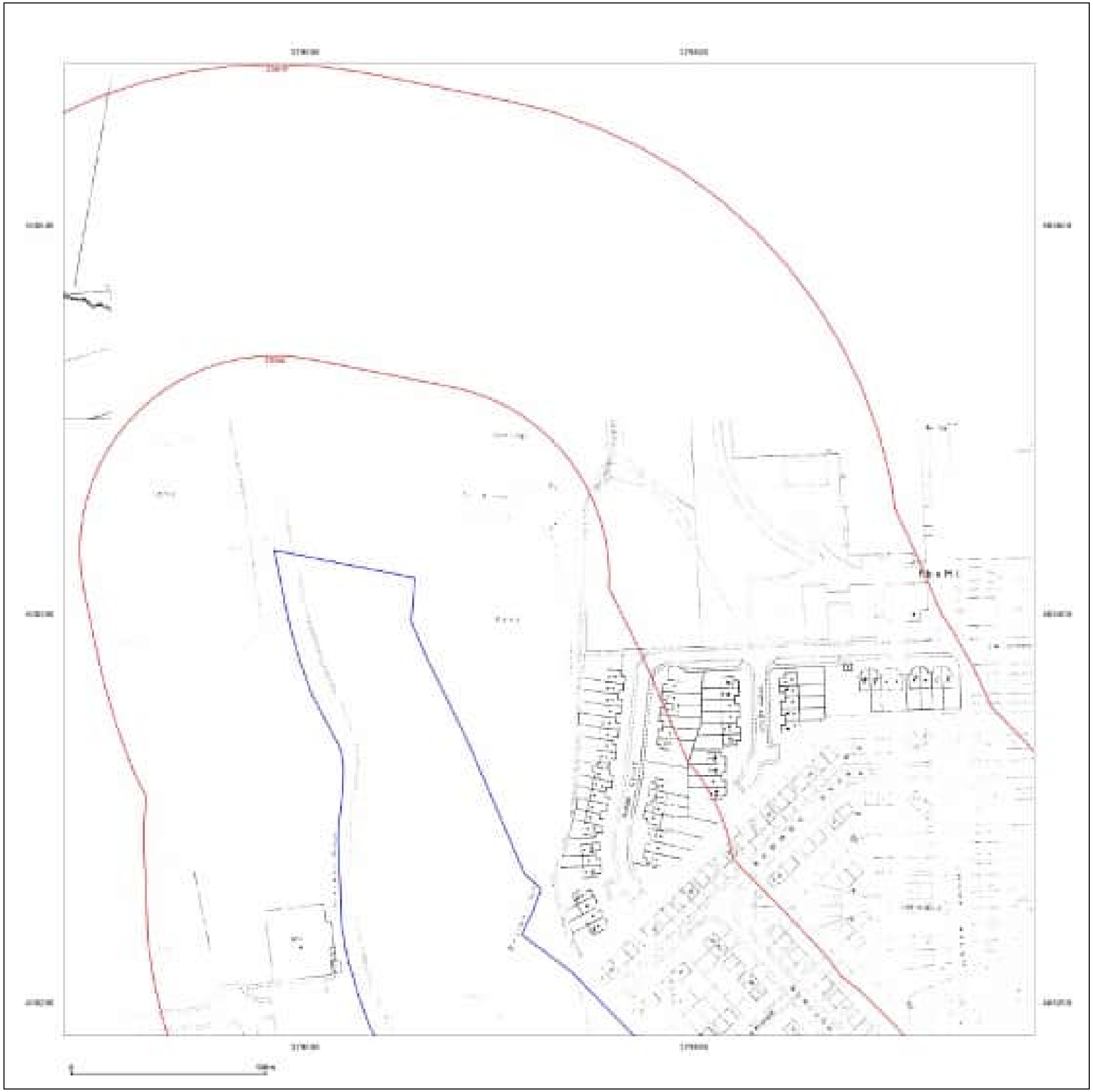
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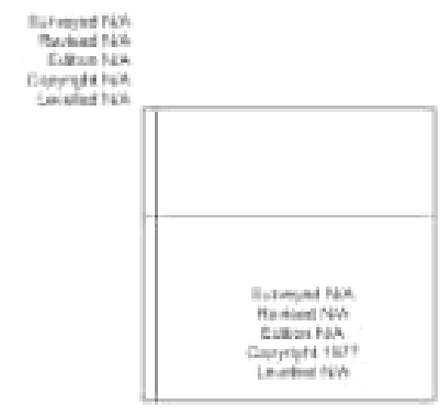
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Grid Ref: 379725, 408433

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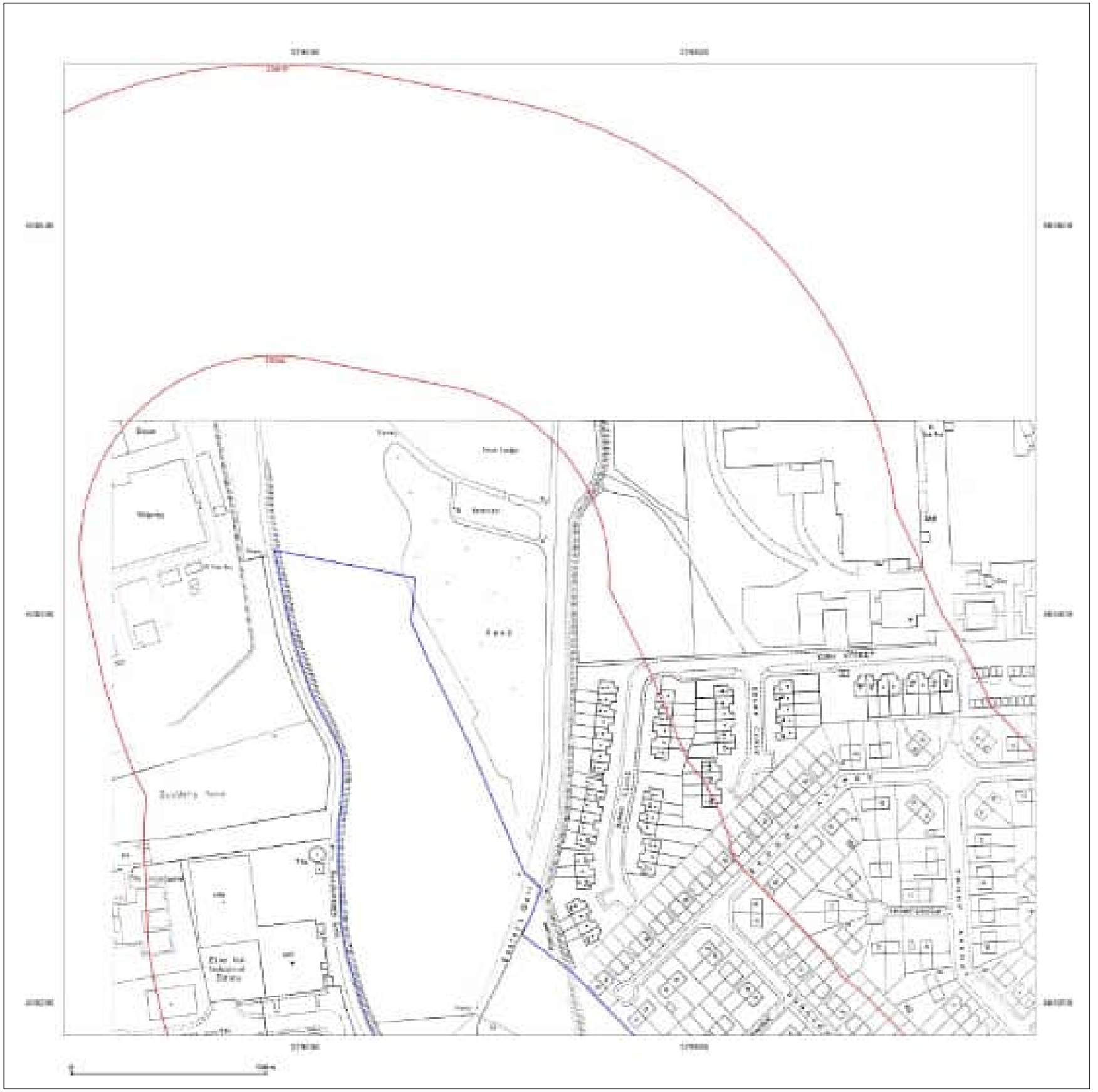
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Grid Ref: 379725, 408433

Map Name: National Grid
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Scale: 1:1,250
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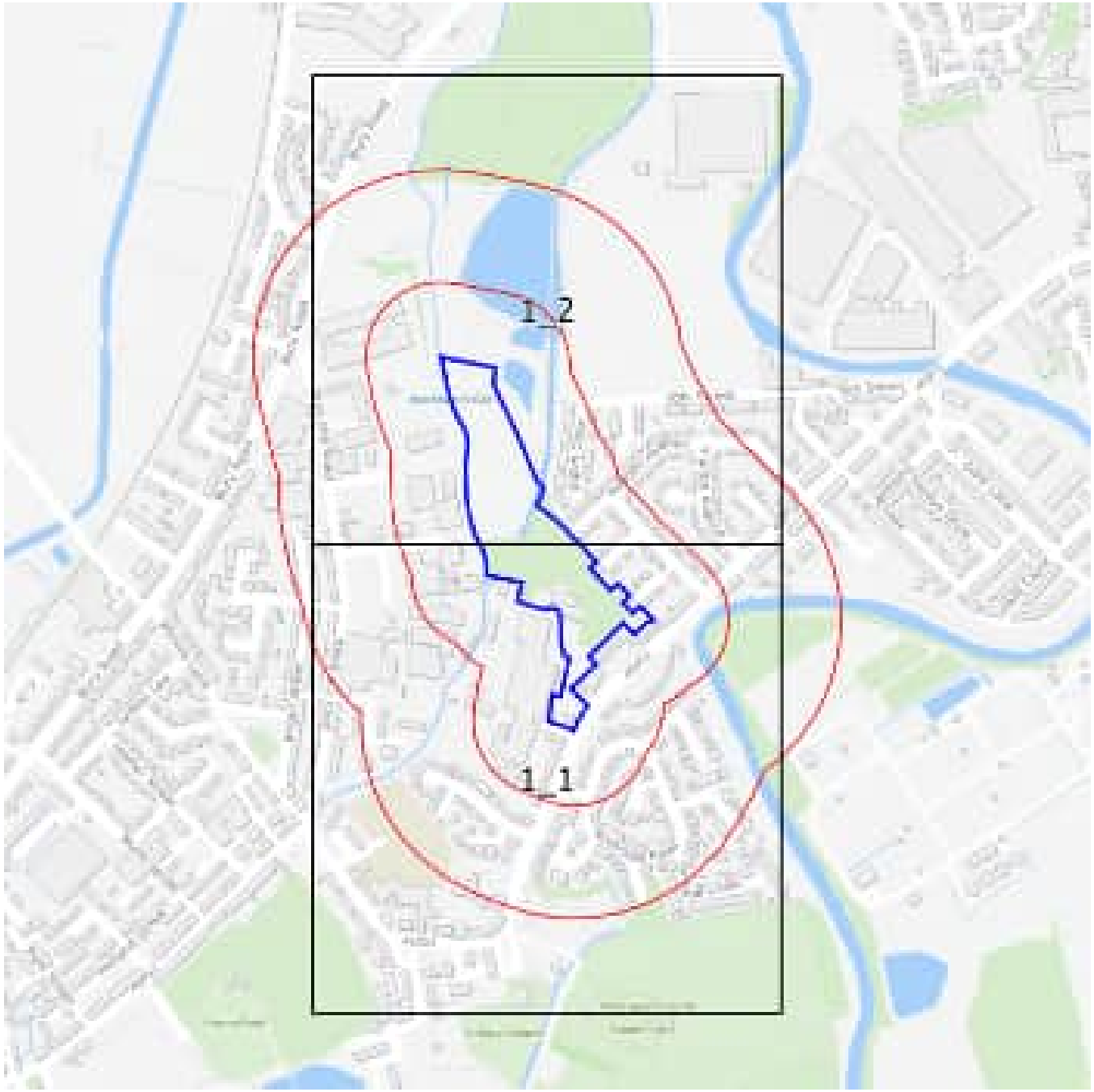
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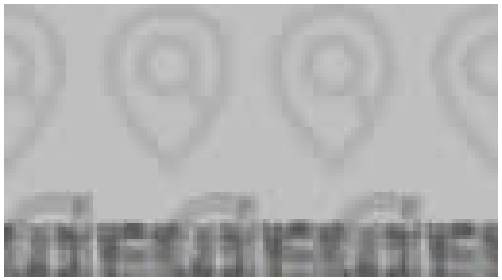
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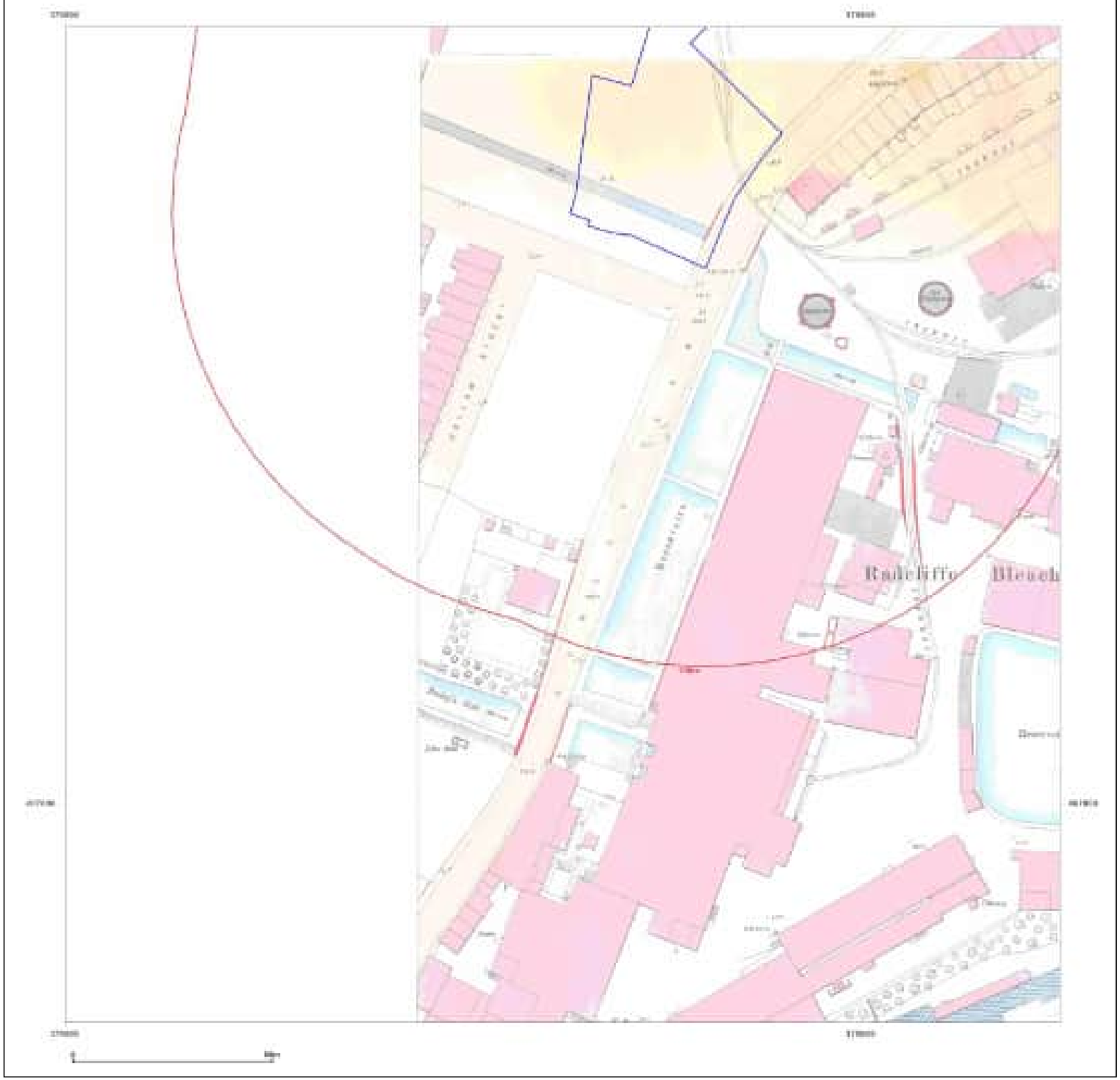
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1:2,500 Scale Grid Index





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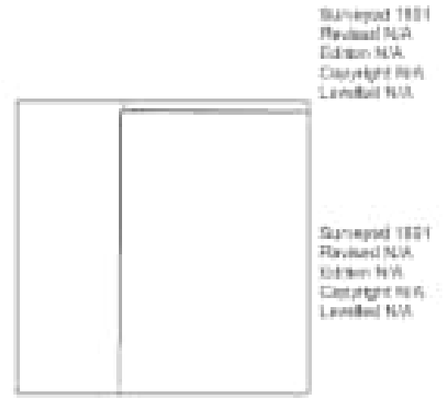
Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

Map Name: County Series Town Plan
Map date: **1891**
Scale: 1:500
Printed at: 1:1,000

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![Groundsure Insights]

Site Details:

Land Adjacent to Bealey
Industrial Estate, Radcliffe, M26
2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

Map Name: County Series

Map date: **1890-1893**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

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Revised 1893
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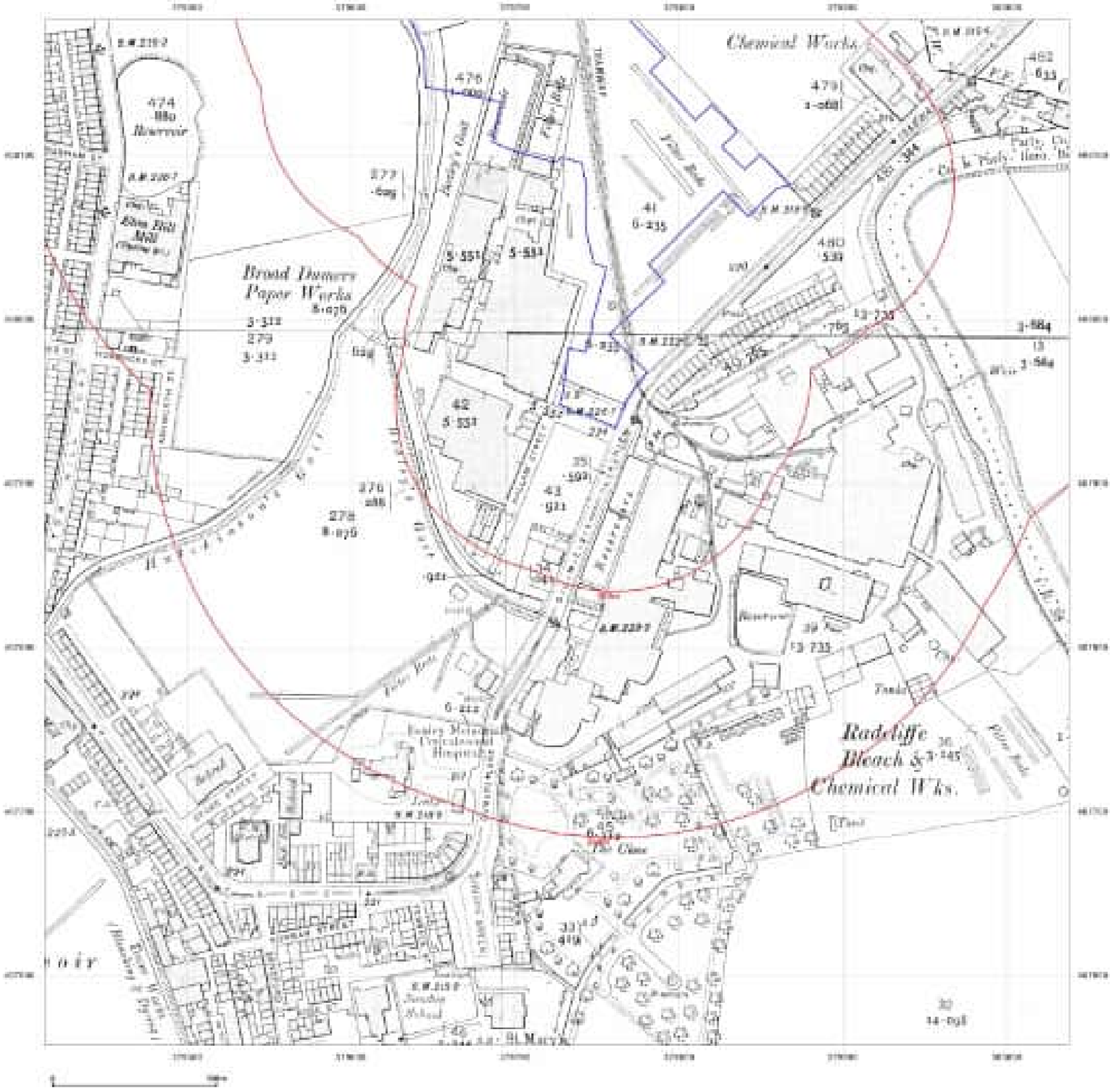
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Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

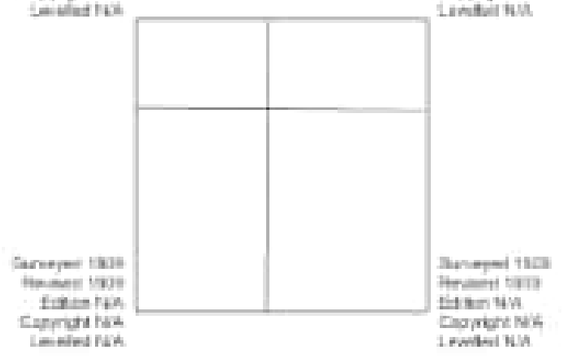
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Printed at: 1:2,500

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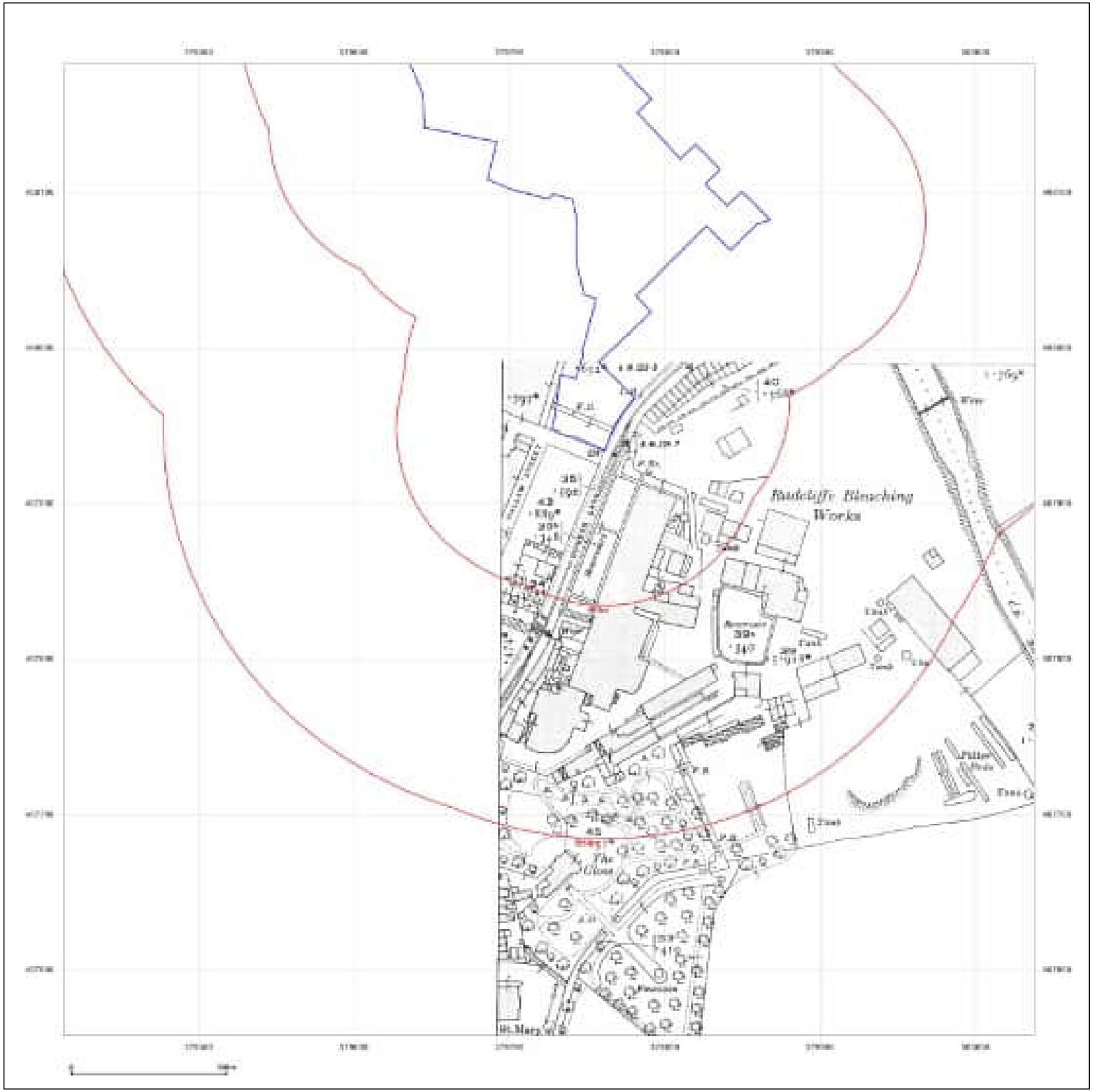
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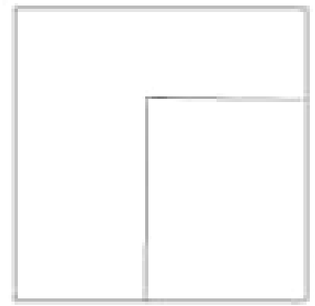
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Industrial Estate, Radcliffe, M26
2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

Map Name: County Series
Map date: **1922**
Scale: 1:2,500
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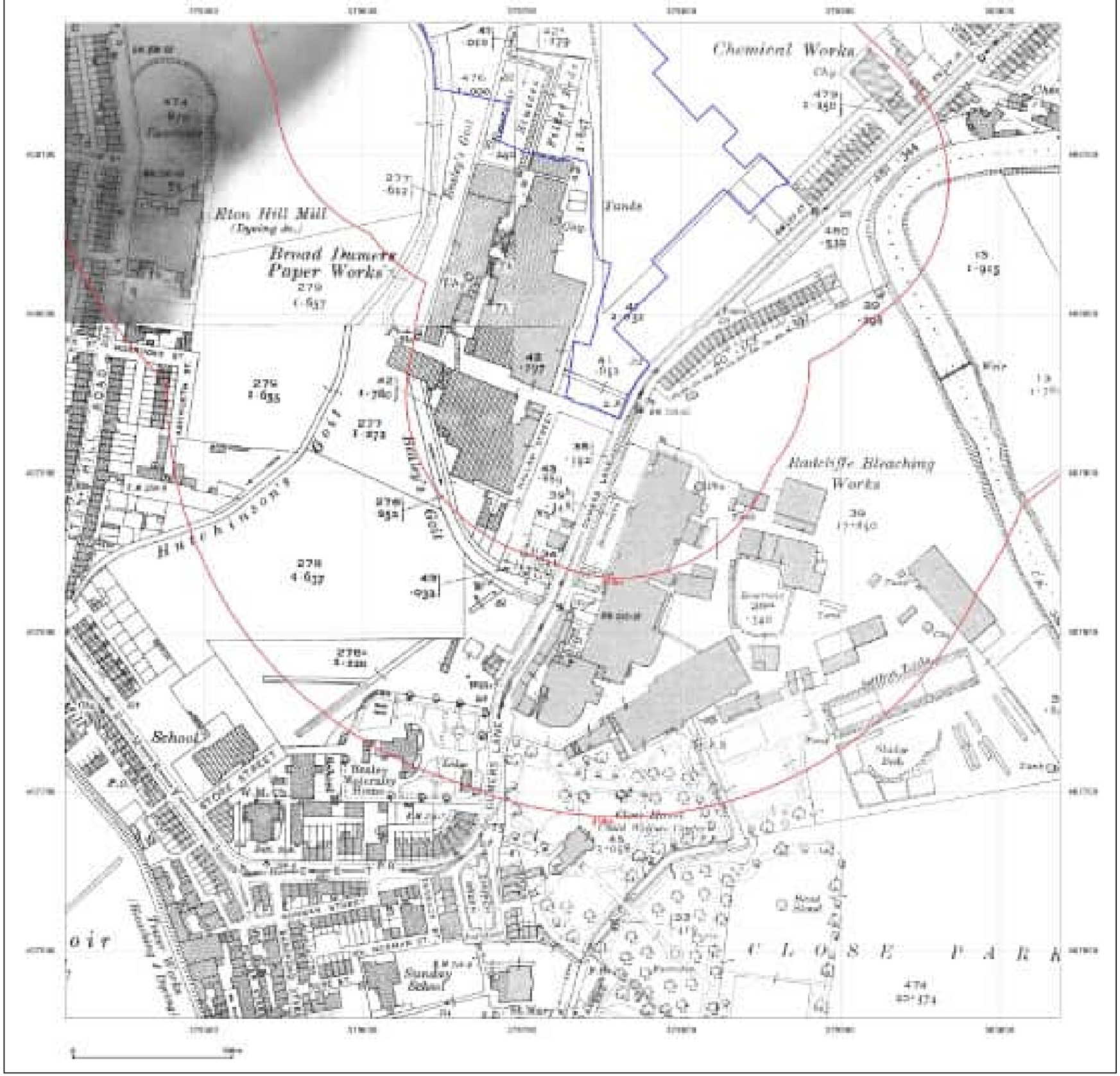
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Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

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Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
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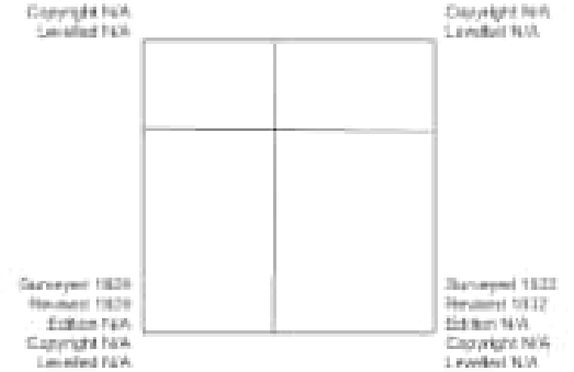
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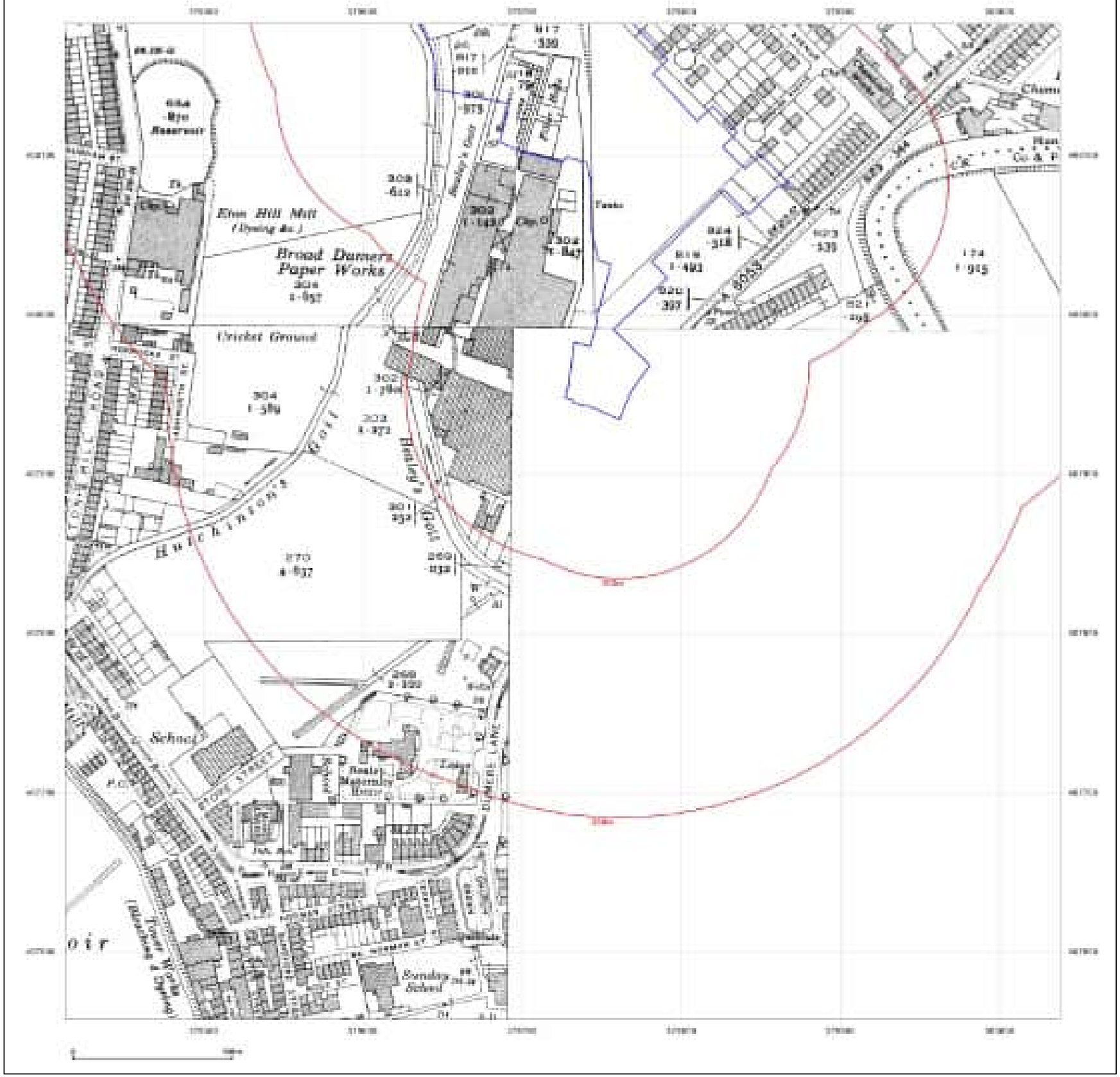
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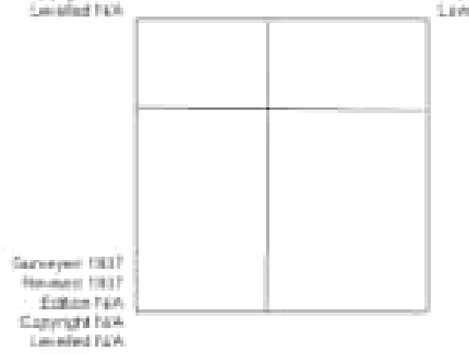
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

Map Name: County Series
Map date: **1937**
Scale: 1:2,500
Printed at: 1:2,500

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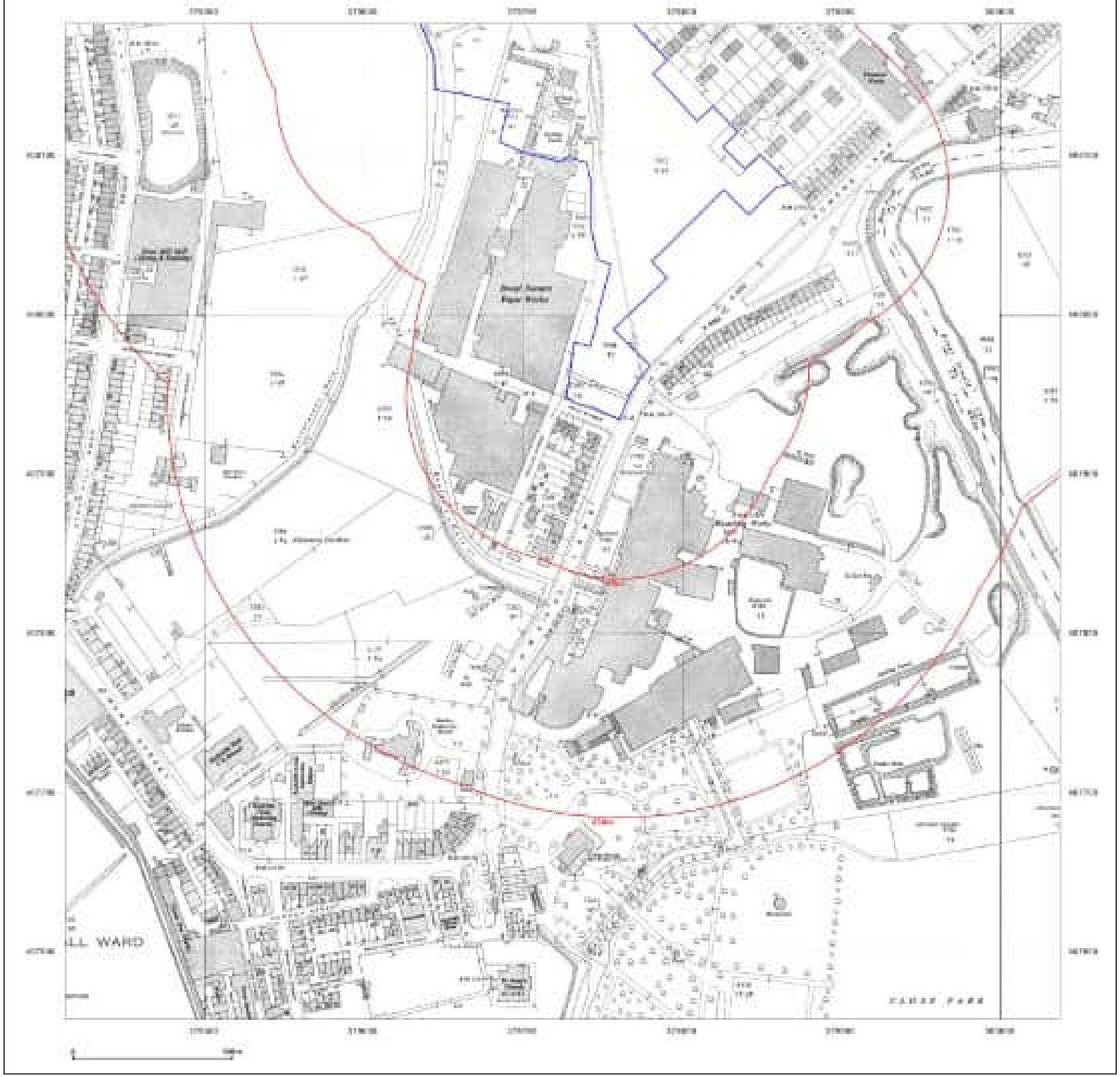
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Site Details:

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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_1
Grid Ref: 379725, 407870

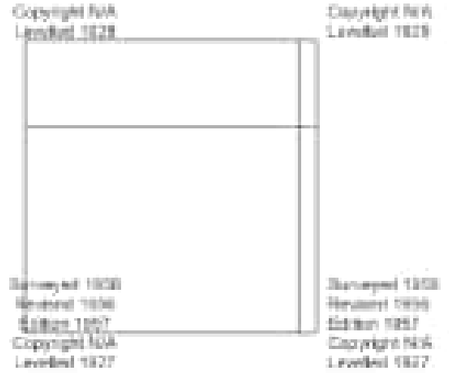
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Scale: 1:2,500

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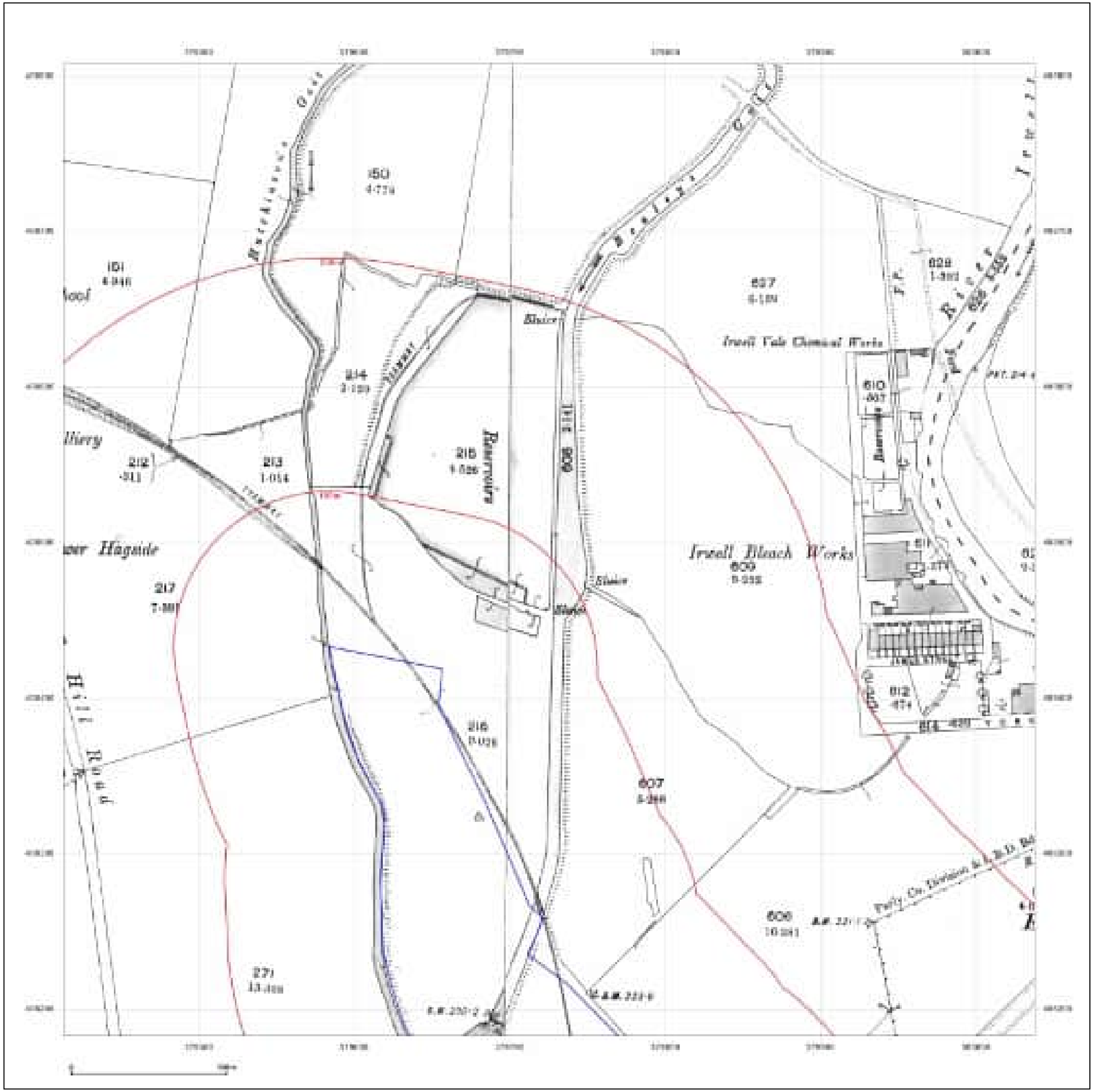
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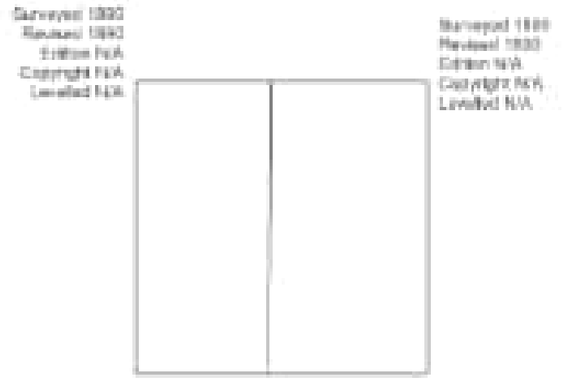
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Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
Grid Ref: 379725, 408495

Map Name: County Series
Map date: 1890
Scale: 1:2,500
Printed at: 1:2,500

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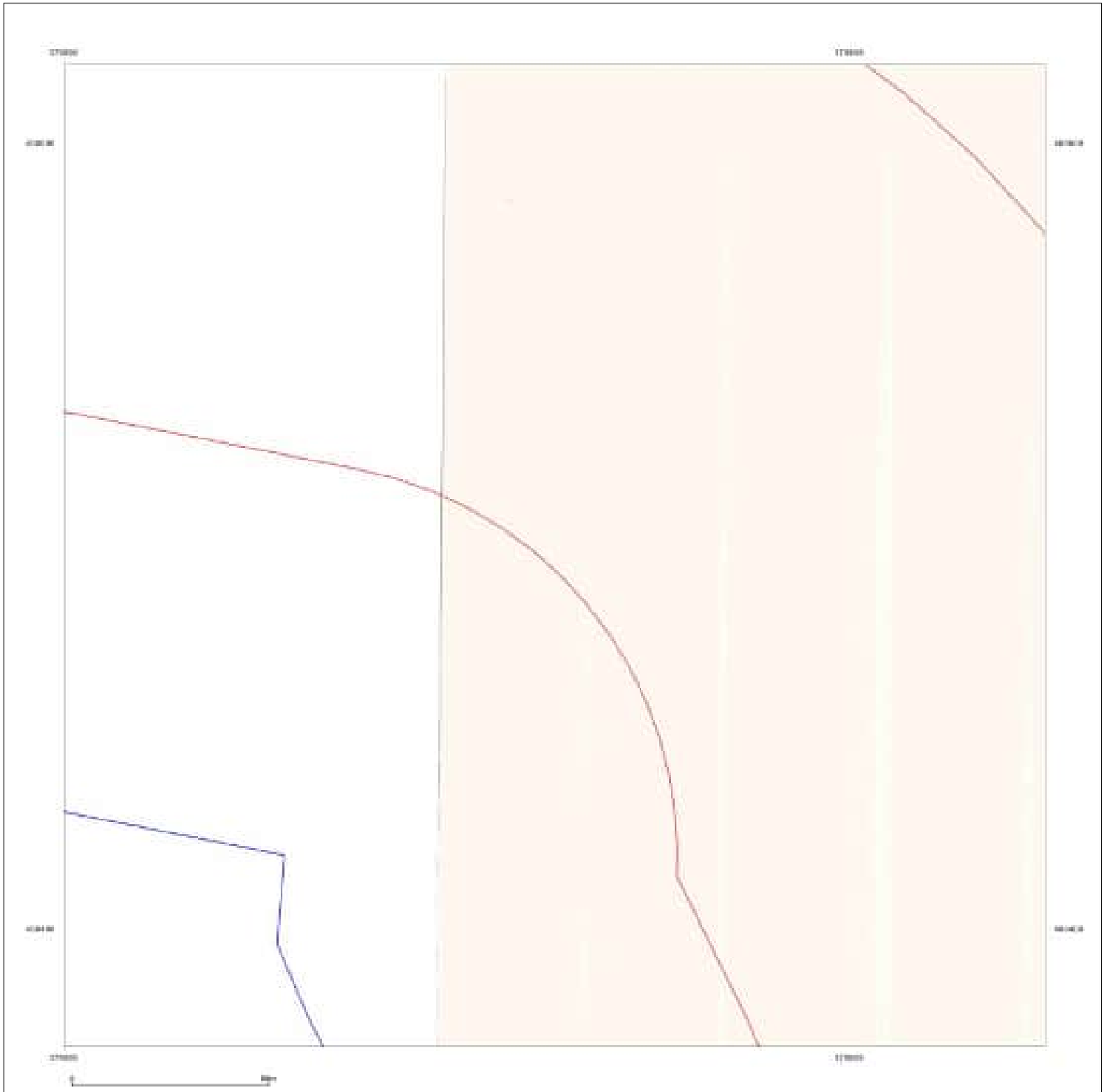
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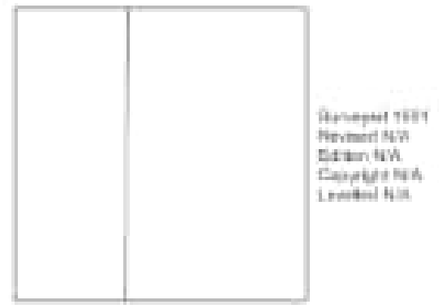
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
Grid Ref: 379725, 408495

Map Name: County Series Town Plan
Map date: **1891**
Scale: 1:500
Printed at: 1:1,000

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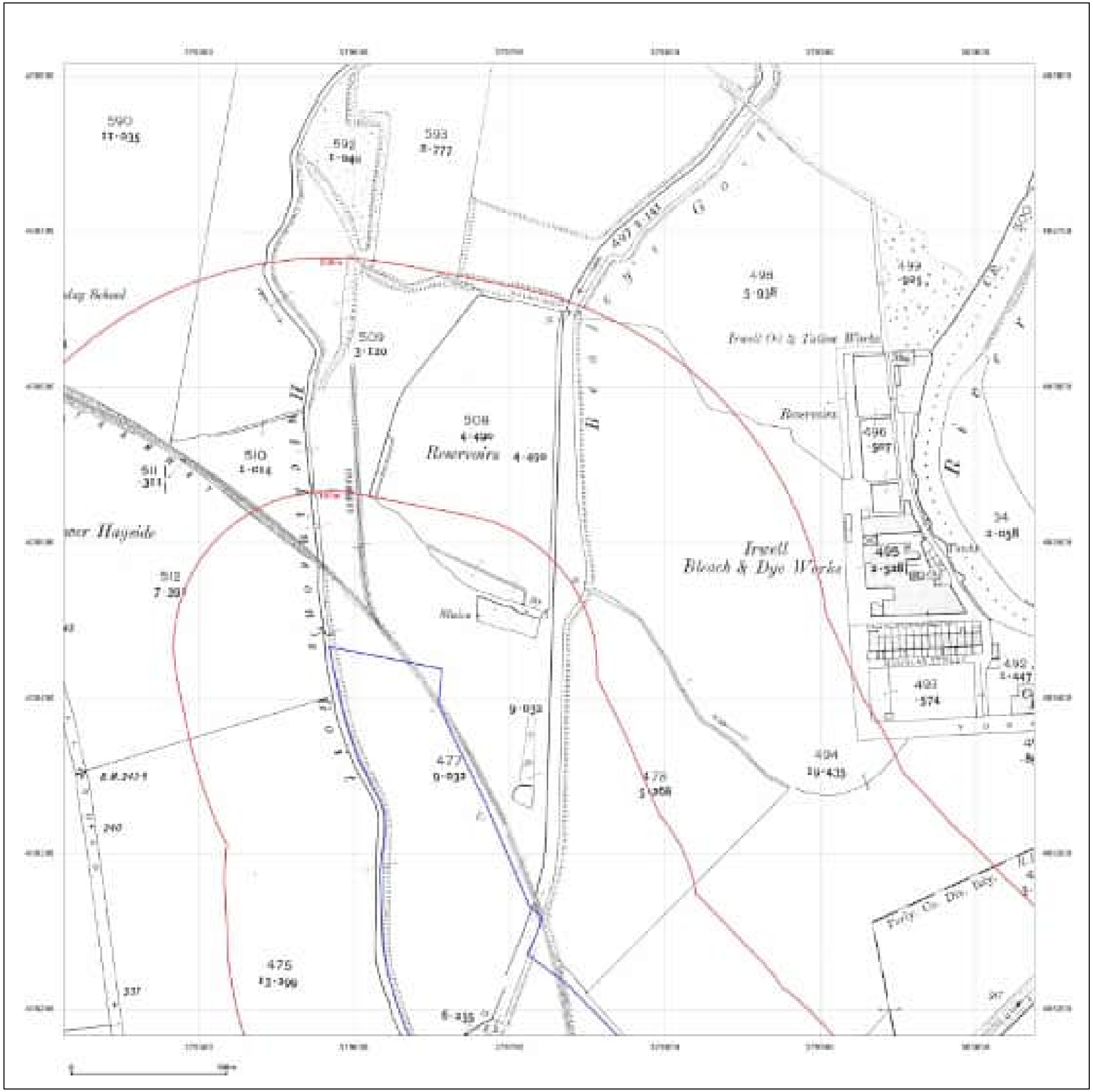
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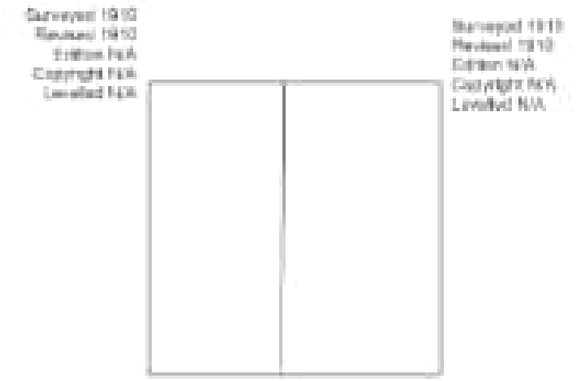
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
Grid Ref: 379725, 408495

Map Name: County Series
Map date: **1910**
Scale: 1:2,500
Printed at: 1:2,500

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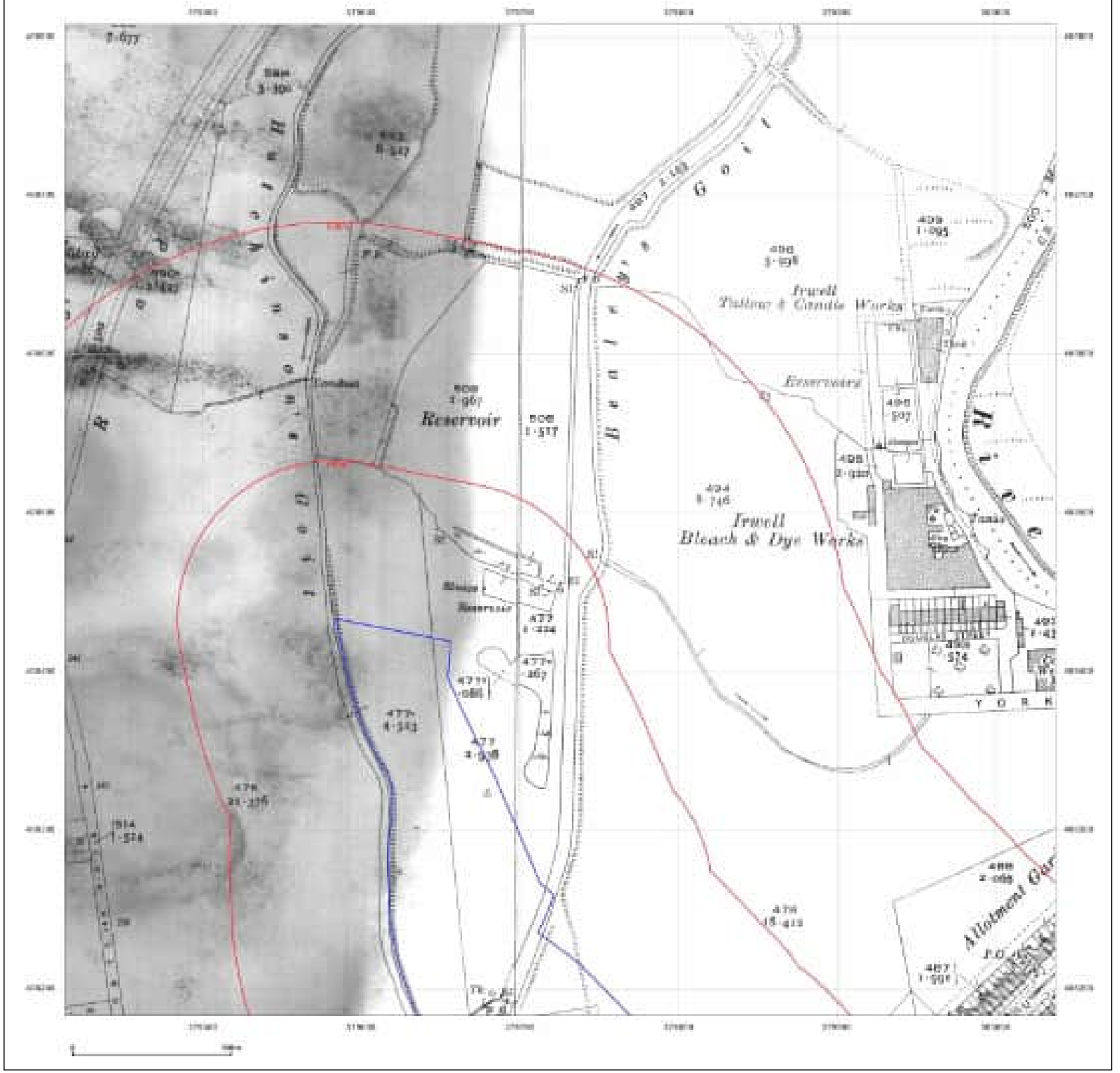
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Site Details:

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Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
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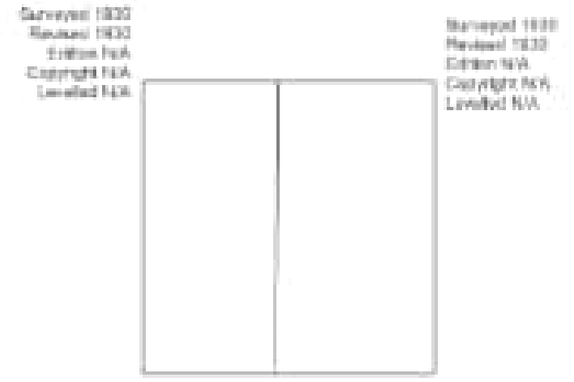
Map Name: County Series

Map date: **1930**

Scale: 1:2,500

Printed at: 1:2,500

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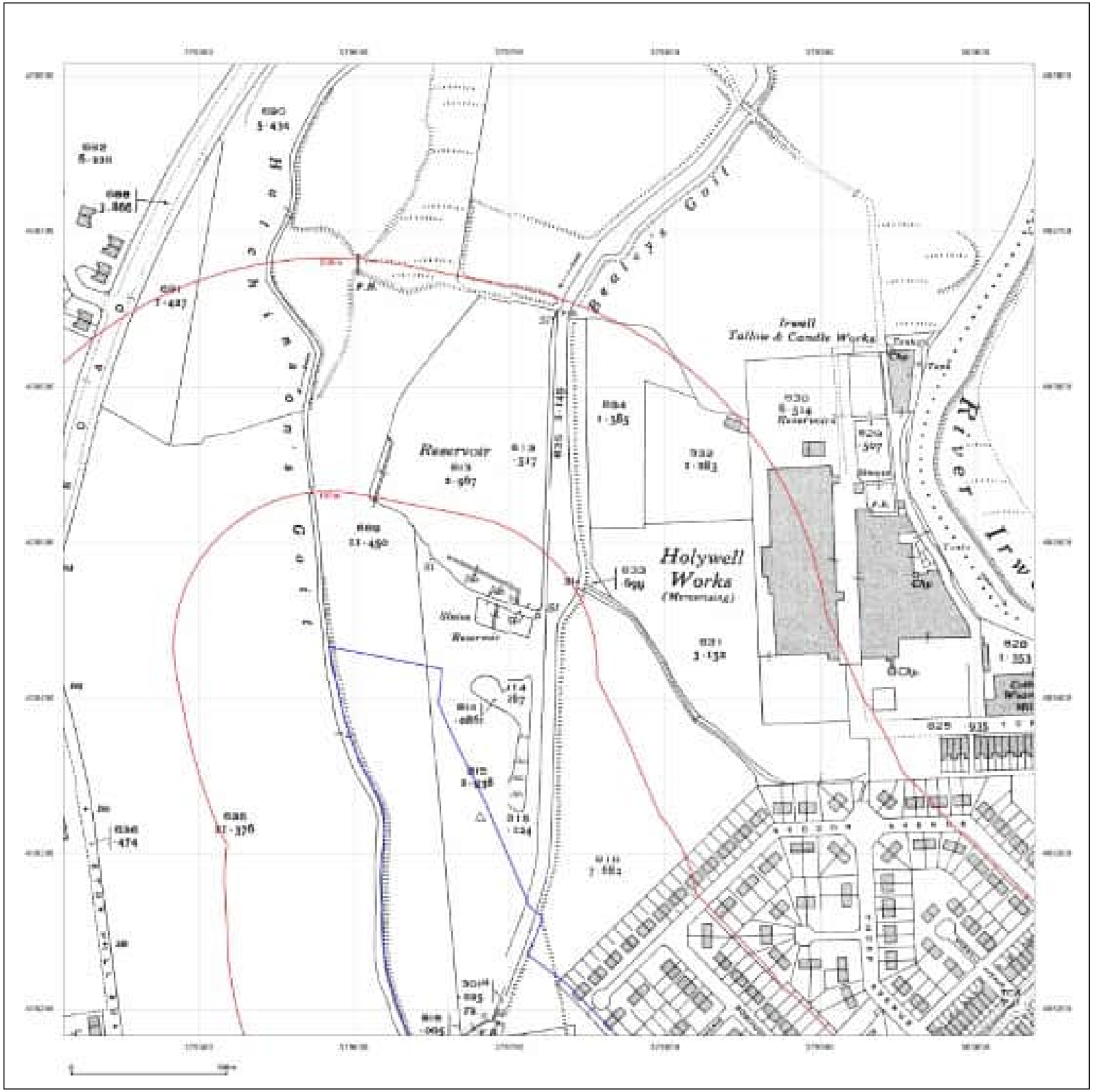
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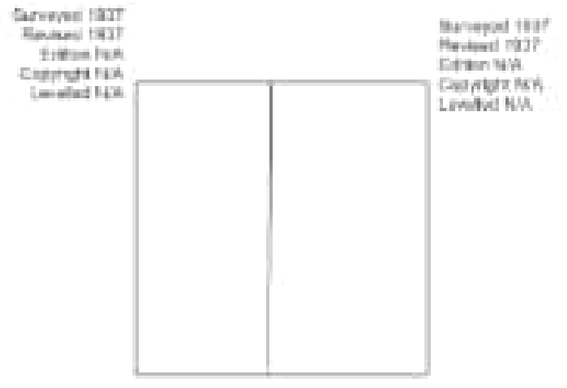
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
Grid Ref: 379725, 408495

Map Name: County Series
Map date: **1937**
Scale: 1:2,500
Printed at: 1:2,500

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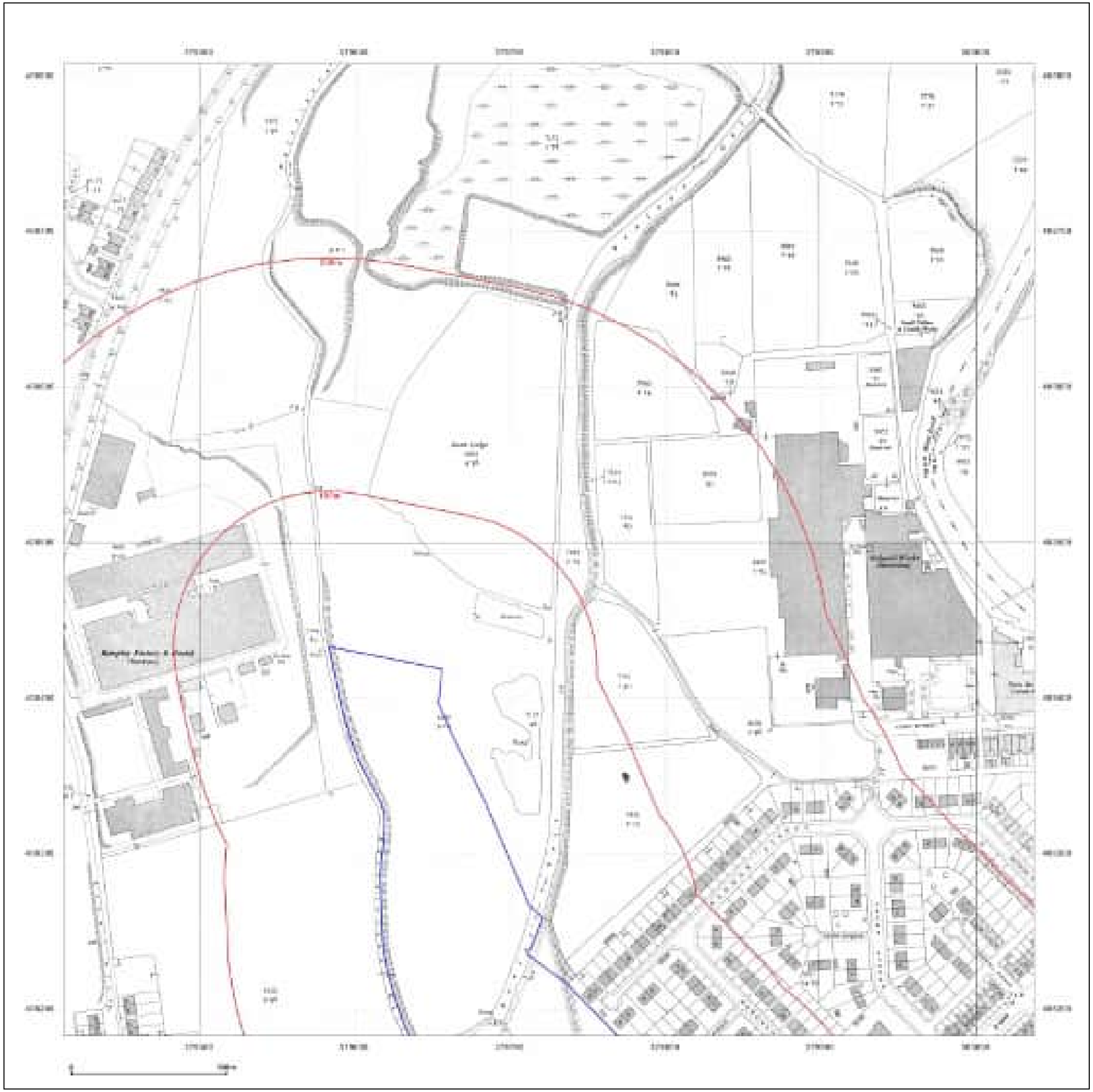
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Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_LS_1_2
Grid Ref: 379725, 408495

Map Name: National Grid

Map date: **1956**

Scale: 1:2,500

Printed at: 1:2,500

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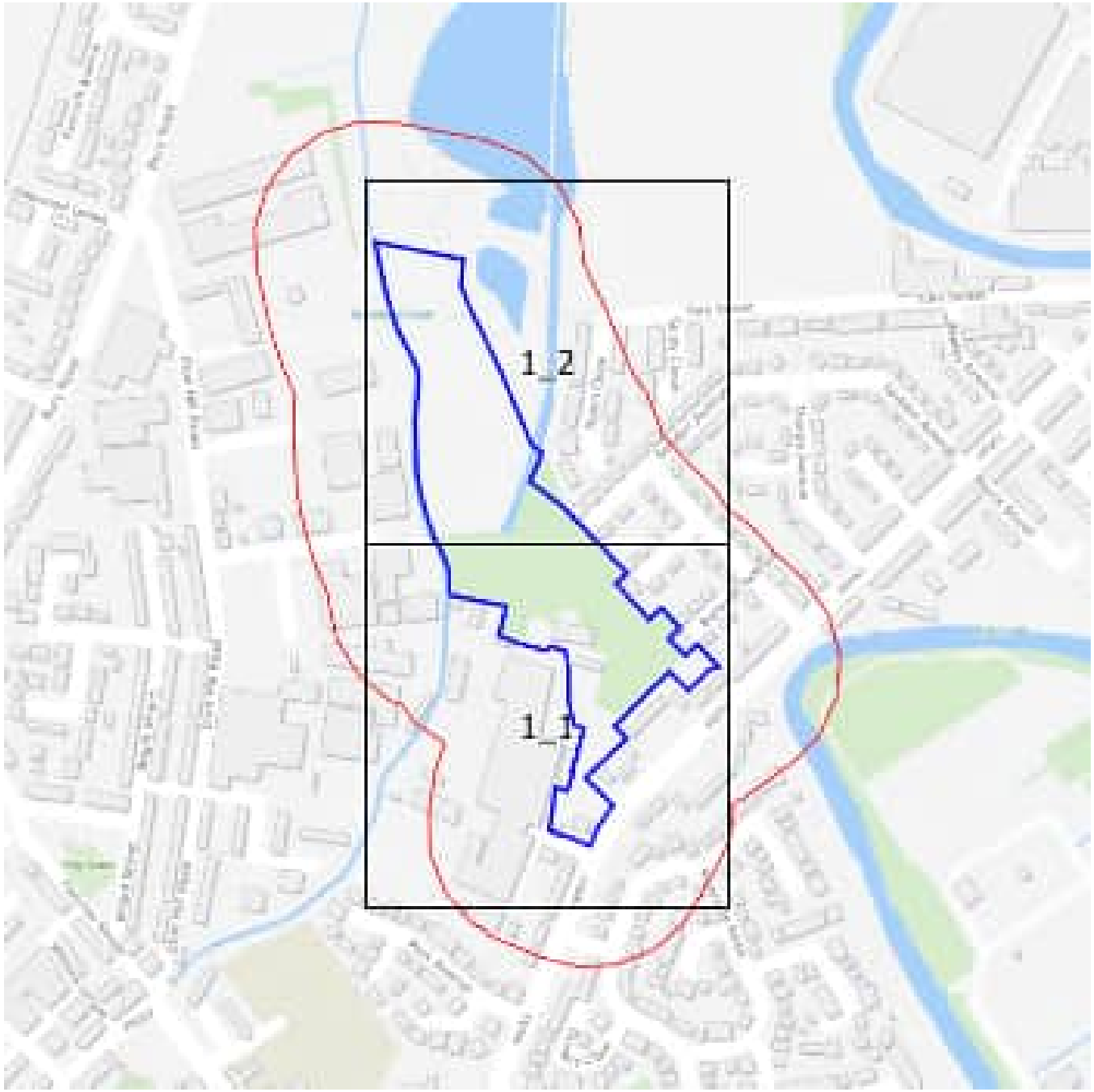
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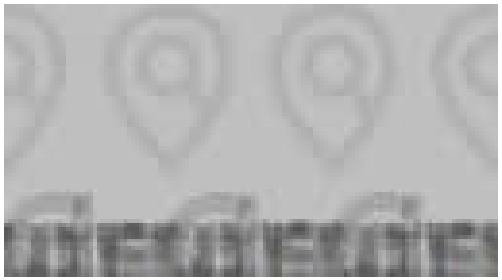
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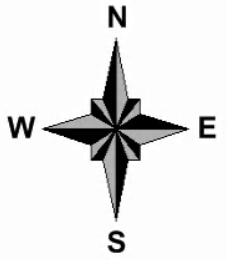
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Landline Scale Grid Index





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Site Details:

Land Adjacent to Bealey
Industrial Estate, Radcliffe, M26
2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11_Landline_1_1
Grid Ref: 379725, 408033

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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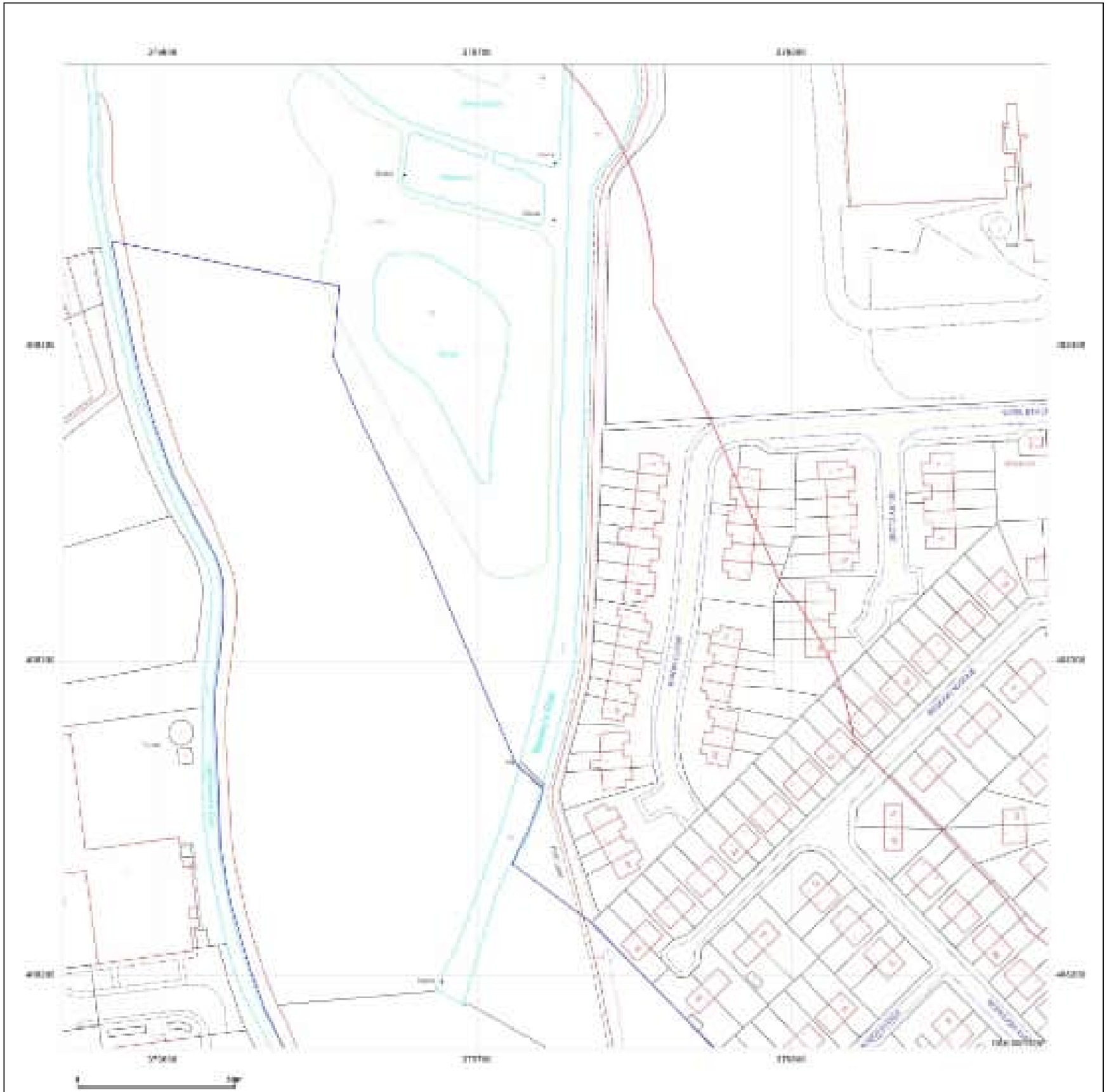
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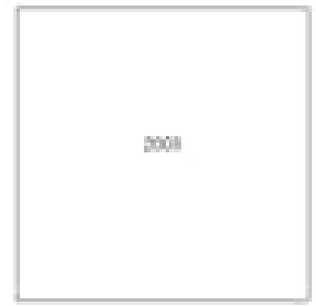
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Land Adjacent to Bealey
Industrial Estate, Radcliffe, M26
2BD

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Report Ref: GS-HMJ-3VX-27B-I11_Landline_1_2
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Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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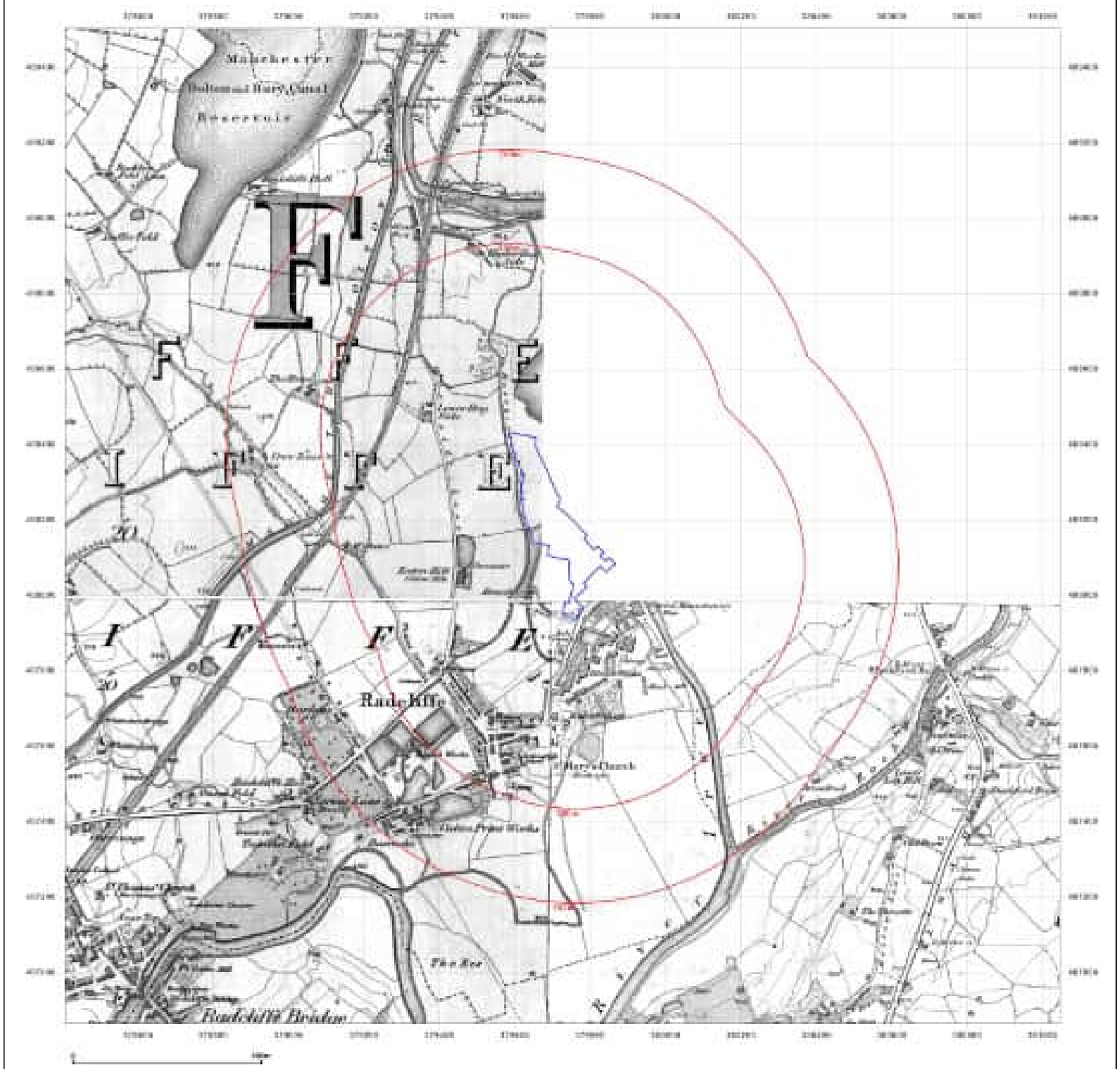
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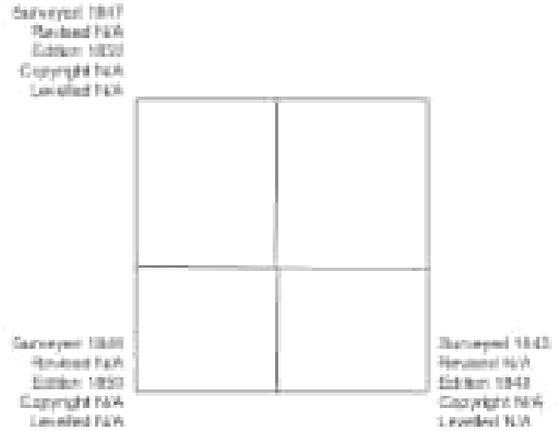
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: County Series
Map date: **1848-1850**
Scale: 1:10,560
Printed at: 1:10,560

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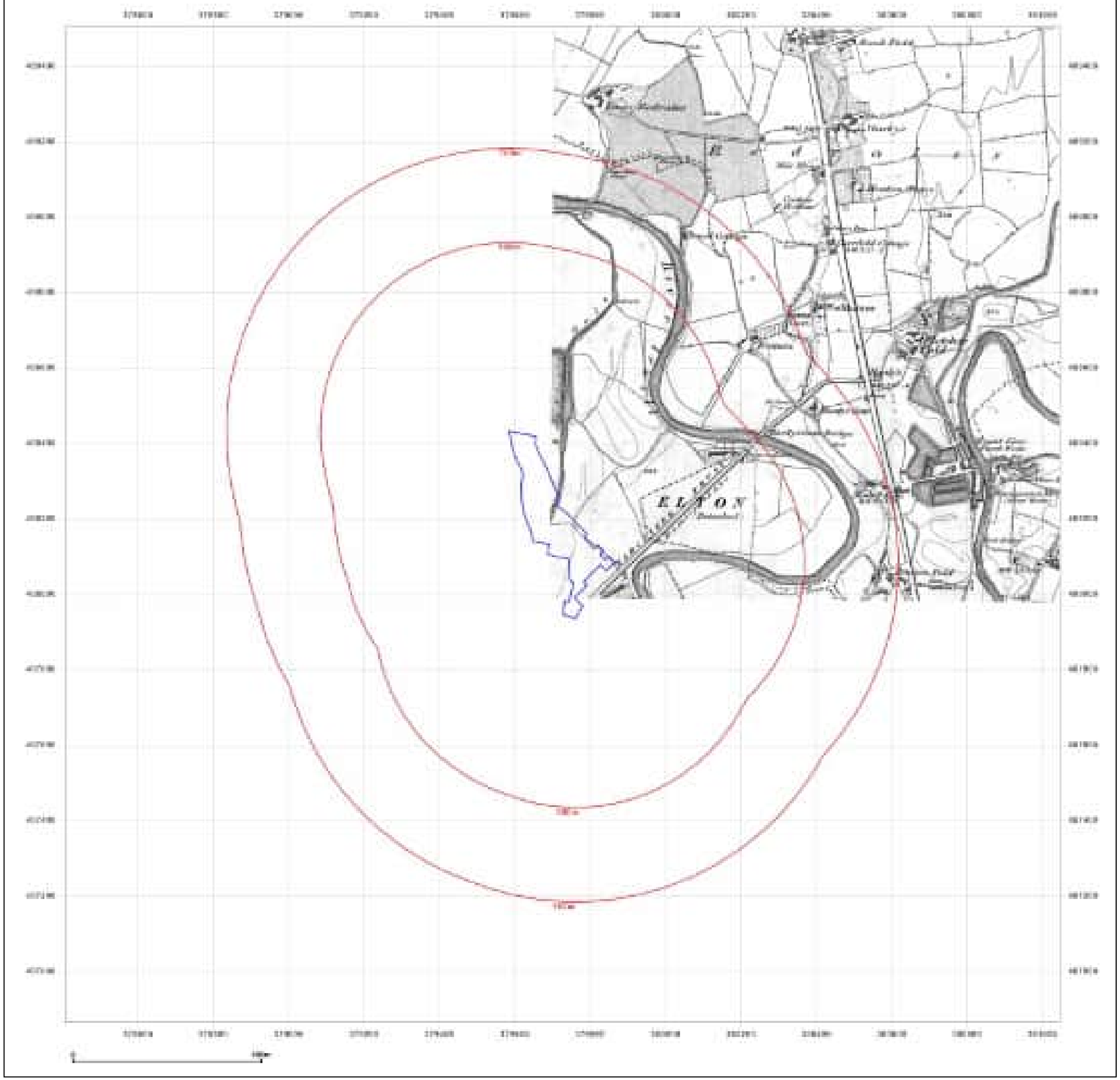
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Site Details:

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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: County Series

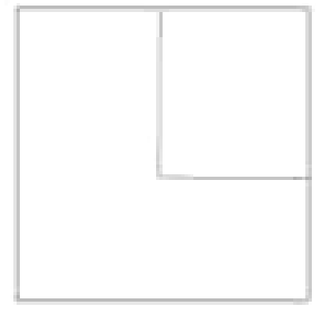
Map date: **1851**

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Printed at: 1:10,560

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Survey: 1847
Revised: N/A
Edition: 1851
Copyright: N/A
Levelled: N/A



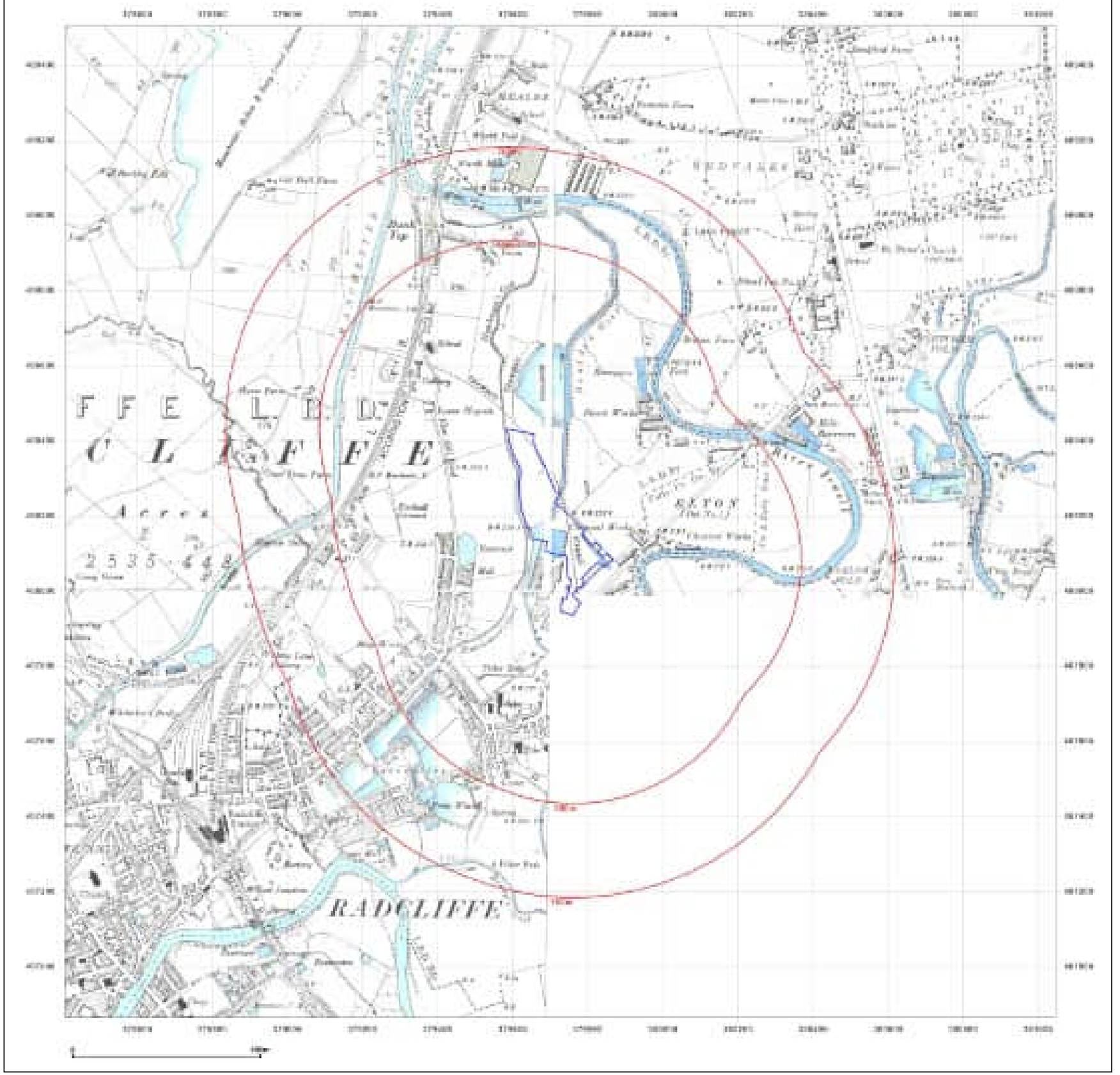
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Site Details:

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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

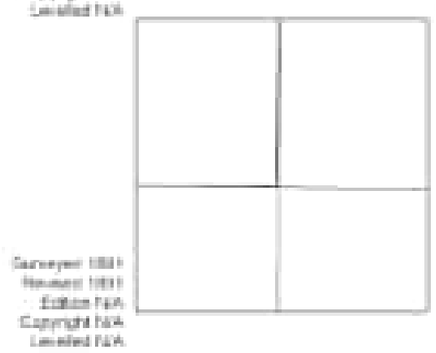
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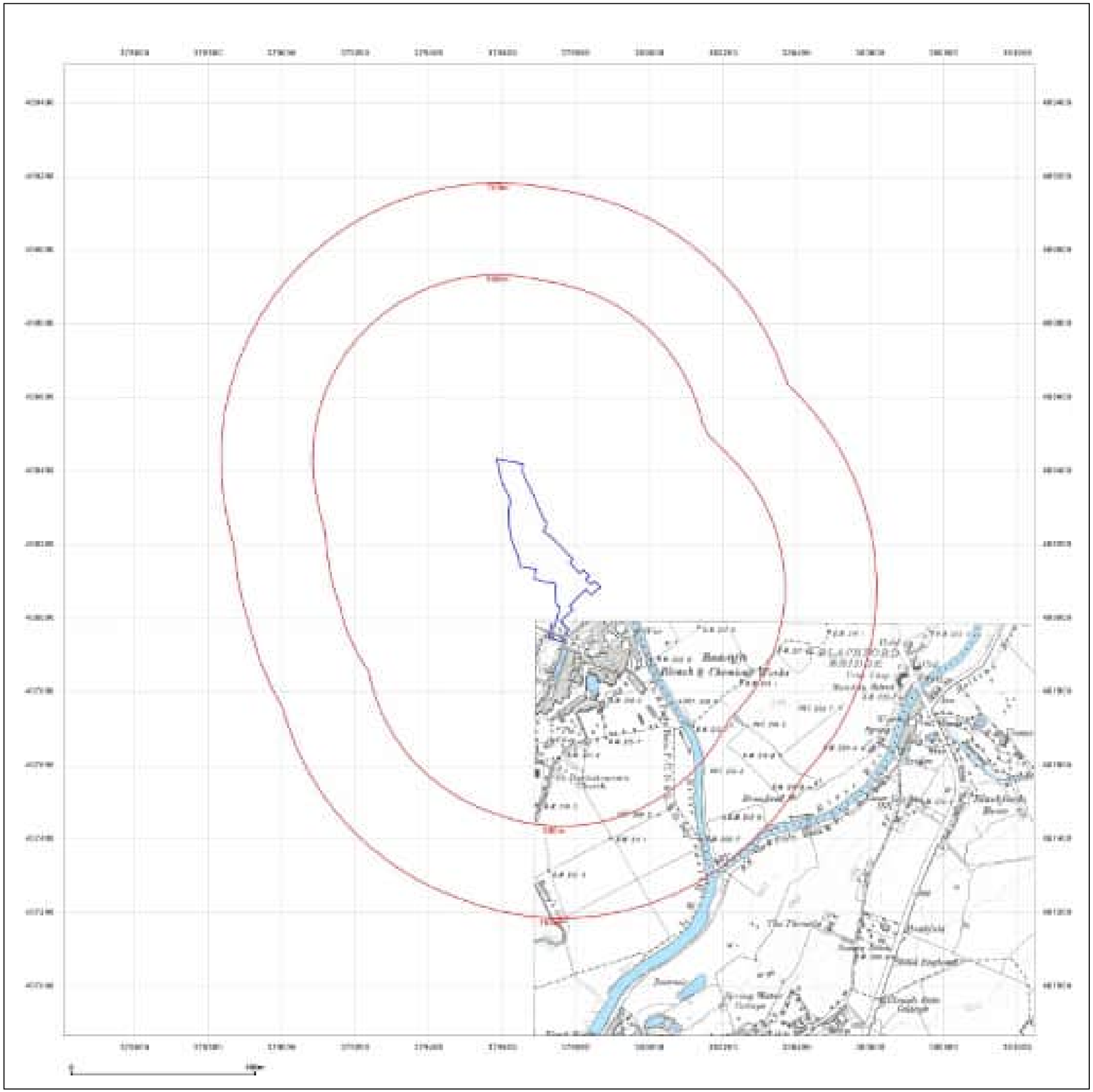
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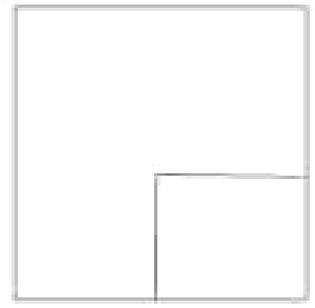
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Grid Ref: 379725, 408183

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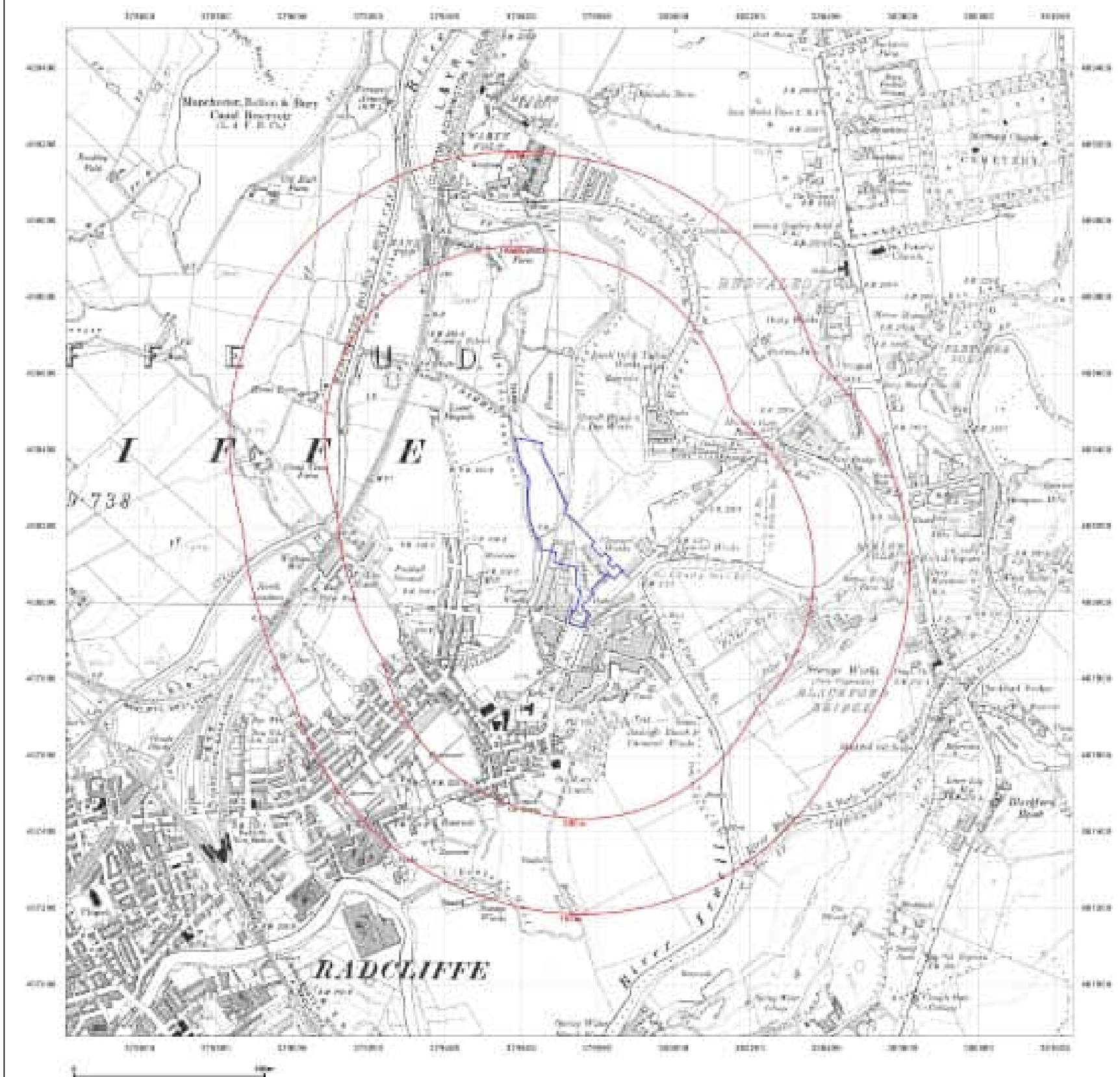
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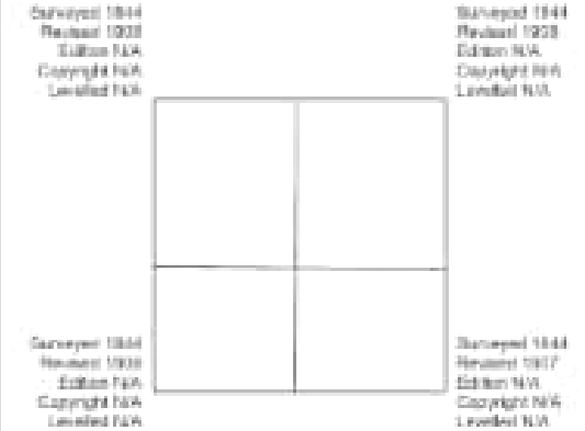
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Grid Ref: 379725, 408183

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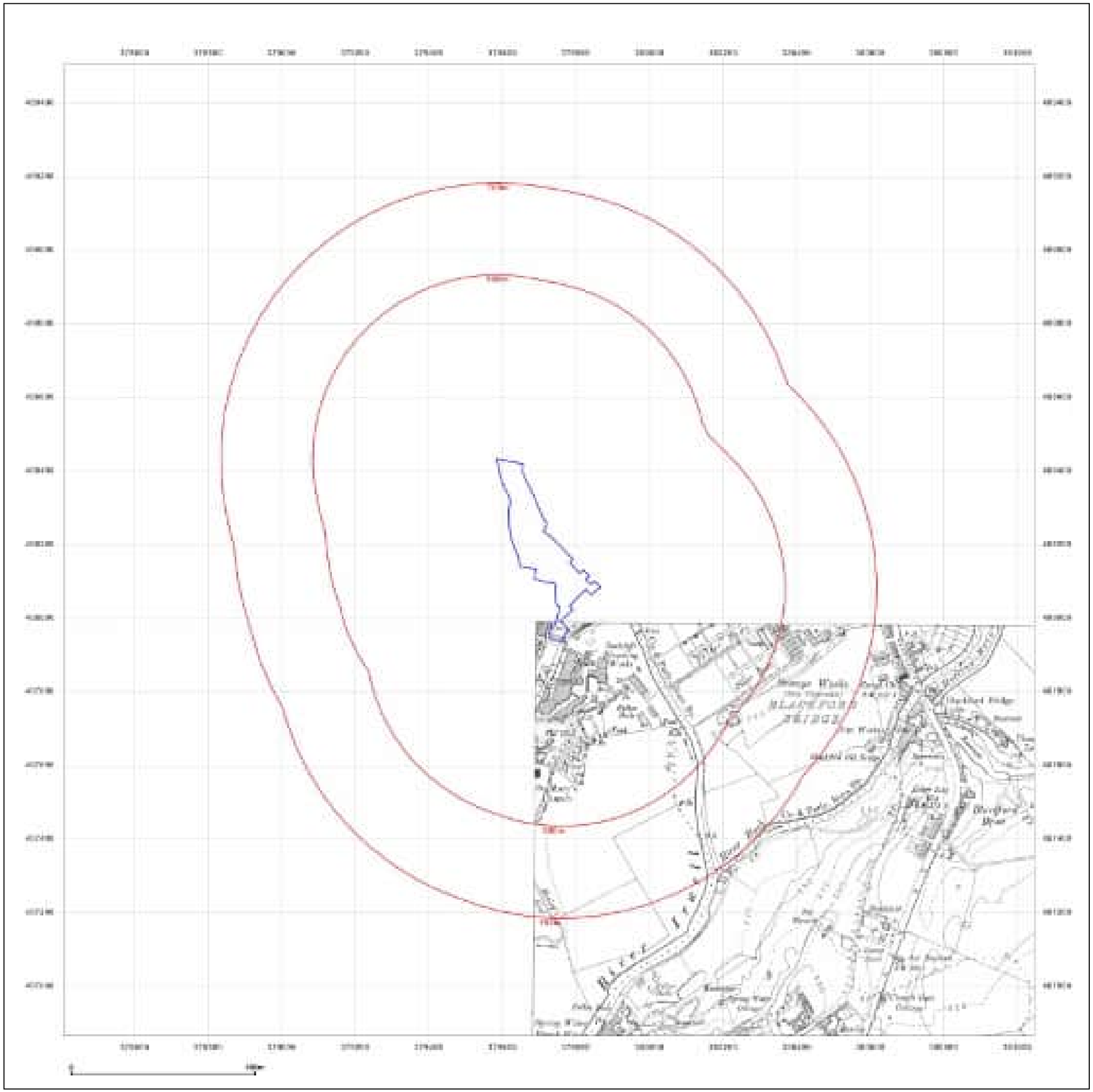
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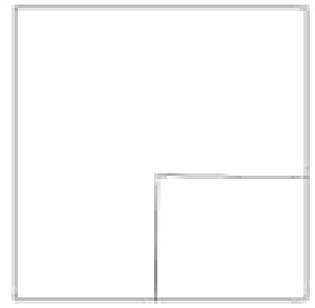
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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: County Series
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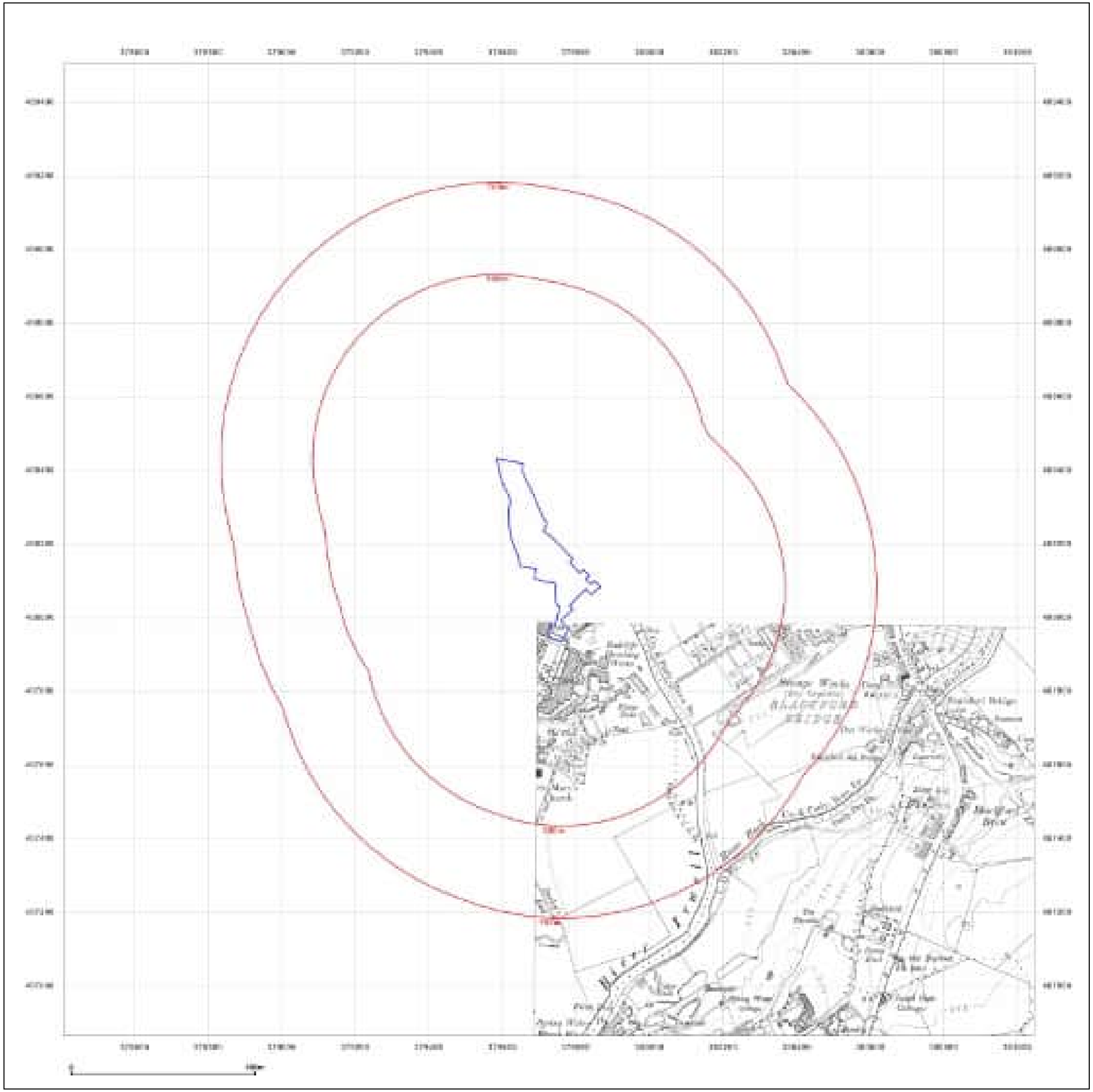
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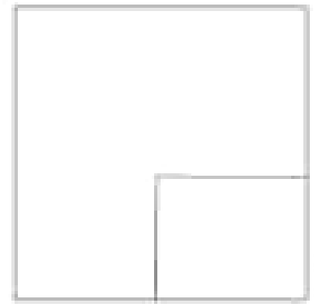
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: County Series
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Scale: 1:10,560
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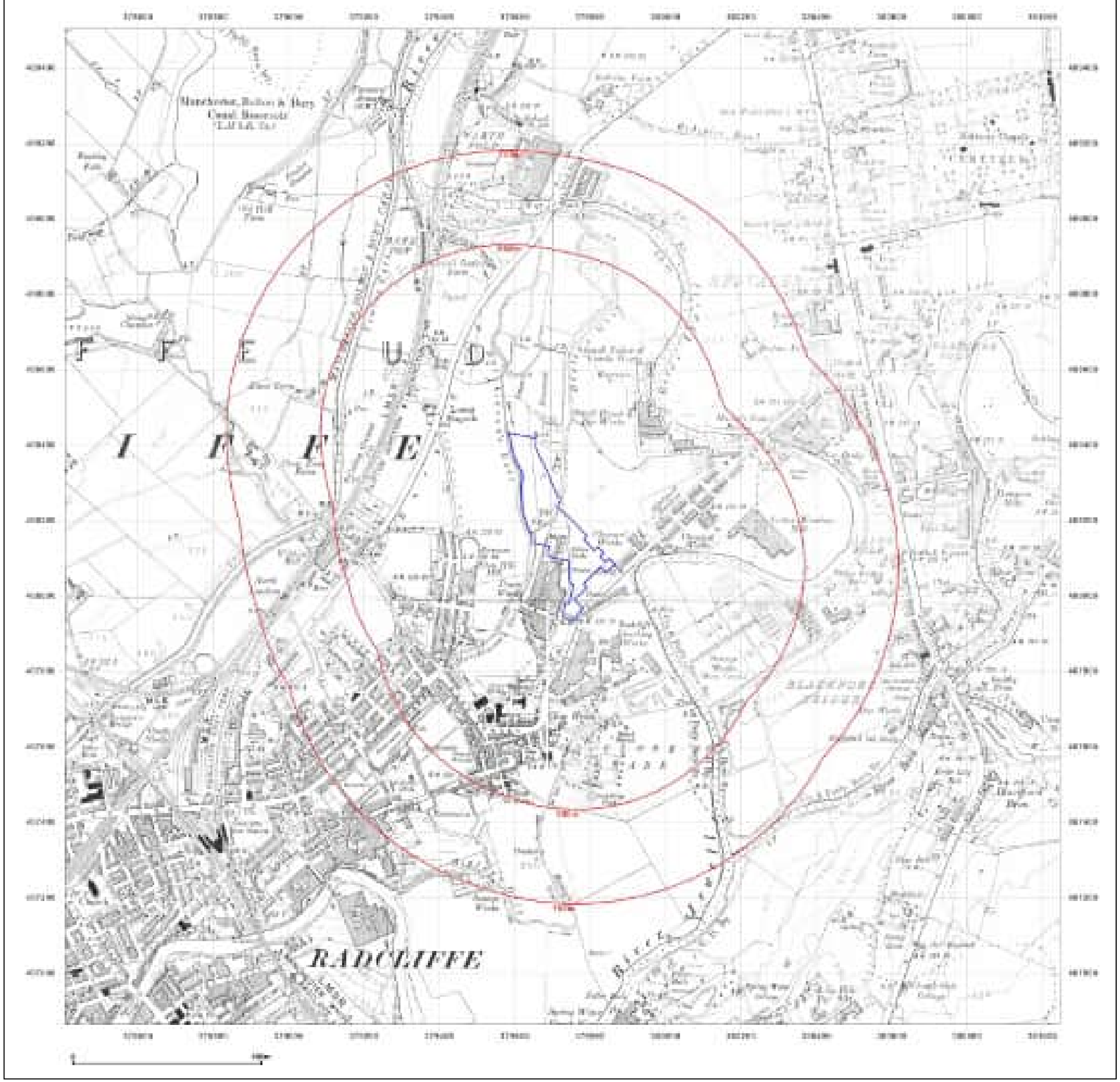
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

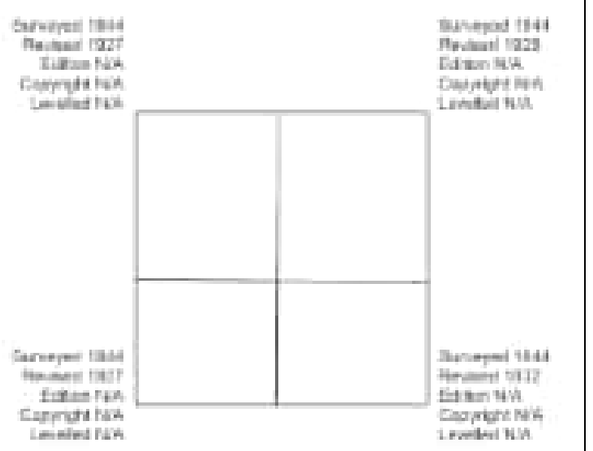
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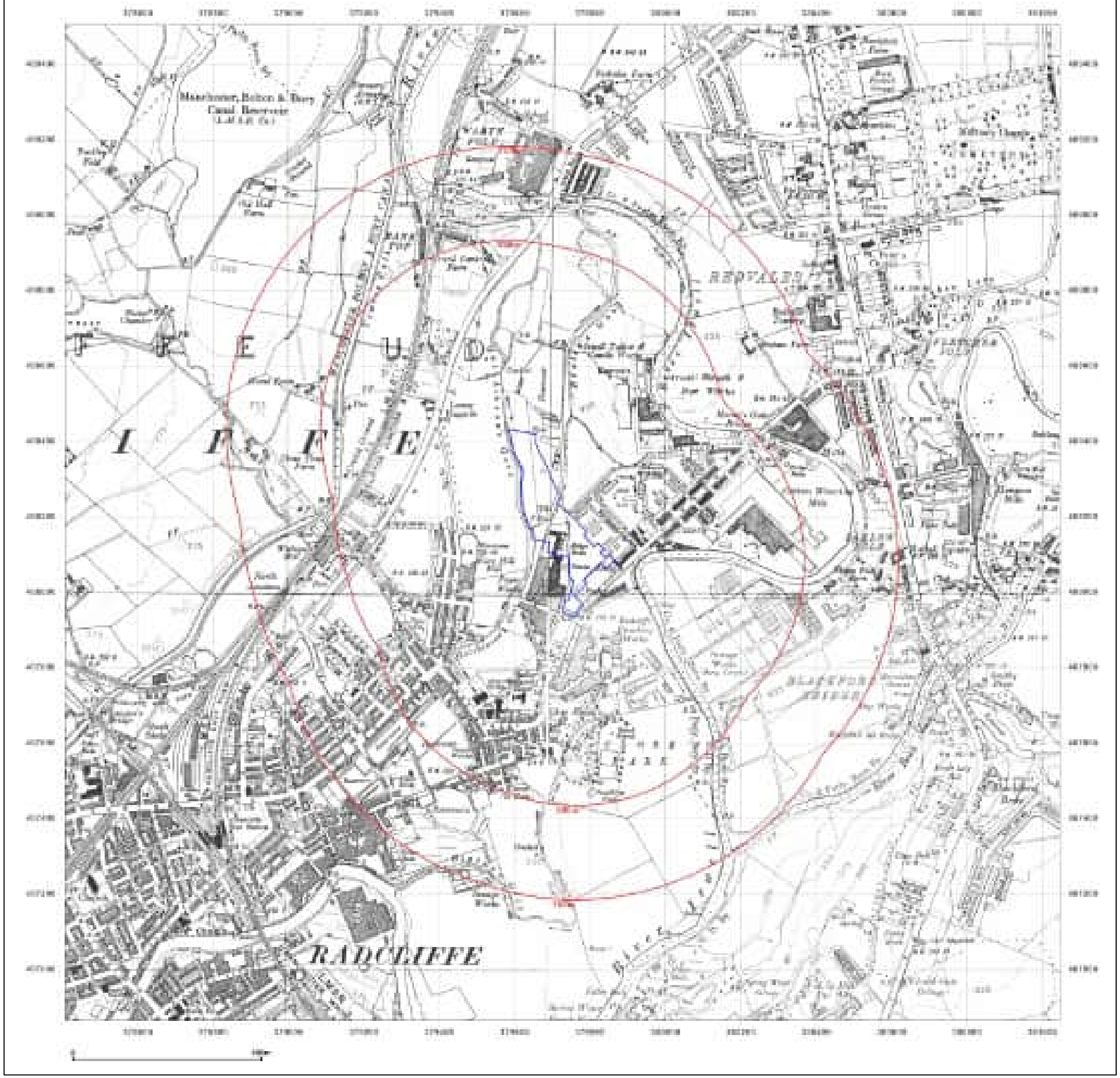
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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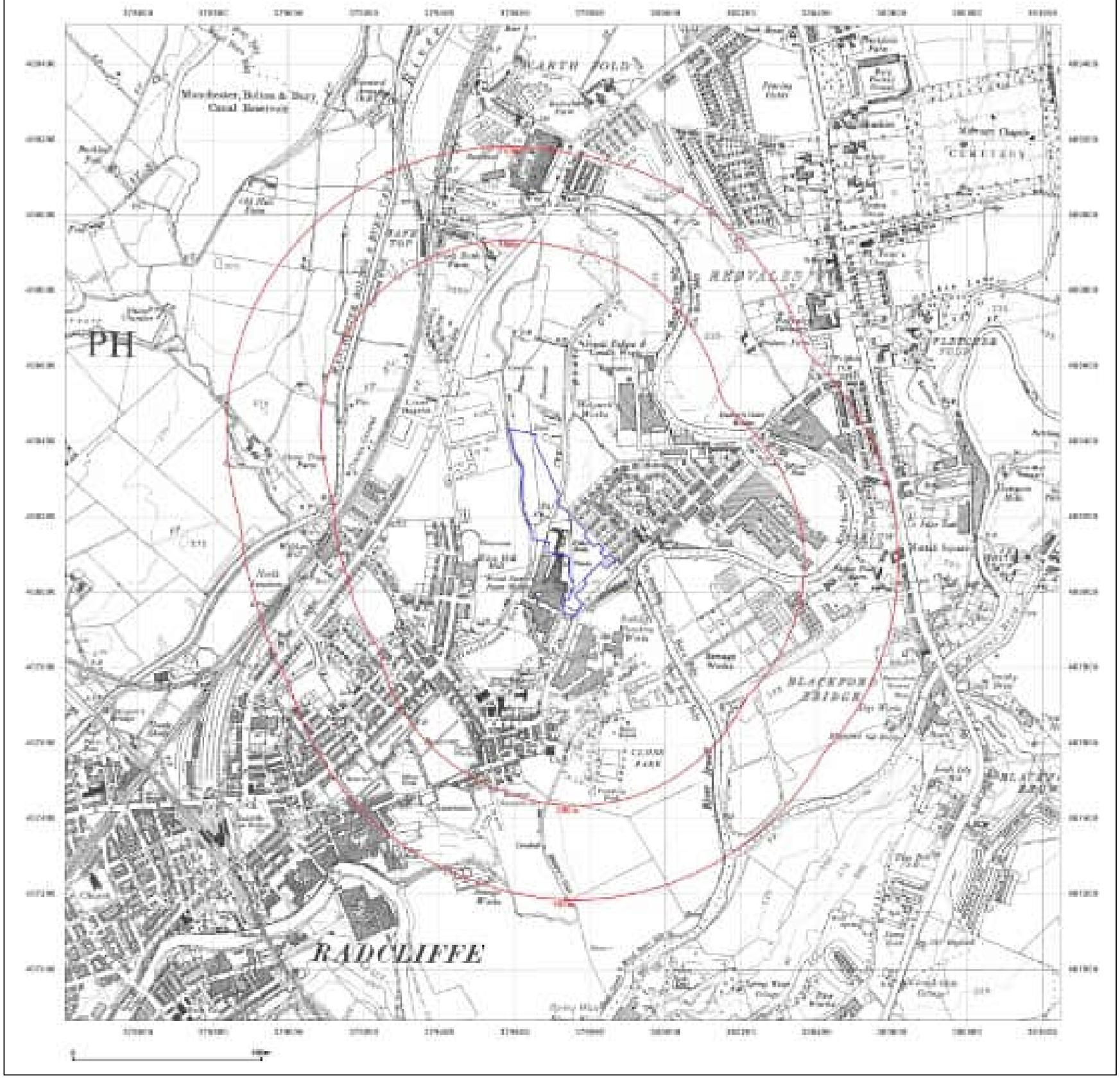
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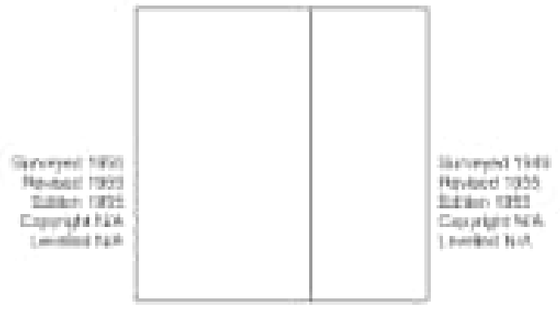
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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: Provisional
Map date: **1955**
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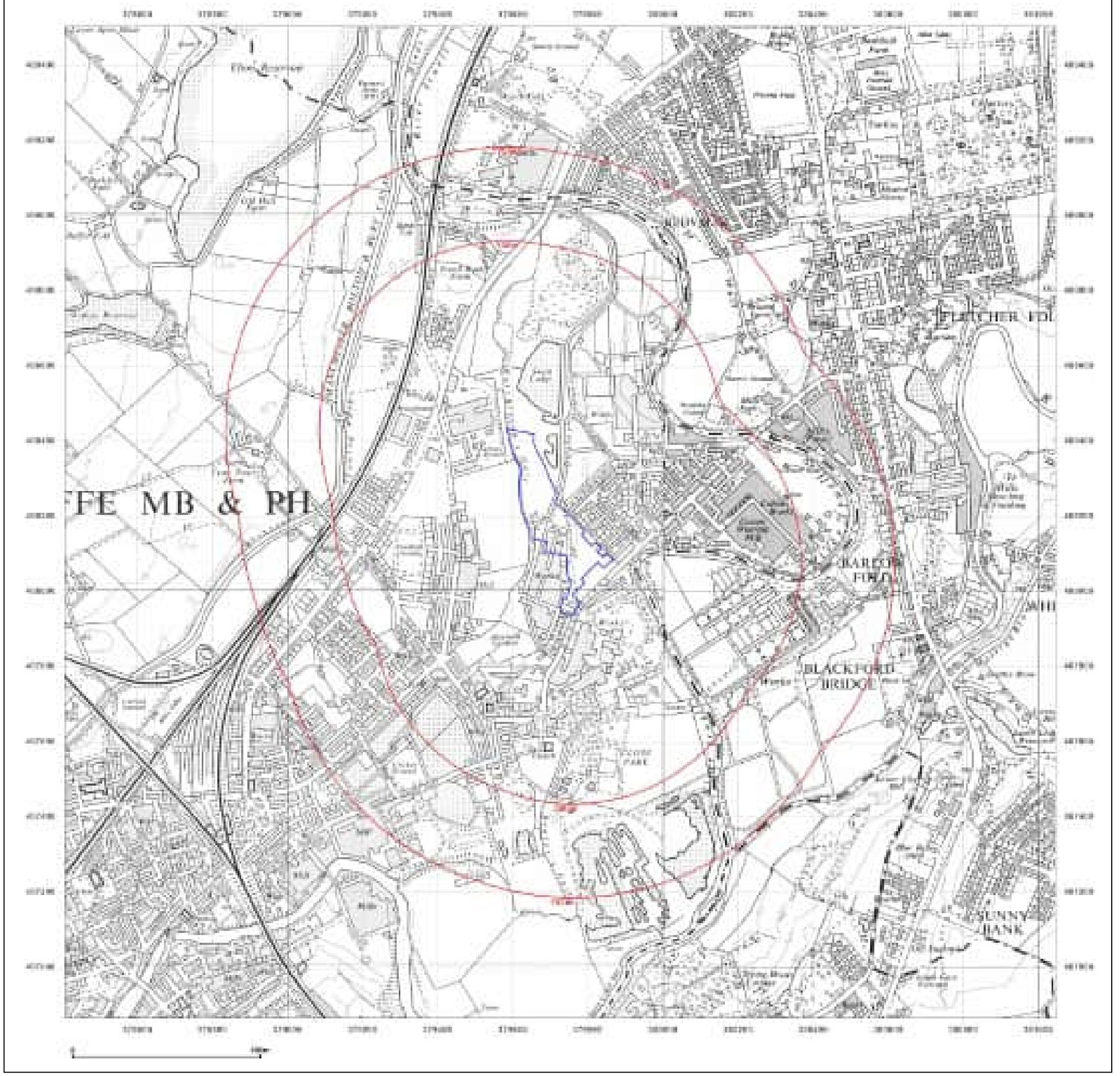
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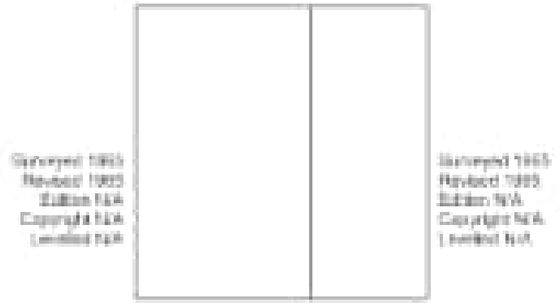
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Client Ref: 8353_-_PO_9951-BH
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Grid Ref: 379725, 408183

Map Name: Provisional
Map date: **1965**
Scale: 1:10,560
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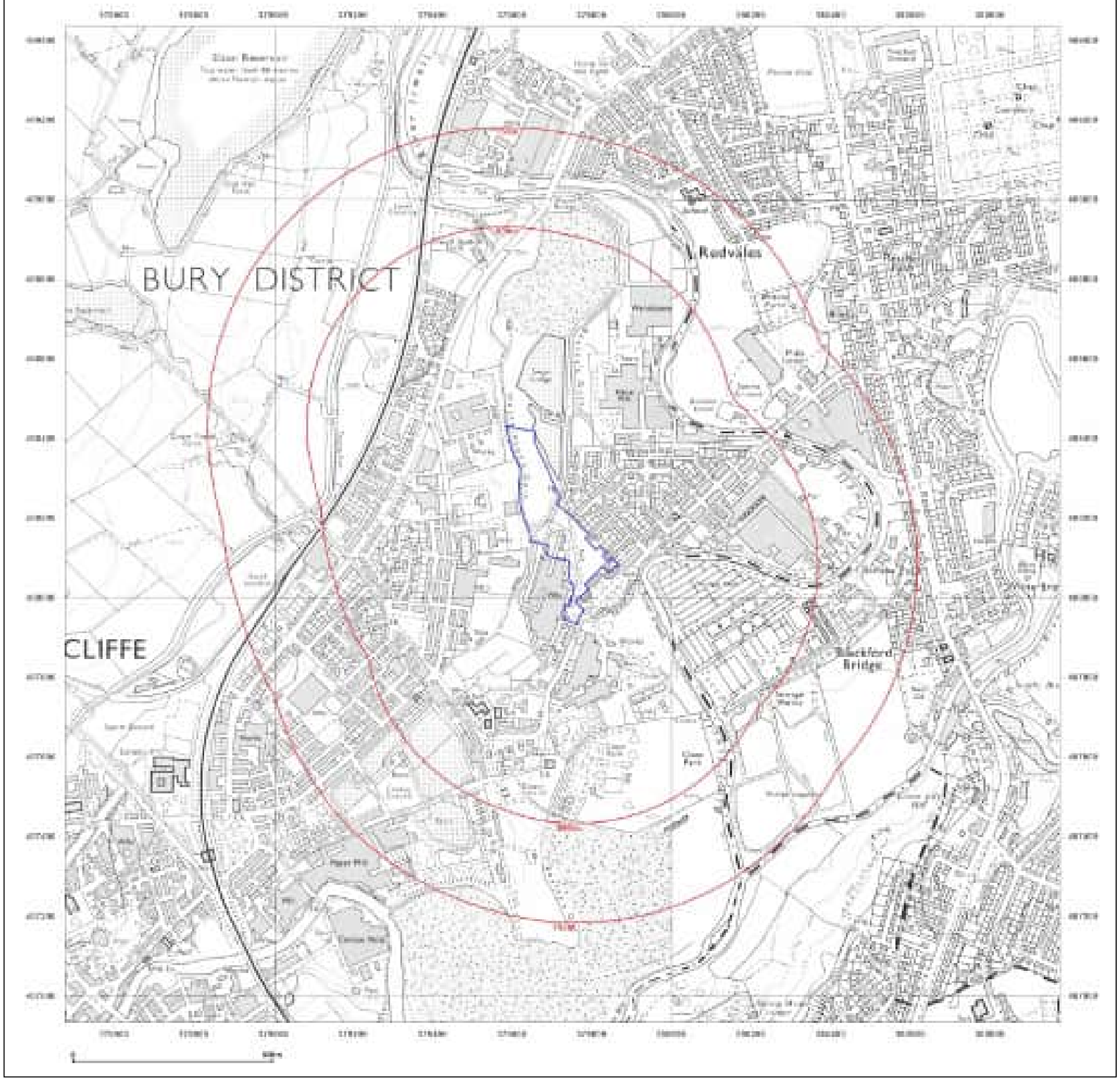
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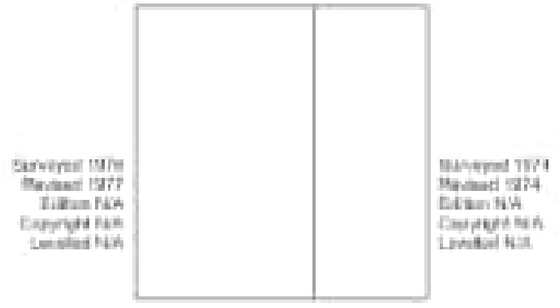
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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: National Grid
Map date: **1974-1977**
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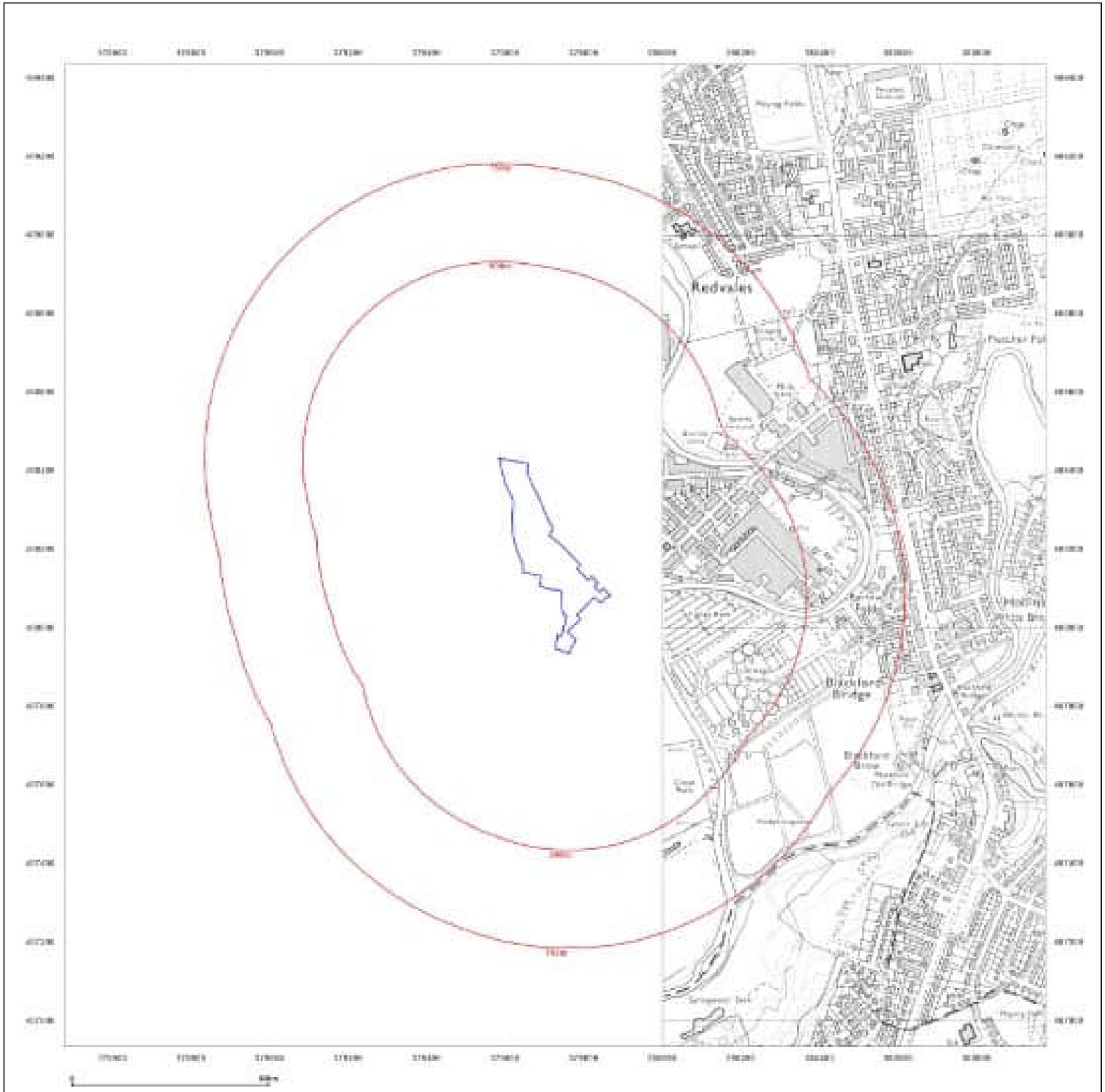
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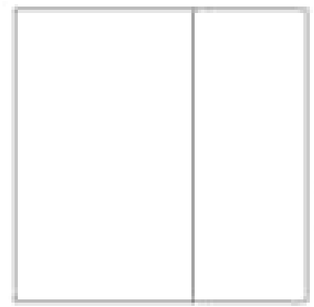
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Report Ref: GS-HMJ-3VX-27B-I11
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Map Name: National Grid
Map date: **1981**
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Printed at: 1:10,000

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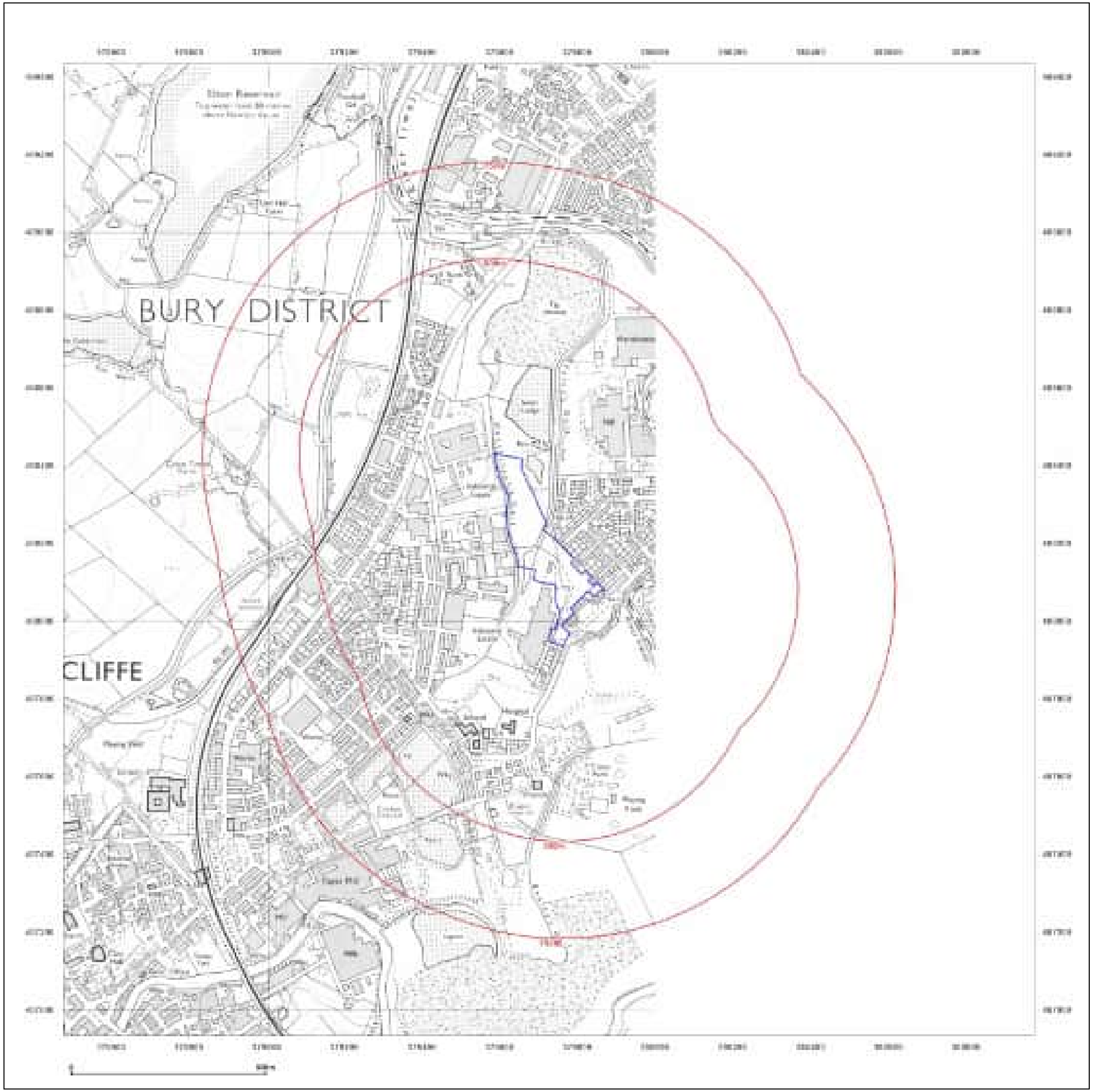
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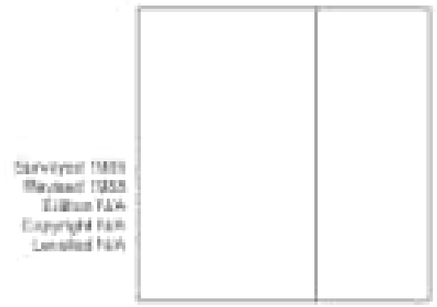
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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: National Grid
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Printed at: 1:10,000

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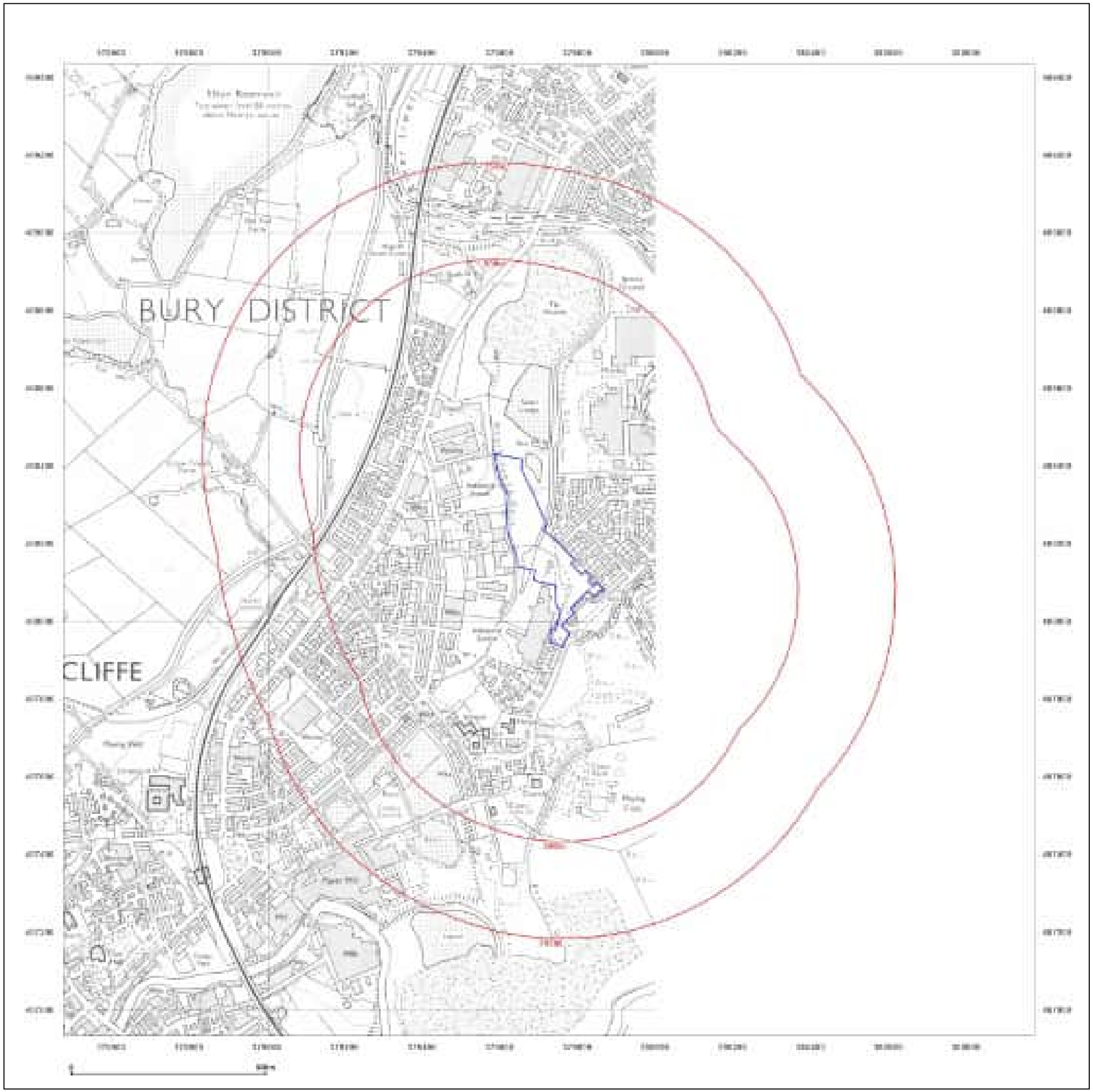
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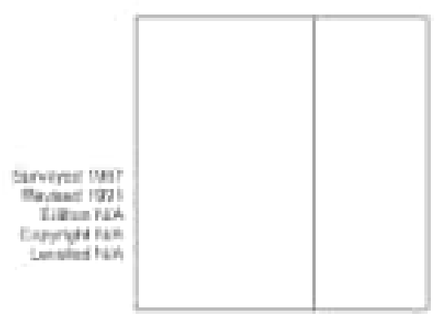
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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: National Grid
Map date: **1991**
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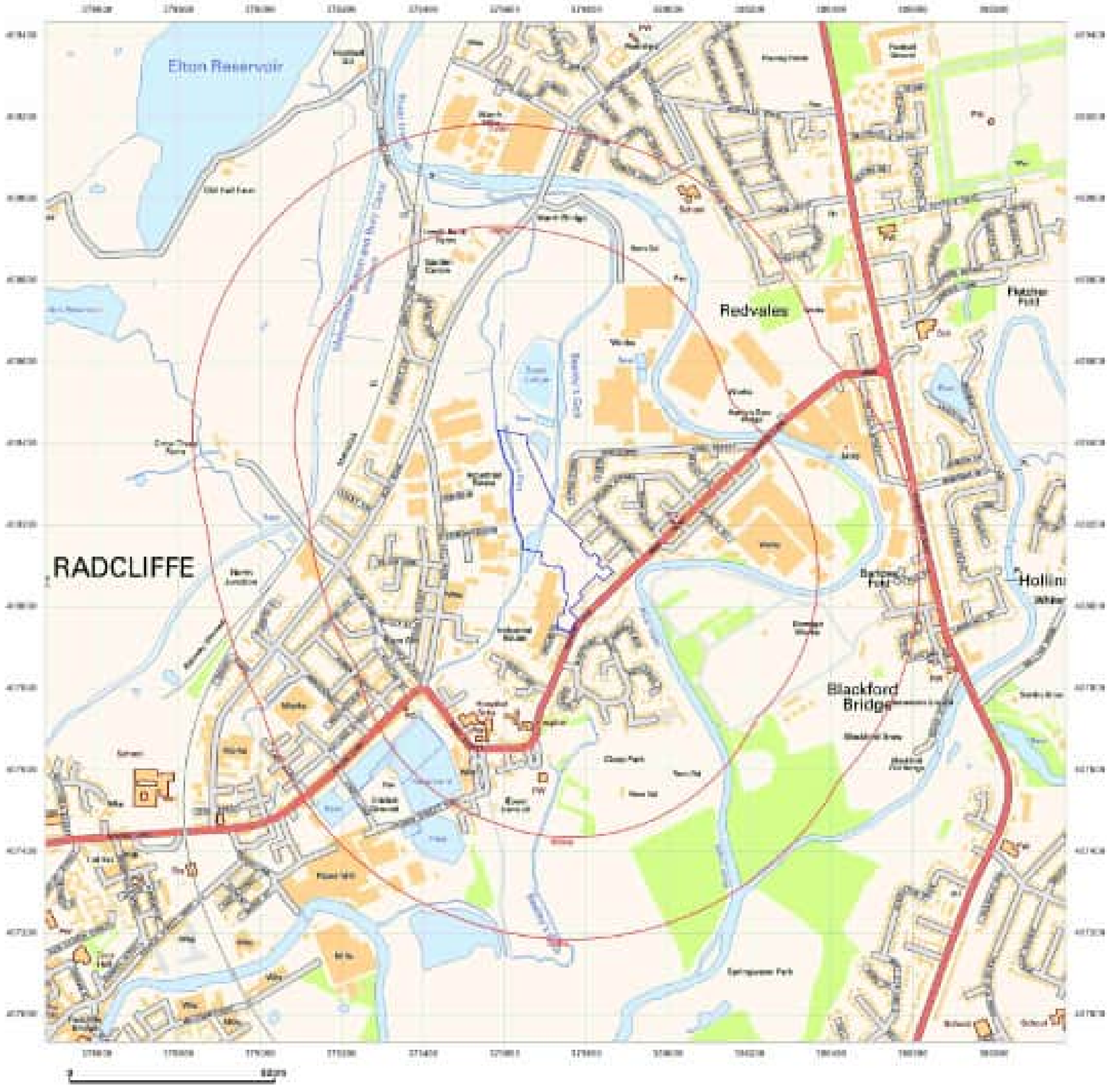
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Site Details:

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Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

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2001

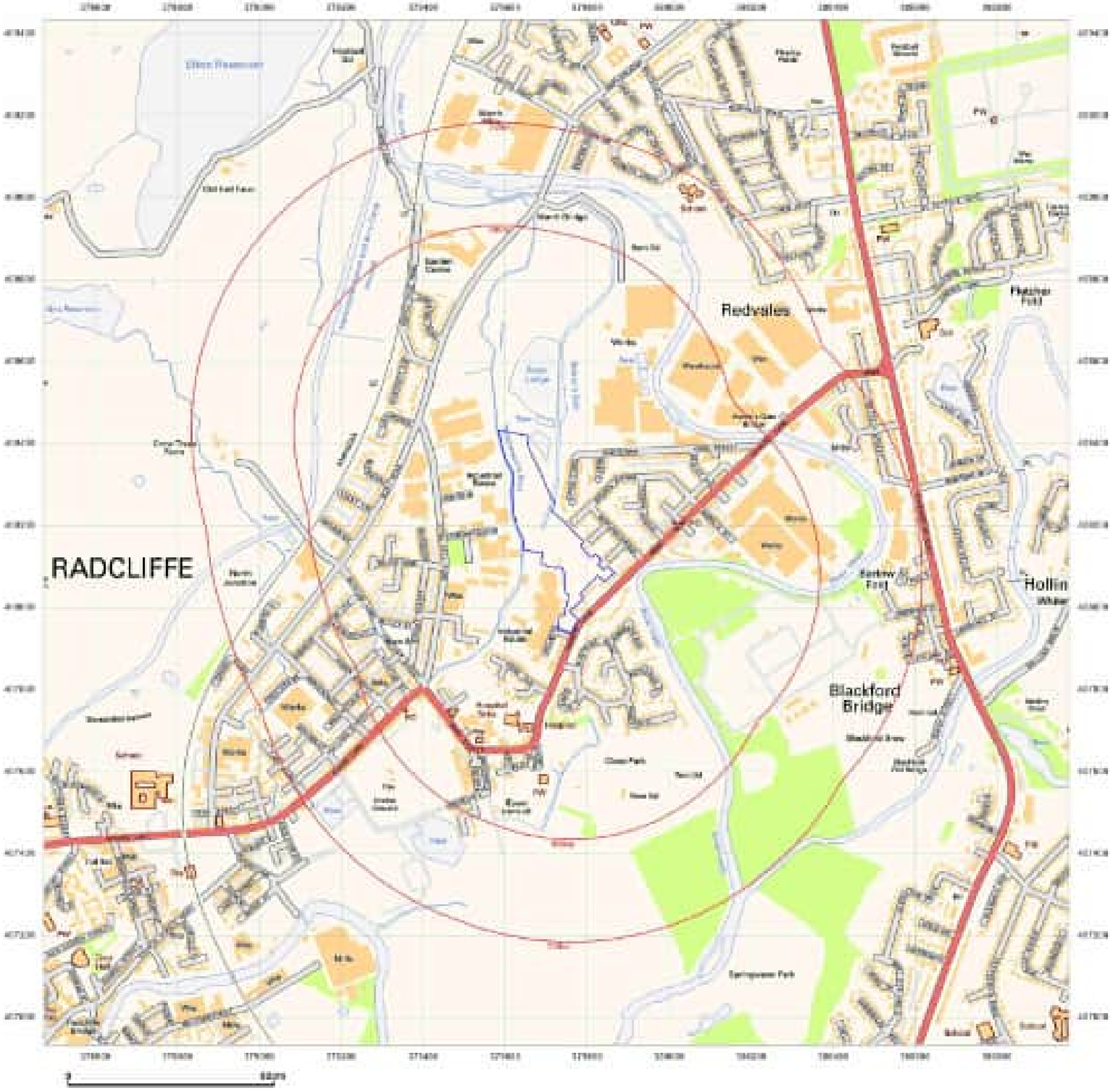
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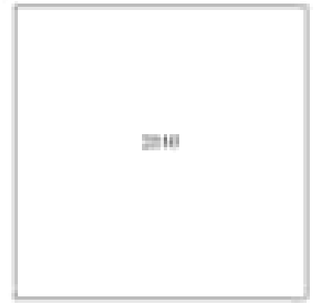
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Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

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Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

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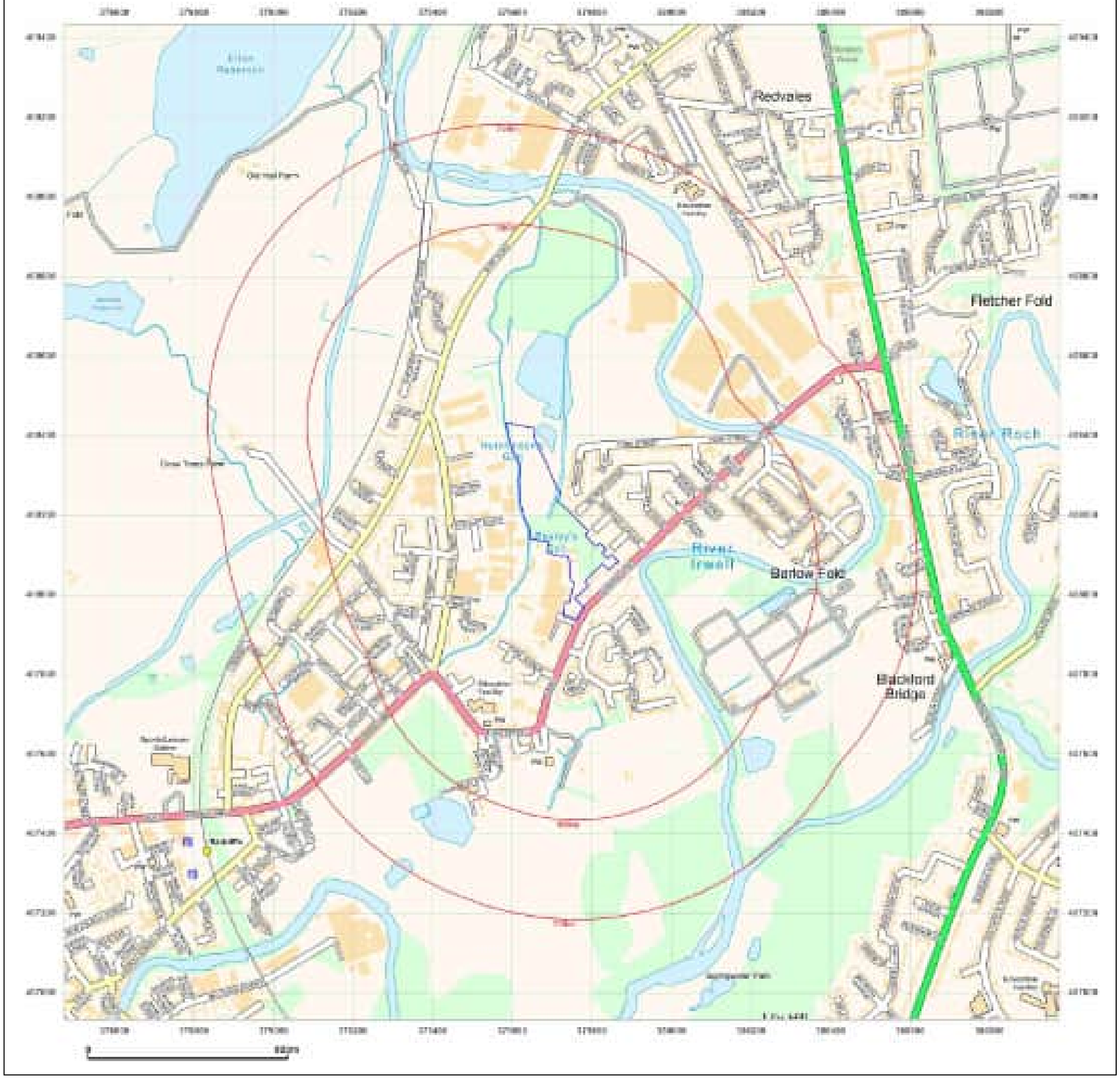
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Site Details:

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Client Ref: 8353_-_PO_9951-BH
Report Ref: GS-HMJ-3VX-27B-I11
Grid Ref: 379725, 408183

Map Name: National Grid
Map date: 2024
Scale: 1:10,000
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Appendix 4

The Coal Authority – Consultants Coal Mining Report

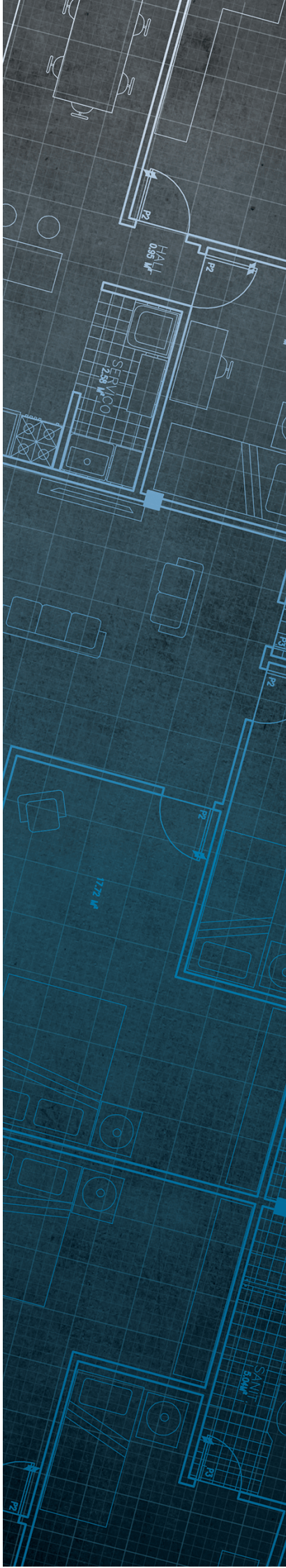
The Coal Authority

Consultants

Coal Mining Report

Land Adjacent To Bealey Industrial
Estate
Radcliffe
Bury
M26 2BD

Date of enquiry:	**15 February 2024**
Date enquiry received:	**15 February 2024**
Issue date:	**15 February 2024**
Our reference:	**51003405517001**
Your reference:	**8353 - PO 9952-BH**



Consultants

Coal Mining Report

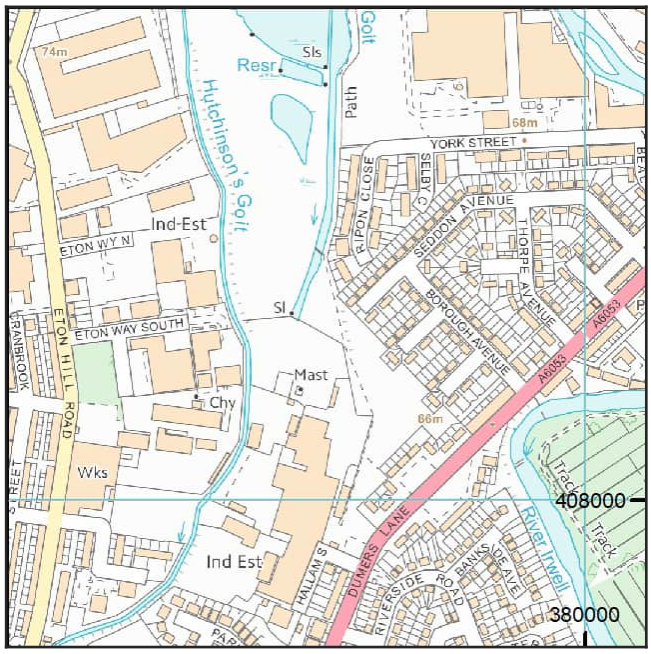
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

COOPERS

Enquiry address

Land Adjacent To Bealey Industrial Estate
Radcliffe
Bury
M26 2BD



Approximate position of property

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+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	DOE	Coal	3YN6	195	West	6.3	South-East	100	1887
unnamed	CANNEL	Coal	3XN8	261	Beneath Property	9.5	South	130	1894
unnamed	CANNEL	Coal	3Y5P	267	Beneath Property	9.5	South	130	1894
unnamed	CANNEL	Coal	3YPC	280	West	9.5	South	130	1894
unnamed	WIGAN FIVE FEET	Coal	3Y7S	299	South-West	13.0	East	120	1887
unnamed	CANNEL	Coal	3Y50	332	West	9.5	South-East	130	1893
unnamed	CANNEL	Coal	3YPB	368	South-West	9.5	South-East	130	1893

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW1556	2055	16820
3001A	3001	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

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Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
RAMS	Coal	Yes	Within	N/A	235
WHITE	Coal	Yes	Within	N/A	91
WHITE	Coal	Yes	20.4	North-East	276

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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Summary of findings

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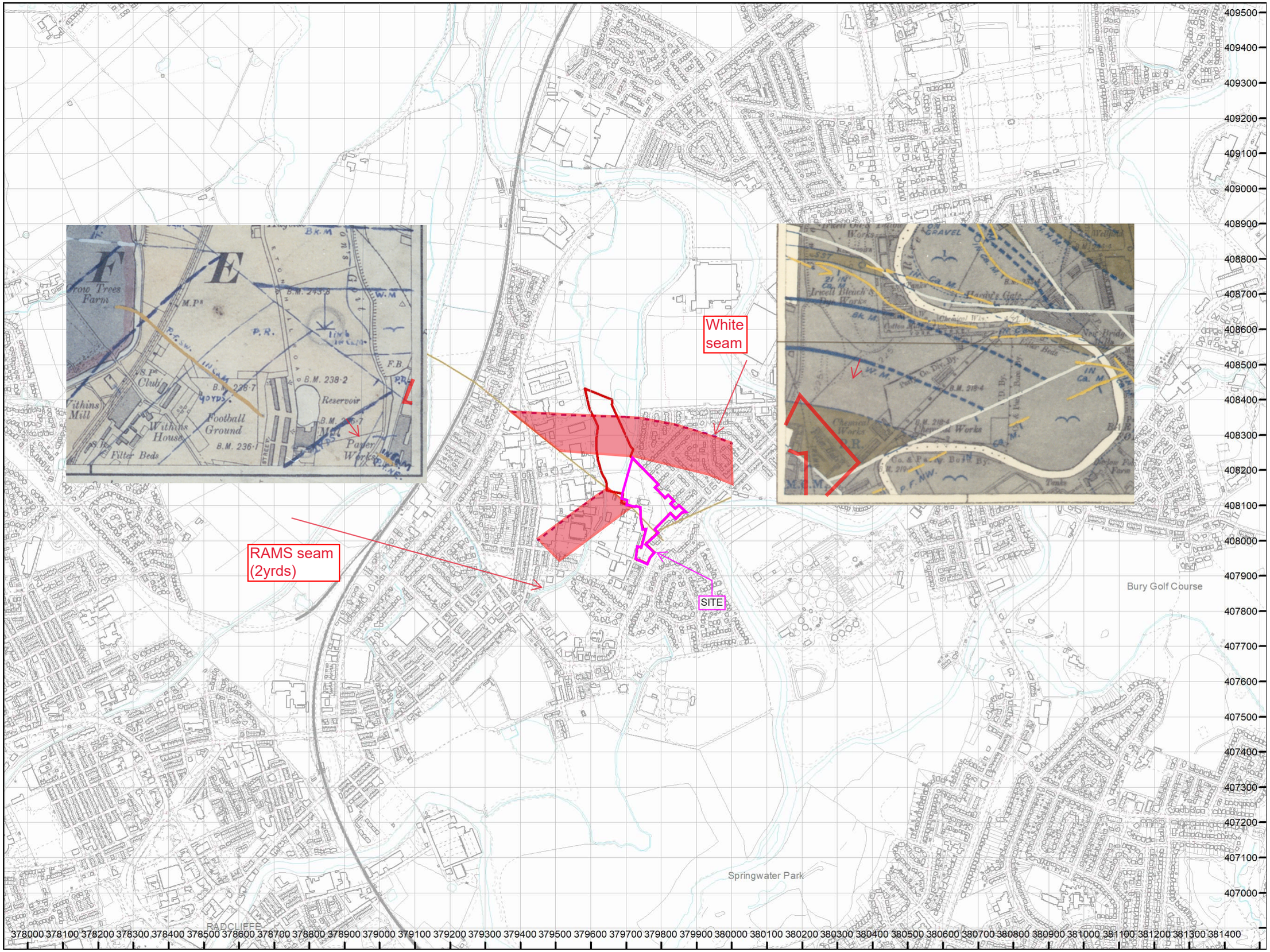
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown

Outcrop (Conjectured)

Geological faults



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

Appendix 5

Trial Pit Logs

Coopers (Chester) Ltd
tel: 01244 684 910
web: www.coopers.co.uk
email: admin@coopers.co.uk

Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP01

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.00 x 0.60 x 0.40m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	JV				(0.40)	MADEGROUND (similar to topsoil). Dark brown, slightly silty, gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick, concrete, glass and plastic.		
0.40	B				0.40	At 0.40m: Cobbles of brick. Possible ACM - corrugated sheet		
						Complete at 0.40m		



Remarks

Location CAT scanned prior to excavation.
Sides stable during excavation.
No groundwater encountered during excavation.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit terminated due to the presence of possible ACMs.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
↓	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP02

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 3.00m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	JV				(0.60) 0.60	MADEGROUND (similar to topsoil). Grass over dark brown, slightly silty, gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick, concrete and plastic. Contains frequent roots and rootlets. Occasional cobbles of brick. *Assumed as loose.		
0.70	JV				(1.00) 1.60	MADEGROUND. Brown. Slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick and concrete. Contains occasional boulders of concrete. *Assumed as loose to medium dense.		
1.40	JV					At 1.40m: Possibole hydrocarbon odour		
1.80	JV				(1.00) 2.60	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies. Contains occasional cobbles of concrete. *Assumed as loose to medium dense.		
						At 2.10m: Cobble of coal tar		
2.70	JV				(0.40) 3.00	MADEGROUND. Firm, dark greyish brown, slightly sandy, slightly gravelly, silty CLAY. Gravel is angular to sub-angular, fine to coarse of various lithologies. Sand is fine to medium. Possible hydrocarbon odour.		
						Complete at 3.00m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - 2.60m.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP03

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	JV				(1.10)	MADEGROUND. Dark brown, slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete and plastic. Contains occasional cobbles and rare boulders of concrete. *Assumed as loose to medium dense. At 0.30m: Becoming clayey		
0.50	JV					At 0.50m: Possible hydrocarbon odour		
1.20	JV				1.10	MADEGROUND. Firm ,orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
					(1.60)	At 1.50m: Sandy		
2.50	B				2.70	At 2.40m: Soft in places		
						Complete at 2.70m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - 1.10m.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
During extension of trial pit - metal pipe uncovered at 0.60m in south of trial pit. Trial pit terminated.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP04

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	JV				(0.30)	MADEGROUND. Dark brown, sandy, gravelly SILT. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick and concrete. Contains rare cobbles and boulders of concrete.		
					0.30	MADEGROUND. Light brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick and concrete. *Assumed as loose to medium dense.		
0.70	JV					At 0.70m: Becoming brown		
					(2.00)			
1.80	B							
2.20	JV					At 2.20m: Pocket of firm, orangish brown CLAY with inclusions of ash and clinker		
					2.30			
2.40	JV				(0.20)	MADEGROUND. Firm, greyish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
					2.50			
2.60	B		Perched water(1) at 2.60m.		(0.20)			▽1
					2.70	Greyish brown, slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies. Sand is fine to medium.		
						Complete at 2.70m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - 2.30m.
Perched water at 2.60m during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP05

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.80m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	JV				(0.10) 0.10	MADEGROUND (similar to topsoil). Dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.		
0.20	JV				(0.20) 0.30	MADEGROUND. Brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.		
0.40	JV					MADEGROUND. Dark reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, ash and clinker. *Assumed as very loose to loose. At 0.60m: Pocket of reddish brown very sandy CLAY		
1.40	JV				(1.80) 2.10			
2.20	JV				(0.70) 2.80	Soft, dark greyish brown, slightly gravelly, slightly silty, sandy CLAY. Possible hydrocarbon odour. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
						Complete at 2.80m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - 2.10m.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP06

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	B				(0.10) 0.10	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse, angular to sub-angular of various lithologies.		
0.15	JV				(0.10) 0.20			
0.40	JV				(0.70)	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies. *Assumed as loose to medium dense.		
					0.90	MADEGROUND. Dark reddish brown, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete, ash and clinker. *Assumed as very loose.		
1.00	JV				(0.40)	MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
					1.30	MADEGROUND. Dark reddish brown, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, ash and clinker. *Assumed as very loose.		
1.50	JV				(1.30)			
2.65	JV				2.60 (0.10) 2.70	MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
						Complete at 2.70m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - to base.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
↗	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP07

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 1.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	B				(0.10) 0.10	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.		
0.15	JV				(0.10) 0.20	MADEGROUND. Brown, sightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies. *Assumed as loose to medium dense.		
					(0.80)	MADEGROUND. Reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick and concrete. *Assumed as very loose to medium dense.		
0.90	JV				1.00	At 0.90m: Wooden sleeper, approximately 1.30m x 0.25m x 0.20m		
1.10	JV				(0.70)	Brown, slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded, fine to coarse of various lithologies. Contains occasional cobbles. *Assumed as loose.		
					1.70	Complete at 1.70m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - to base.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
↗	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP08

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	B				(0.10) 0.10	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.		
0.20	JV				(0.50)	MADEGROUND. Brown, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including limestone, brick and concrete.		
0.70	JV				0.60 (0.60)	Brown mottled orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies. *Assumed as very loose to medium dense.		
1.30	JV				1.20 (1.50)	Orangish brown, slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded, fine to coarse of various lithologies. * Assumed as loose to medium dense.		
					2.70	Complete at 2.70m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - 1.20m during excavation. Sides collapsing from 1.20m - 1.70m.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
↑	1:25	LP	PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Trial Pit Number
TP09

Machine : 5 Tonne Rubber Tracked Excavator

Method : Mechanical Excavation

Dimensions
2.50 x 0.60 x 2.20m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
26/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	JV				(2.20)	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick, concrete and car tyre. Contains rare boulders of concrete. * Assumed as loose to medium dense.		
					2.20	Complete at 2.20m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - to base.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Trial pit undertaken into earth bund, 2.20m above existing ground level.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

North	Scale (approx)	Logged By	Checked By
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Appendix 6

Borehole Logs

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS01

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 5.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
21/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.40	B				(0.40)	Grass over dark brown, slightly gravelly, sandy, silty TOPSOIL.			
0.40-1.60	B				0.40	Orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45	SPT N=5		1,1/2,1,1,1		(1.20)	At 1.00m: Loose			
1.60-2.20	B				1.60	Firm, medium strength, orangish brown mottled grey, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.			
1.70	SV *40kPa		Medium vane		(0.60)				
2.00-2.45	SPT N=14		5,4/4,3,3,4 Water strike(1) at 2.10m.					▽1	
2.20-3.50	B				2.20	Orangish brown, slightly gravelly, silty, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
3.00-3.45	SPT N=0		1,2/0,0,0,0			At 3.00m: Very loose			
3.50-5.00	B				(3.25)	At 3.80m: Gravelly			
4.00-4.45	SPT N=12		3,3/2,3,4,3			At 4.00m: Medium dense			
5.00-5.45	SPT N=21		4,4/4,5,6,6			At 4.90m: Becoming grey			
					5.45	Complete at 5.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.10m
From 2.00m - 3.00m: 60% Recovery. From 3.00m - 4.00m: 50% Recovery. SPT at 4.00m: No Recovery.
*Spurious shear vane result, sample breaking apart during testing due to sand content. SV No. 6 used.
Monitoring well installed from ground level to 1.60m comprising 0.50m plain pipe, 1.10m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
Logged in accordance BS5930:2015

Scale (approx)
1:40

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS02

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 5.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
21/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	B				(0.30)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, sandy SILT. Inclusions of ash and brick fragments.			
0.20	JV				0.30				
0.30-0.80	B				(0.50)	Firm, brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium. Contains inclusions of rootlets.			
0.80-1.70	B				0.80				
1.00-1.45	SPT N=6		0,0/2,1,1,2		(0.90)	Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.			
						At 1.50m: Very sandy			
1.70-3.50	B				1.70	Orangish brown, slightly gravelly, slightly silty, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.		▽1	
2.00-2.45	SPT N=12		Water strike(1) at 2.00m. 4,2/4,3,2,3			At 2.00m: Medium dense			
						At 2.20m: Gravelly			
					(1.80)				
3.00-3.45	SPT N=11		3,1/2,4,3,2			At 3.00m: Slightly clayey, very gravelly			
3.50-5.00	B				3.50	Firm, greyish brown, slightly gravelly, slightly sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.			
4.00-4.45	SPT N=17		5,4/4,4,4,5		(1.95)				
5.00-5.45	SPT N=27		7,5/7,7,6,7		5.45	Complete at 5.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m
From 2.00m - 3.00m: 80% Recovery. From 3.00m - 4.00m: 70% Recovery. From 4.00m - 5.00m: 30% Recovery.
Monitoring well installed from ground level to 3.00m comprising 1.00m plain pipe, 2.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample locations shown on Coopers Drawing No. 8353/01.

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Scale (approx) 1:40

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS03

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 4.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
21/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	JV				(0.30)	MADEGROUND (similar to topsoil). Grass over dark brown, sandy SILT.			
0.30-1.00	B				0.30	MADEGROUND. Dark greyish brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies with inclusions of ash and clinker.			
0.60	JV				(0.70)				
1.00-1.45	SPT N=25		3,6/5,6,7,7		1.00	Medium dense, orangish brown, slightly silty, very sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.			
1.00-3.50	B								
2.00-2.45	SPT N=22		5,6/6,4,6,6 Water strike(1) at 2.10m.		(2.50)			▽1	
3.00-3.45	SPT N=11		4,4/3,3,2,3						
3.50-4.00	B				3.50	Stiff, brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.			
4.00-4.45	SPT N=40		4,5/10,10,10,10		(0.95)				
					4.45	Complete at 4.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.10m
From 3.00m - 4.00m: 70% Recovery.
Monitoring well installed from ground level to 1.00m, comprising 0.50m plain pipe, 0.50m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS04

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 5.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
21/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	JV				(0.40)	MADEGROUND (similar to topsoil). Grass over dark brown, sandy SILT with inclusions of brick and glass fragments.			
0.40-0.80	B				0.40				
0.80-2.00	B				(0.40)	Orangish brown, slightly silty, clayey, gravelly, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45	SPT N=13		4,4/3,3,3,4		0.80	Orangish brown, slightly silty, very sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse. At 1.00m: Medium dense			
2.00-2.45	SPT N=15		5,5/5,4,3,3						
2.00-4.50	B				(3.70)			▽1	
3.00-3.45	SPT N=27		Water strike(1) at 3.00m. 10,9/10,8,5,4						
4.00-4.45	SPT N=13		3,2/2,5,4,2						
4.50-5.00	B				4.50	Stiff, brown, slightly gravelly, slightly sandy, slightly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
4.70	SV *42kPa		Medium vane						
5.00-5.45	SPT N=27		4,5/6,7,7,7		(0.95)				
					5.45	Complete at 5.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 3.00m
From 1.00m - 2.00m: 80% Recovery. From 2.00m - 3.00m: 50% Recovery. From 3.00m - 4.00m: 50% Recovery. SPT at 5.00m: No Recovery.
Monitoring well installed from ground level to 2.00m comprising 1.00m plain pipe, 1.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
*Spurious shear vane result, sample breaking apart during testing. SV No. 6 used. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS05

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 2.25m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
22/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	B				(0.30) 0.30	Grass over dark brown, slightly clayey, sandy, silty TOPSOIL.			
0.30-1.00	B				(0.70) 1.00	Orangish brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45	SPT N=10		3,3/3,3,2,2						
1.00-2.00	B				(1.25)	Medium dense, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.			
			Water strike(1) at 2.00m.					▽1	
2.00-2.26	SPT 49/105		8,8/27,22		2.25				
						Complete at 2.25m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m
Monitoring well installed from ground level to 1.50m comprising 0.50m plain pipe, 1.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01. Borehole terminated due to refusal in SPT at 2.25m.

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Scale (approx) 1:40

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Site	Number
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE	WS06

Machine	Dimensions	Ground Level (mOD)	Client	Job Number
Archway Dart Method : Drive-in Windowless Sampler	100mm to 4.15m		Westchurch Homes Ltd	8353
	Location (Observed measurements)	**Dates** 22/03/2024	**Engineer** Coopers (Chester) Ltd	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	B				(0.30)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly clayey, sandy SILT.			
0.30-0.60	B				0.30 (0.30)	MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. Sand is fine to medium.			
0.60-1.10	B		Water strike(1) at 0.60m.		0.60			▽1	
0.80	JV				(0.50)	MADEGROUND. Dark greyish brown, slightly silty, very gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies with inclusions of ash and clinker and brick fragments. At 1.00m: Very loose			
1.00-1.45 1.10-1.60	SPT N=0 B		0,0/0,0,0,0		1.10 (0.50)				
1.60-2.00	B				1.60 (0.40)	Soft, greyish brown, slightly gravelly, sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. Sand is fine to medium.			
2.00-2.45 2.00-2.30	SPT N=34 B		1,6/7,10,8,9		2.00 (0.30)	Dark brown, silty, sandy, fibrous PEAT. Faint organic odour. Inclusions of plant matter throughout.			
2.30-3.70	B				2.30	Dark grey brown, slightly gravelly, slightly clayey, sandy SILT. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. At 2.00m: Dense			
3.00-3.45	SPT N=32		6,5/8,8,7,9		(1.85)	Dense, greyish brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. At 3.00m: Becoming gravelly			
3.70-4.15	SPT N=48		7,8/11,12,12,13		4.15	Complete at 4.15m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 0.60m.
From 2.00m - 3.00m: 80% Recovery.
Monitoring well installed from ground level to 1.10m, comprising 0.50m plain pipe, 0.60m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

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Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE			**Number** WS07
Machine : Archway Dart **Method :** Drive-in Windowless Sampler	**Dimensions** 100mm to 4.45m	**Ground Level (mOD)**	**Client** Westchurch Homes Ltd	**Job Number** 8353
	Location (Observed measurements)	**Dates** 22/03/2024	**Engineer** Coopers (Chester) Ltd	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.40)	MADEGROUND (similar to topsoil). Grass over dark brown, sandy, SILT with inclusions of glass fragment.			
0.20	JV				0.40				
0.40-0.70	B				(0.30)	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
0.70-2.00	B				0.70				
0.80	SV *40kPa		Medium vane			Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45	SPT N=2		0,0/0,0,0,2			At 0.80m: Low to medium strength			
			Water strike(1) at 1.40m.					▽1	
1.70	SV *38kPa		Medium vane						
2.00-2.45	SPT N=10		4,3/3,3,2,2		(2.80)				
2.00-3.50	B					At 2.30m: Gravelly			
						At 2.50m: Stiff, becoming brown. No longer sandy			
2.70	SV *78kPa		Medium vane			At 2.70m: High strength			
3.00-3.45	SPT N=19		0,3/4,5,5,5						
3.50-4.00	B				3.50	Brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
4.00-4.45	SPT N=50		4,5/12,13,13,12		(0.95)	At 4.00m: Dense			
					4.45	Complete at 4.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 1.40m.
From 1.00m - 2.00m: 50% Recovery. From 2.00m - 3.00m: 80% Recovery. From 3.00m - 4.00m: 90% Recovery.
*Spurious shear vane result, sample breaking apart during testing. SV No. 6 used.
Monitoring well installed from ground level to 3.00m comprising 1.00m plain pipe, 2.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
Logged in accordance BS5930:2015

Scale (approx)	Logged By
1:40	LP
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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS08

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 3.70m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
22/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	B				(0.30)	Grass over dark brown, sandy, silty TOPSOIL.			
0.30-1.00	B				0.30 (0.70)	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45 1.00-3.70	SPT N=26 B		2,3/6,7,5,8		1.00	Medium dense, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.			
2.00-2.45	SPT N=37		Water strike(1) at 2.00m. 13,11/11,10,8,8		(2.40)			▽1	
3.00-3.45	SPT N=14		10,6/5,3,3,3		3.40 (0.30) 3.70	Firm, brown, slightly gravelly, slightly sandy, slightly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.			
						Complete at 3.70m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m.
SPT at 2.00m: No Recovery. From 2.00m - 3.00m: 70% Recovery.
Monitoring well installed from ground level to 1.80m comprising 1.00m plain pipe, 0.80m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
Borehole terminated at 3.70m due to obstruction from large cobble.
Logged in accordance BS5930:2015

Scale (approx) 1:40
Logged By LP
Checked By PRS

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web: www.coopers.co.uk
email: admin@coopers.co.uk

Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS09

Machine : Archway Dart
Method : Drive-in Windowless Sampler

Dimensions
100mm to 4.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
22/03/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	JV				(0.60)	MADEGROUND (similar to topsoil). Dark brown, sandy, gravelly SILT. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick fragments, plastic and concrete.			
0.60-1.90	B				0.60	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
1.00-1.45	SPT N=6		1,1/1,2,1,2			At 1.00m: Loose			
					(1.50)				
1.90-2.10	B					At 1.90m: No longer clayey			
2.00-2.45	SPT N=6		3,2/2,1,2,1						
2.10-4.00	B				2.10	Loose, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.			
			Water strike(1) at 3.00m.					▽1	
3.00-3.45	SPT N=9		4,2/3,2,2,2						
					(2.35)				
4.00-4.45	SPT N=6		2,2/2,2,1,1						
					4.45	Complete at 4.45m			

Remarks
Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 3.00m.
From 2.00m - 3.00m: 30% Recovery. From 3.00m - 4.00m: 60% Recovery.
Monitoring well installed from ground level to 2.50m comprising 1.00m plain pipe, 1.50m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

Logged in accordance BS5930:2015

Scale (approx) 1:40

Logged By LP

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS101

Machine : Archway Dart 334

Method : Drive-in Windowless Sampler

Dimensions
100mm to 4.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
30/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40	JV				(1.10)	MADEGROUND. Dark brown, slightly clayey, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick, concrete and plastic.		
1.20-1.65	SPT N=27		1,3/6,8,7,6		1.10	MADEGROUND. Brown, slightly silty, slightly sandy, very clayey, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete and timber. Sand is fine to coarse.		
1.50	JV							
2.00-2.45	SPT N=6		4,3/1,2,1,2		(1.90)			
2.00-3.00	JV							
3.00-3.44	SPT 25*/135 N=29		2,23/15,8,3,3		3.00	MADEGROUND. Dark greyish brown, slightly silty, slightly clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick. Sand is fine to coarse.		
3.00-4.00	JV				(1.45)			
4.00-4.45	SPT N=4		1,1/2,1,0,1		4.45	Complete at 4.45m		

Remarks
Location CAT scanned prior to drilling. Hand dug to 1.20m for service clearance.
From 2.00m - 3.00m 40% recovery, From 3.00m - 4.00m 30% recovery.
Monitoring well installed from ground level to 3.50m, comprising 1.00m pain pipe and 2.50m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone.
Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

Scale (approx)
1:40

Logged By
LP

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS102

Machine : Archway Dart 334

Method : Drive-in Windowless Sampler

Dimensions
100mm to 0.90m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
30/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	MADEGROUND. Dark brown, slightly silty, very gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick and concrete.		
0.70	JV				0.90	Complete at 0.90m		

Remarks
Location CAT scanned prior to drilling. Hand dug to 0.90m for service clearance.
Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
Terminated at 0.90m due to obstruction.

Scale (approx)
1:40

Logged By
LP

Checked By
PRS

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Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS103

Machine : Archway Dart 334

Method : Drive-in Windowless Sampler

Dimensions
100mm to 4.45m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
30/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	JV				(0.40)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, gravelly, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.		
0.20	JV				0.40			
0.70	JV				(0.70)	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.		
1.20-1.65	SPT N=2		1,0/0,0,1,1		1.10	MADEGROUND. Dark reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete, ash and clinker. Sand is fine to coarse.		
1.50	JV				(1.30)			
2.00-2.45	SPT N=0		1,1/0,0,0,0					
2.00-3.80	B				2.40			
2.80	SV *20kPa		Medium vane			Soft, dark greyish brown, slightly gravelly, slightly sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium. At 2.70m: Becoming light brown At 2.80m: Low strength		
2.80	JV							
3.00-3.45	SPT N=2		1,1/1,0,1,0		(1.40)			
3.60	SV *30kPa		Medium vane					
3.80-4.00	B				3.80			
4.00-4.45	SPT N=27		3,3/8,8,6,5		(0.65)	Greyish brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 4.00m: Medium dense		
					4.45	Complete at 4.45m		

Remarks
Location CAT scanned prior to drilling. Hand dug to 1.20m for service clearance.
From 1.00m - 2.00m 40% recovery, From 2.00m - 3.00m 80% recovery. *Spurious shear vane results; sample breaking apart during testing. SV10 used.
Monitoring well installed from ground level to 2.50m, comprising 1.00m pain pipe and 1.50m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone.
Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

Scale (approx)
1:40

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email: admin@coopers.co.uk

Site
LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number
WS104

Machine : Archway Dart 334

Method : Drive-in Windowless Sampler

Dimensions
1.00mm to 4.44m

Ground Level (mOD)

Client
Westchurch Homes Ltd

Job Number
8353

Location (Observed measurements)

Dates
30/09/2024

Engineer
Coopers (Chester) Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	B				(0.20) 0.20	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, gravelly, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies.		
0.25	JV				(0.10) 0.30			
0.70	JV				(1.20)	MADEGROUND. Brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.		
1.20-1.65	SPT N=13		3,2/4,3,3,3		1.50	MADEGROUND. Reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, glass, ash and clinker. Sand is fine to coarse.		
1.50-2.00	B				(0.90)	Brown, slightly silty, SAND and GRAVEL. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to coarse.		
1.70	JV							
2.00-2.45	SPT N=5		3,2/2,1,1,1			At 2.00m: Loose		
2.00-3.50	B				2.40			
2.60	JV				(1.10)	Firm (soft in places), orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
3.00-3.45	SPT N=15		Water strike(1) at 3.00m. 3,4/6,4,3,2					▽1
3.50-3.70	B				3.50 (0.20) 3.70	Brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.		
3.70-4.00	B				(0.74)	Orangish brown, slightly silty, slightly gravelly, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 4.00m: Dense		
4.00-4.44	SPT 50/290		14,11/15,10,10,15		4.44	Complete at 4.44m		

Remarks
Location CAT scanned prior to drilling. Hand dug to 1.00m for service clearance.
Water strike at 3.00m.
Monitoring well installed from ground level to 1.50m, comprising 0.50m pain pipe and 1.00m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone.
Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.

Scale (approx)
1:40

Logged By
LP

Checked By
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Appendix 7

Ground Gas Monitoring Results

Gas Monitoring Calibration Certificate

Gresham Tube Test Certificate

chartered consulting engineers

Project Name: Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No. 8353
Prepared by: LP
Checked by: BH

Date of Production:
03/04/2024

GROUND GAS MONITORING RECORD SUMMARY SHEET

Borehole Reference	Response Depth (m-bgl)	Date	Time	Temp (°c)	Gas Analyser	Weather Conditions	CH_4 (peak) (%)	CH_4 (steady) (%)	CO_2 (peak) (%)	CO_2 (steady) (%)	O_2 (min.) (%)	O_2 (steady) (%)	H_2S (peak) (ppm)	CO (peak) (ppm)	Flow (initial) (l/hr)	Flow (steady) (l/hr)	TWL (m - bgl)	Atmos. Pressure (mbar)	Remarks
WS01	0.50-16.0m	02/04/2024	15:03:38	13	GA5000	Sunny/Cloudy	0.0	0.0	2.6	2.6	18.1	18.1	0	1	0.1	0.3	Dry	997	Monitored successfully
		05/04/2024	10:24:35	14	GA5000	Overcast/Rain	0.1	0.1	3.3	3.3	17.0	17.0	0	2	0.2	0.3	Dry	991	Monitored successfully
WS02	1.00-3.00m	02/04/2024	14:00:29	13	GA5000	Sunny/Cloudy	0.0	0.0	2.1	2.1	19.5	19.5	0	1	0.1	0.3	2.02	998	Monitored successfully
		05/04/2024	12:13:18	14	GA5000	Overcast/Rain	0.1	0.1	2.6	2.6	19.0	19.0	0	1	0.1	0.3	2.02	992	Monitored successfully
WS03	0.50-1.00m	02/04/2024	13:12:21	13	GA5000	Sunny/Cloudy	0.1	0.1	1.4	1.4	20.5	20.5	0	1	0.1	0.2	Dry	998	Monitored successfully
		05/04/2024	10:37:29	14	GA5000	Overcast/Rain	0.1	0.0	1.7	1.6	19.2	19.3	0	1	0.1	0.3	Dry	991	Monitored successfully
WS04	1.00-2.00m	02/04/2024	14:13:58	13	GA5000	Sunny/Cloudy	0.0	0.0	1.6	1.5	20.0	20.0	0	1	0.0	0.1	Dry	998	Monitored successfully
		05/04/2024	11:42:07	14	GA5000	Overcast/Rain	0.1	0.1	2.1	2.1	19.3	19.4	0	1	0.1	0.4	Dry	992	Monitored successfully
WS05	0.50-1.50m	02/04/2024	12:57:51	13	GA5000	Sunny/Cloudy	0.1	0.1	2.2	2.2	18.8	18.8	0	1	0.0	0.0	Dry	998	Monitored successfully
		05/04/2024	11:02:44	14	GA5000	Overcast/Rain	0.0	0.0	3.0	2.9	17.1	17.2	0	1	0.0	0.0	Dry	992	Monitored successfully
WS06	0.50-1.10m	02/04/2024	12:38:14	13	GA5000	Sunny/Cloudy	0.1	0.1	0.3	0.3	20.9	21.0	0	3	0.1	0.1	0.67	997	Monitored successfully
		05/04/2024	11:56:36	14	GA5000	Overcast/Rain	0.1	0.1	0.4	0.4	21.5	21.5	0	2	0.4	2.1	0.67	991	Monitored successfully
WS07	1.00-3.00m	02/04/2024	12:16:39	13	GA5000	Sunny/Cloudy	0.1	0.1	2.8	2.7	17.3	17.3	0	1	0.0	0.0	1.33	997	Monitored successfully
		05/04/2024	11:24:03	14	GA5000	Overcast/Rain	0.0	0.0	3.0	3.0	16.6	16.6	0	1	0.1	0.3	1.21	992	Monitored successfully
WS08	1.00-1.80m	02/04/2024	13:30:26	13	GA5000	Sunny/Cloudy	0.1	0.1	3.0	2.9	17.9	18.0	0	1	0.0	0.1	Dry	998	Monitored successfully
		05/04/2024	10:49:16	14	GA5000	Overcast/Rain	0.0	0.0	3.1	3.0	16.9	17.1	0	1	0.1	0.2	Dry	991	Monitored successfully
WS09	1.00-2.45m	02/04/2024	14:36:08	13	GA5000	Sunny/Cloudy	0.0	0.0	2.9	2.9	17.2	17.3	0	1	0.1	0.2	Dry	999	Monitored successfully
		05/04/2024	10:09:13	14	GA5000	Overcast/Rain	0.1	0.1	3.0	2.5	17.3	17.9	0	1	0.0	0.0	Dry	990	Monitored successfully

Visit Conditions Summary

Visit Date	Temperature	Atmos Pressure	Pressure Trend	Weather
02/04/2024	13	997	Rising	Sunny/Cloudy
05/04/2024	14	991	Rising	Overcast/Rain

Park House, Sandpiper Court,
Chester Business Park,
Chester, CH4 9QU

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Company registered in England & Wales. Company number 09730429.
Registered office Park House, Sandpiper Court, Chester, CH4 9QU

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chartered consulting engineers

Project Name: Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No. 8353
Prepared by: LP
Checked by: BH

Date of Production:
15/10/2024

GROUND GAS MONITORING RECORD SUMMARY SHEET

Borehole Reference	Response Depth (m-bgl)	Date	Time	Temp (°c)	Gas Analyser	Weather Conditions	CH_4 (peak) (%)	CH_4 (steady) (%)	CO_2 (peak) (%)	CO_2 (steady) (%)	O_2 (min.) (%)	O_2 (steady) (%)	H_2S (peak) (ppm)	CO (peak) (ppm)	Flow (initial) (l/hr)	Flow (steady) (l/hr)	TWL (m - bgl)	Atmos. Pressure (mbar)	Remarks
WS101	1.00-3.50m	08/10/2024	15:46:00	15	GA5000	Cloudy/Light Rain	1.4	1.4	4.9	4.8	0.5	0.9	0	4	0.0	0.1	3.2	985	Monitored successfully
		06/11/2024	10:57:00	11	GA5000	Cloudy	0.1	0.1	0.1	0.1	21.3	21.4	0	1	0.0	0.0	3.2	1025	Monitored successfully after replacing gas bung on arrival
					GA5000														
					GA5000														
					GA5000														
					GA5000														
WS103	1.00-2.50m	08/10/2024	15:30:00	15	GA5000	Cloudy/Light Rain	0.1	0.1	1.7	1.7	19.1	19.1	0	3	0.1	0.3	Dry	986	Monitored successfully
		06/11/2024	10:17:00	11	GA5000	Cloudy	0.1	0.1	2.8	2.7	16.1	16.2	0	1	0.0	0.2	Dry	1025	Monitored successfully
					GA5000														
					GA5000														
					GA5000														
					GA5000														
WS104	0.50-1.50m	08/10/2024	15:06:00	15	GA5000	Cloudy/Light Rain	0.1	0.1	1.4	1.4	19.5	19.5	0	2	0.1	0.2	Dry	986	Monitored successfully
		06/11/2024	10:33:00	11	GA5000	Cloudy	0.1	0.1	2.2	2.2	19.0	19.0	0	1	0.0	0.1	Dry	1026	Monitored successfully
					GA5000														
					GA5000														
					GA5000														
					GA5000														

Visit Conditions Summary

Visit Date	Temperature	Atmos Pressure	Pressure Trend	Weather
08/10/2024	15	985	Failling	Cloudy/Light Rain
06/11/2024	11	1025	Rising	Cloudy

Park House, Sandpiper Court,
Chester Business Park,
Chester, CH4 9QU

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Registered office Park House, Sandpiper Court, Chester, CH4 9QU

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CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 26-Sep-2022

Certificate Number: G501314_2/31282

Issued by: QED Environmental Systems Ltd.

Customer: **Coopers**
Park House Sandpiper Court Chester Business Park
CHESTER CH4 9QU UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G501314

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.072
15.0	14.9	0.13
60.0	59.7	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	5.0	0.074
15.0	15.0	0.13
40.0	40.0	0.29

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.2	21.3	0.25

The inwards assessment was carried out 16-Sep-2022.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.7 °C ± 2.5 °C

O2 readings recorded at : 22.2 °C ± 2.5 °C

Barometric Pressure : 0991 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 26-Sep-2022

Certificate Number: G501314_2/31282

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
991	991

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	499	499
H_2S	260	260

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5.0	5.2
10.0	10.2

Date of Issue : 29-Sep-2022 **Approved by Signatory**

Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

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Registered in England and Wales 1898734

Service Interval Statement

Service scheme for analyser G501314 has been changed from a 12-month service to 24-months. Next service will be due 26th September 2024.

Signed for and on behalf of:



Name: Leanne Yates

Position: Customer Service Manager

Date: 29th February 2024

QED Environmental Systems

USA office

QED Environmental Systems Inc.
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Attention: Cooper Geotech

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 October 2024
Customer:	Cooper Associates
Sample Delivery Group (SDG):	241014-53
Your Reference:	8353
Location:	Land Adjacent to Bealey Industrial Estate, Radelif
Report No:	744244
Order Number:	10221-LP

We received 3 samples on Monday October 14, 2024 and 3 of these samples were scheduled for analysis which was completed on Monday October 21, 2024. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Lauren Ellis
General Manager Western Europe Environmental

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
30514862	GRESHAM TUBE 01 WS04			08/10/2024
30514863	GRESHAM TUBE 02 WS03			08/10/2024
30514864	GRESHAM TUBE 03 WS01			08/10/2024

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG: 241014-53 **Report Number:** 744244 **Superseded Report:**
Client Ref.: 8353 **Location:** Land Adjacent to Bealey Industrial Estate, Radelif

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			30514862	30514863	30514864
Customer Sample Reference			GRESHAM TUBE 01 WS04	GRESHAM TUBE 02 WS03	GRESHAM TUBE 03 WS01
AGS Reference					
Depth (m)					
Container			Gresham Tube	Gresham Tube	Gresham Tube
Sample Type			G	G	G
Bulk Gas	All	NDPs: 0 Tests: 3	X	X	X

CERTIFICATE OF ANALYSIS

SDG: 241014-53 **Report Number:** 744244 **Superseded Report:**
Client Ref.: 8353 **Location:** Land Adjacent to Bealey Industrial Estate, Radelif

Bulk Gas

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+$@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	GRESHAM TUBE 01 WS04	GRESHAM TUBE 02 WS03	GRESHAM TUBE 03 WS01			
			Depth (m)	.	.	.			
			Sample Type	Gas (G)	Gas (G)	Gas (G)			
			Date Sampled	08/10/2024	08/10/2024	08/10/2024			
			Sample Time	.	.	.			
			Date Received	14/10/2024	14/10/2024	14/10/2024			
			SDG Ref	241014-53	241014-53	241014-53			
			Lab Sample No.(s)	30514862	30514863	30514864			
			AGS Reference						
Carbon monoxide(ppm)	<1 ppm	TM053		<1	<1	<1			
Hydrogen sulphide	<1 ppm	TM053		<1	<1	<1			
Hydrogen	<0.5 %	TM053		<0.5 @	<0.5 @	<0.5 @			
Oxygen	<0.5 %	TM053		18.5 @	18.1 @	1.86 @			
Nitrogen	<1 %	TM053		80.3 @	80.5 @	93.2 @			
Carbon monoxide	<0.05 %	TM053		<0.05 @	<0.05 @	<0.05 @			
Methane	<0.05 %	TM053		<0.05 @	<0.05 @	0.908 @			
Carbon dioxide	<0.05 %	TM053		1.18 @	1.43 @	4.02 @			
Bulk gas, Total	%	TM053		100 @	100 @	100 @			

Table of Results - Appendix

Method No	Description
TM053	Determination of Bulk Gas Composition

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 241014-53 **Report Number:** 744244 **Superseded Report:**
Client Ref.: 8353 **Location:** Land Adjacent to Bealey Industrial Estate, Radelif

Test Completion Dates

Lab Sample No(s)	30514862	30514863	30514864
Customer Sample Ref.	GRESHAM TUBE 01 WS04	GRESHAM TUBE 02 WS03	GRESHAM TUBE 03 WS01
AGS Ref.			
Depth			
Type	Gas (G)	Gas (G)	Gas (G)
Bulk Gas	21-Oct-2024	21-Oct-2024	21-Oct-2024

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 8

Chemical Test Results

Certificate of Analysis

Certificate Number	24-06432	*Issued:*	11-Apr-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference	24-06432
Client Reference ~	8353
Order No ~	P/O10002
Contract Title ~	LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE
Description	12 Soil samples.
Date Received	27-Mar-24
Date Started	27-Mar-24
Date Completed	11-Apr-24
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Sample ID	Depth	Lab No	Completed	Matrix Description
WS01	0.00-0.40	2317961	11/04/2024	Dark brown gravelly, sandy CLAY including odd rootlets
WS02	0.30-0.80	2317962	11/04/2024	Brown sandy CLAY
WS03	0.6	2317964	11/04/2024	Dark brown gravelly, sandy CLAY including odd rootlets (Possible made ground - slag)
WS04	0.2	2317965	11/04/2024	Dark brown gravelly, sandy CLAY including numerous rootlets
WS05	0.00-0.30	2317966	11/04/2024	Dark brown gravelly, sandy CLAY including odd rootlets
WS06	0.30-0.60	2317967	11/04/2024	Brown sandy CLAY including odd rootlets
WS06	0.8	2317968	11/04/2024	Dark brown very gravelly SAND (Possible made ground - slag)
WS06	1.60-2.00	2317969	11/04/2024	Dark brown slightly gravelly, sandy CLAY including odd rootlets
WS07	0.2	2317970	11/04/2024	Dark brown gravelly, sandy CLAY including odd rootlets (Possible made ground - plastic)
WS08	0.30-1.00	2317971	11/04/2024	Brown sandy CLAY including odd rootlets
WS09	0.2	2317972	11/04/2024	Dark brown gravelly, sandy CLAY including odd rootlets (Possible made ground - glass)

Summary of Chemical Analysis
Soil Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2317961	2317962	2317964	2317965	2317966	2317967	2317968
			Sample ID ~	WS01	WS02	WS03	WS04	WS05	WS06	WS06
			Depth ~	0.00-0.40	0.30-0.80	0.60	0.20	0.00-0.30	0.30-0.60	0.80
			Other ID ~							
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/03/2024	21/03/2024	21/03/2024	21/03/2024	22/03/2024	22/03/2024	22/03/2024
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	49	140	130	120	45	35	60
Beryllium	DETSC 2301#	0.2	mg/kg	0.4	0.6	2.8	0.6	0.9	0.8	1.8
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.4	0.4	0.5	0.3	0.3	0.7	2.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.2	0.7	0.2	0.4	0.4	1.2
Chromium	DETSC 2301#	0.15	mg/kg	63	63	23	130	33	29	14
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	84	76	440	73	73	120	200
Lead	DETSC 2301#	0.3	mg/kg	160	160	230	210	160	300	220
Mercury	DETSC 2325#	0.05	mg/kg	0.22	0.15	0.86	0.50	0.31	0.24	0.18
Nickel	DETSC 2301#	1	mg/kg	13	16	66	21	19	22	41
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5	1.1	< 0.5	3.4
Vanadium	DETSC 2301#	0.8	mg/kg	20	23	73	25	32	26	53
Zinc	DETSC 2301#	1	mg/kg	100	87	180	79	130	110	110
Inorganics										
pH	DETSC 2008#		pH	5.3	6.9	6.3	5.2	4.9	6.6	6.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.8	0.5	0.2	1.6	0.7	11	1.5
FOC	DETSC 2084#	0.001			0.018					
FOC	DETSC 2002	0.001		0.015		0.053	0.017	0.028	0.011	0.061
Total Organic Carbon	DETSC 2084#	0.5	%		1.8					
Total Organic Carbon	DETSC 2002	0.1	%	1.5		5.3	1.7	2.8	1.1	6.1
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	31	14	85	11	17	25	160
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.11	0.05	0.16	0.08	0.09	0.05	0.12
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg				< 1.50			< 1.50
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg				< 1.20			< 1.20
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg				< 1.50			< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40			< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40			< 3.40
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40			< 3.40
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01			< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg				< 0.90			< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg				< 0.50			< 0.50
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg				0.74			< 0.60

Summary of Chemical Analysis
Soil Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2317961	2317962	2317964	2317965	2317966	2317967	2317968
			Sample ID ~	WS01	WS02	WS03	WS04	WS05	WS06	WS06
			Depth ~	0.00-0.40	0.30-0.80	0.60	0.20	0.00-0.30	0.30-0.60	0.80
			Other ID ~							
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/03/2024	21/03/2024	21/03/2024	21/03/2024	22/03/2024	22/03/2024	22/03/2024
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg				< 1.40			< 1.40
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				< 1.40			< 1.40
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				< 1.40			< 1.40
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00			< 10.00
Benzene	DETSC 3321#	0.01	mg/kg				< 0.01			< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg				< 0.01			< 0.01
Toluene	DETSC 3321#	0.01	mg/kg				< 0.01			< 0.01
Xylene	DETSC 3321#	0.01	mg/kg				< 0.01			< 0.01
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.09	< 0.03	0.11	0.10	0.09	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.13	< 0.03	0.15	0.16	0.16	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	0.13	< 0.03	0.16	0.15	0.15	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.06	0.05	0.05	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.05	< 0.03	0.07	0.06	0.06	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.06	0.06	0.05	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.04	0.03	0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.48	< 0.10	0.65	0.57	0.56	< 0.10	< 0.10
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	0.3	0.6	< 0.3	1.2

Summary of Chemical Analysis
Soil Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL EST

			Lab No	2317969	2317970	2317971	2317972
			Sample ID ~	WS06	WS07	WS08	WS09
			Depth ~	1.60-2.00	0.20	0.30-1.00	0.20
			Other ID ~				
			Sample Type ~	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	22/03/2024	22/03/2024	22/03/2024	22/03/2024
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	8.2	24	10	23
Beryllium	DETSC 2301#	0.2	mg/kg	0.7	1.7	0.3	0.7
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.5	0.3	0.6	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.5	0.1	0.5
Chromium	DETSC 2301#	0.15	mg/kg	9.5	26	16	25
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	15	73	18	65
Lead	DETSC 2301#	0.3	mg/kg	17	110	25	160
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.16	< 0.05	1.1
Nickel	DETSC 2301#	1	mg/kg	9.5	25	11	17
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	13	35	19	26
Zinc	DETSC 2301#	1	mg/kg	48	180	63	310
Inorganics							
pH	DETSC 2008#		pH	6.3	7.3	6.1	7.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.7	0.9	0.4	0.6
FOC	DETSC 2084#	0.001		0.11		0.014	
FOC	DETSC 2002	0.001			0.044		0.045
Total Organic Carbon	DETSC 2084#	0.5	%	11		1.4	
Total Organic Carbon	DETSC 2002	0.1	%		4.4		4.5
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	380	73	< 10	24
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.20	0.09	0.05	0.07
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg		< 1.50		
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg		< 1.20		
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg		< 1.50		
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg		< 3.40		
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg		< 3.40		
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg		< 3.40		
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg		< 0.90		
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg		< 0.50		
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg		2.68		

Summary of Chemical Analysis
Soil Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL EST

	Lab No	2317969	2317970	2317971	2317972
	Sample ID ~	WS06	WS07	WS08	WS09
	Depth ~	1.60-2.00	0.20	0.30-1.00	0.20
	Other ID ~				
	Sample Type ~	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	22/03/2024	22/03/2024	22/03/2024	22/03/2024
	Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg		1.92		
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg		6.46		
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg		4.54		
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg		< 10.00		
Benzene	DETSC 3321#	0.01	mg/kg		< 0.01		
Ethylbenzene	DETSC 3321#	0.01	mg/kg		< 0.01		
Toluene	DETSC 3321#	0.01	mg/kg		< 0.01		
Xylene	DETSC 3321#	0.01	mg/kg		< 0.01		
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.03	< 0.03	0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.26	< 0.03	0.15
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.05	< 0.03	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.67	< 0.03	0.24
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.65	< 0.03	0.23
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.27	< 0.03	0.13
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.34	< 0.03	0.14
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.40	< 0.03	0.16
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.14	< 0.03	0.09
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.30	< 0.03	0.14
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.14	< 0.03	0.11
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03	0.06
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.18	0.03	0.13
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	3.4	< 0.10	1.7
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	25	0.7	0.8

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2317963	2317964
			Sample ID ~	WS03	WS03
			Depth ~	0.20	0.60
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	21/03/2024	21/03/2024
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2317963	2317964
			Sample ID ~	WS03	WS03
			Depth ~	0.20	0.60
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	21/03/2024	21/03/2024
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2317963	2317964
			Sample ID ~	WS03	WS03
			Depth ~	0.20	0.60
			Other ID ~		
			Sample Type ~	SOIL	SOIL
			Sampling Date ~	21/03/2024	21/03/2024
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg	0.4	
Anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	0.3	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg	0.7	
Pyrene	DETSC 3433	0.1	mg/kg	0.6	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	0.3	
Chrysene	DETSC 3433	0.1	mg/kg	0.3	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	0.3	< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	0.5	
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	0.1	
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	0.4	
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	0.3	
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	0.2	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1

Summary of Asbestos Analysis
Soil Samples

Our Ref 24-06432
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2317961	WS01 0.00-0.40	SOIL	NAD	none	Pierce Booth
2317964	WS03 0.60	SOIL	NAD	none	Pierce Booth
2317965	WS04 0.20	SOIL	NAD	none	Pierce Booth
2317966	WS05 0.00-0.30	SOIL	NAD	none	Pierce Booth
2317967	WS06 0.30-0.60	SOIL	NAD	none	Pierce Booth
2317968	WS06 0.80	SOIL	NAD	none	Pierce Booth
2317970	WS07 0.20	SOIL	NAD	none	Pierce Booth
2317972	WS09 0.20	SOIL	NAD	none	Pierce Booth

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 24-06432
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2317961	WS01 0.00-0.40 SOIL	21/03/24	PG		
2317962	WS02 0.30-0.80 SOIL	21/03/24	PG		
2317963	WS03 0.20 SOIL	21/03/24	GJ 250ml x2, GJ 60ml		
2317964	WS03 0.60 SOIL	21/03/24	GJ 250ml x2, GJ 60ml		
2317965	WS04 0.20 SOIL	21/03/24	GJ 250ml x2, GJ 60ml		
2317966	WS05 0.00-0.30 SOIL	22/03/24	PG		
2317967	WS06 0.30-0.60 SOIL	22/03/24	PG		
2317968	WS06 0.80 SOIL	22/03/24	GJ 250ml x2, GJ 60ml		
2317969	WS06 1.60-2.00 SOIL	22/03/24	PG		
2317970	WS07 0.20 SOIL	22/03/24	GJ 250ml x2, GJ 60ml		
2317971	WS08 0.30-1.00 SOIL	22/03/24	PG		
2317972	WS09 0.20 SOIL	22/03/24	GJ 250ml x2, GJ 60ml		

Key: P-Plastic G-Bag G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Certificate of Analysis

Certificate Number	24-07560	*Issued:*	17-Apr-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference	24-07560
Client Reference ~	8353
Order No ~	P/O10002
Contract Title ~	LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE
Description	6 Leachate prepared by DETS samples.
Date Received	27-Mar-24
Date Started	12-Apr-24
Date Completed	17-Apr-24
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Leachate Samples

Our Ref 24-07560
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

			Lab No	2324235	2324236	2324237	2324238	2324239	2324240
			Sample ID ~	WS02	WS03	WS04	WS06	WS06	WS09
			Depth ~	0.30-0.80	0.60	0.20	0.30-0.60	0.80	0.20
			Other ID ~						
			Sample Type ~	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
			Sampling Date ~	21/03/2024	21/03/2024	21/03/2024	22/03/2024	22/03/2024	22/03/2024
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	7.1	2.0	2.4		1.2	
Copper, Dissolved	DETSC 2306	0.4	ug/l		2.8				
Lead, Dissolved	DETSC 2306	0.09	ug/l				3.4		
Zinc, Dissolved	DETSC 2306	1.3	ug/l						12
Inorganics									
Cyanide, Total	DETSC 2130	40	ug/l				< 40		

Information in Support of the Analytical Results

Our Ref 24-07560
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2324235	WS02 0.30-0.80 LEACHATE	21/03/24	PG		
2324236	WS03 0.60 LEACHATE	21/03/24	GJ 250ml x2, GJ 60ml		
2324237	WS04 0.20 LEACHATE	21/03/24	GJ 250ml x2, GJ 60ml		
2324238	WS06 0.30-0.60 LEACHATE	22/03/24	PG		
2324239	WS06 0.80 LEACHATE	22/03/24	GJ 250ml x2, GJ 60ml		
2324240	WS09 0.20 LEACHATE	22/03/24	GJ 250ml x2, GJ 60ml		

Key: P-Plastic G-Bag G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Certificate of Analysis

Certificate Number	24-20913	*Issued:*	08-Oct-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference	24-20913
Client Reference ~	8353
Order No ~	10200-LP
Contract Title ~	LAND ADJACENT TO BEALEY INDUSTRIAL
Description	15 Soil samples, 1 Misc sample.
Date Received	01-Oct-24
Date Started	01-Oct-24
Date Completed	08-Oct-24
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

ilac-MRA

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Sample ID	Depth	Lab No	Completed	Matrix Description
TP01	0.1	2402143	08/10/2024	Dark brown very gravelly, sandy CLAY including odd rootlets (Possible made ground - brick)
TP02	0.7	2402146	08/10/2024	Dark brown very gravelly, sandy CLAY including odd rootlets (Possible made ground - brick)
TP03	0.2	2402148	08/10/2024	Dark brown very gravelly, sandy CLAY including odd rootlets (Possible made ground - brick)
TP03	1.2	2402150	08/10/2024	Dark brown slightly gravelly, sandy CLAY including odd rootlets
TP04	0.1	2402151	08/10/2024	Dark brown gravelly, sandy CLAY including odd rootlets
TP05	0.4	2402152	08/10/2024	Dark brown very gravelly, sandy CLAY including odd rootlets (Possible made ground - brick)
TP06	1	2402154	08/10/2024	Brown slightly gravelly, sandy CLAY
TP08	0.2	2402157	08/10/2024	Dark brown very gravelly, sandy CLAY including odd rootlets (Possible made ground - glass) (Possible made ground - brick)
TP09	1	2402158	08/10/2024	Dark brown gravelly, sandy CLAY including odd rootlets

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

				Lab No	2402143	2402145	2402146	2402147	2402148	2402149
				Sample ID ~	TP01	TP02	TP02	TP02	TP03	TP03
				Depth ~	0.10	0.10	0.70	2.70	0.20	0.50
				Other ID ~						
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	14		28		16	
Beryllium	DETSC 2301#	0.2	mg/kg	1.1		0.9		0.8	
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.5		0.9		1.1	
Cadmium	DETSC 2301#	0.1	mg/kg	0.5		0.6		0.9	
Chromium	DETSC 2301#	0.15	mg/kg	21		64		32	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	41		110		100	
Lead	DETSC 2301#	0.3	mg/kg	83		260		170	
Mercury	DETSC 2325#	0.05	mg/kg	0.09		0.49		0.17	
Nickel	DETSC 2301#	1	mg/kg	13		32		23	
Selenium	DETSC 2301#	0.5	mg/kg	4.7		< 0.5		< 0.5	
Vanadium	DETSC 2301#	0.8	mg/kg	24		33		26	
Zinc	DETSC 2301#	1	mg/kg	120		220		230	
Inorganics										
pH	DETSC 2008#		pH	10.0		9.5		9.0	
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.4		0.5		0.6	
FOC	DETSC 2002	0.001		0.027		0.035		0.022	
Total Organic Carbon	DETSC 2002	0.1	%	2.7		3.5		2.2	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	49		230		100	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.27		0.13		0.09	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg				1.89		2.56
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg				< 1.20		1.64
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg				< 1.50		< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		4.42
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		4.42
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg				< 0.90		< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg				< 0.50		< 0.50
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg				< 0.60		< 0.60
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg				2.58		2.40

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402143	2402145	2402146	2402147	2402148	2402149
			Sample ID ~	TP01	TP02	TP02	TP02	TP03	TP03
			Depth ~	0.10	0.10	0.70	2.70	0.20	0.50
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				8.98		2.40
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				6.41		< 1.40
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg				10.88		11.03
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		0.08		0.04	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.04		< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.09		0.31		0.17	
Fluorene	DETSC 3303	0.03	mg/kg	0.05		0.23		0.13	
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.58		1.9		1.1	
Anthracene	DETSC 3303	0.03	mg/kg	0.13		0.48		0.29	
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.2		2.7		2.4	
Pyrene	DETSC 3303#	0.03	mg/kg	1.1		2.6		2.3	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.45		1.0		0.89	
Chrysene	DETSC 3303	0.03	mg/kg	0.50		0.95		0.81	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.56		1.2		1.1	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.21		0.43		0.33	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.42		0.96		0.79	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.19		0.40		0.36	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.05		0.12		0.10	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.24		0.54		0.45	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	5.7		14		11	
PCBs									
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01				
PCB 77	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 81	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 105	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 114	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01				
PCB 123	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 126	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 156	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 157	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 167	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 169	DETSC 3401*	0.01	mg/kg		< 0.01				
PCB 189	DETSC 3401*	0.01	mg/kg		< 0.01				
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.6		< 0.3		0.4	

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

				Lab No	2402150	2402151	2402152	2402153	2402154	2402155
				Sample ID ~	TP03	TP04	TP05	TP05	TP06	TP07
				Depth ~	1.20	0.10	0.40	2.20	1.00	0.90
				Other ID ~						
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	29	43	150		24	
Beryllium	DETSC 2301#	0.2	mg/kg	0.7	1.1	2.8		0.8	
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.5	0.5	0.6		0.3	
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.8	0.3		0.4	
Chromium	DETSC 2301#	0.15	mg/kg	24	32	20		19	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	31	140	170		53	
Lead	DETSC 2301#	0.3	mg/kg	52	310	250		78	
Mercury	DETSC 2325#	0.05	mg/kg	0.08	0.98	0.37		0.26	
Nickel	DETSC 2301#	1	mg/kg	28	25	80		22	
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.8	3.2		1.4	
Vanadium	DETSC 2301#	0.8	mg/kg	23	34	69		22	
Zinc	DETSC 2301#	1	mg/kg	75	200	170		120	
Inorganics										
pH	DETSC 2008#		pH	7.7	8.1	6.1		7.9	
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.4	0.3		0.1	
FOC	DETSC 2002	0.001		0.016	0.039	0.076		0.017	
Total Organic Carbon	DETSC 2002	0.1	%	1.6	3.9	7.6		1.7	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	60	20	140		32	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.05	0.08	0.26		0.04	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg				3.18		3.81
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg				2.13		2.34
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg				< 1.50		< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		< 3.40
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg				< 3.40		< 3.40
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg				< 0.01		< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg				< 0.90		< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg				< 0.50		< 0.50
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg				< 0.60		< 0.60
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg				2.74		3.13

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

	Lab No	2402150	2402151	2402152	2402153	2402154	2402155
	Sample ID ~	TP03	TP04	TP05	TP05	TP06	TP07
	Depth ~	1.20	0.10	0.40	2.20	1.00	0.90
	Other ID ~						
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				2.74		3.13
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg				< 1.40		< 1.40
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg				< 10.00		< 10.00
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.08	< 0.03		< 0.03	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03		< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.31	< 0.03		< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.24	< 0.03		< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	2.4	0.04		< 0.03	
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.65	< 0.03		< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	3.7	0.07		< 0.03	
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	3.3	0.07		< 0.03	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.3	0.04		< 0.03	
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	1.1	0.05		< 0.03	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	1.6	0.04		< 0.03	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.52	< 0.03		< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.2	< 0.03		< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.51	< 0.03		< 0.03	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.13	< 0.03		< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.65	< 0.03		< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	18	0.31		< 0.10	
PCBs									
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 77	DETSC 3401*	0.01	mg/kg						
PCB 81	DETSC 3401*	0.01	mg/kg						
PCB 105	DETSC 3401*	0.01	mg/kg						
PCB 114	DETSC 3401*	0.01	mg/kg						
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 123	DETSC 3401*	0.01	mg/kg						
PCB 126	DETSC 3401*	0.01	mg/kg						
PCB 156	DETSC 3401*	0.01	mg/kg						
PCB 157	DETSC 3401*	0.01	mg/kg						
PCB 167	DETSC 3401*	0.01	mg/kg						
PCB 169	DETSC 3401*	0.01	mg/kg						
PCB 189	DETSC 3401*	0.01	mg/kg						
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.6	< 0.3		< 0.3	

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402156	2402157	2402158
			Sample ID ~	TP08	TP08	TP09
			Depth ~	0.05	0.20	1.00
			Other ID ~			
			Sample Type ~	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg		17	25
Beryllium	DETSC 2301#	0.2	mg/kg		0.7	1.1
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg		0.4	0.2
Cadmium	DETSC 2301#	0.1	mg/kg		0.7	0.8
Chromium	DETSC 2301#	0.15	mg/kg		29	41
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg		100	87
Lead	DETSC 2301#	0.3	mg/kg		150	190
Mercury	DETSC 2325#	0.05	mg/kg		0.19	0.28
Nickel	DETSC 2301#	1	mg/kg		22	31
Selenium	DETSC 2301#	0.5	mg/kg		< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg		24	32
Zinc	DETSC 2301#	1	mg/kg		240	180
Inorganics						
pH	DETSC 2008#		pH		10.9	8.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.3	0.3
FOC	DETSC 2002	0.001			0.015	0.048
Total Organic Carbon	DETSC 2002	0.1	%		1.5	4.8
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l		130	50
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.12	0.07
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg			2.94
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg			1.83
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg			< 1.50
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg			< 3.40
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg			< 10.00
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg			< 10.00
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg			< 0.90
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg			< 0.50
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg			2.23
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg			5.65

Summary of Chemical Analysis
Soil/Misc Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402156	2402157	2402158
			Sample ID ~	TP08	TP08	TP09
			Depth ~	0.05	0.20	1.00
			Other ID ~			
			Sample Type ~	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg			69.55
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg			63.90
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg			71.78
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg			71.78
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg			90.17
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg			76.55
PAHs						
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.05
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.06	0.31
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	0.07
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.15	0.54
Pyrene	DETSC 3303#	0.03	mg/kg		0.17	0.51
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.07	0.19
Chrysene	DETSC 3303	0.03	mg/kg		0.07	0.18
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.07	0.24
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.08
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.05	0.18
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.09
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.04	0.12
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		0.68	2.6
PCBs						
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01
PCB 77	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 81	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 105	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 114	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01
PCB 123	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 126	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 156	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 157	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 167	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 169	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
PCB 189	DETSC 3401*	0.01	mg/kg	< 0.01		< 0.01
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		0.4	0.5

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402147	2402149	2402153	2402155
			Sample ID ~	TP02	TP03	TP05	TP07
			Depth ~	2.70	0.50	2.20	0.90
			Other ID ~				
			Sample Type ~	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
VOCs							
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402147	2402149	2402153	2402155
			Sample ID ~	TP02	TP03	TP05	TP07
			Depth ~	2.70	0.50	2.20	0.90
			Other ID ~				
			Sample Type ~	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs							
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	0.9	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

			Lab No	2402147	2402149	2402153	2402155
			Sample ID ~	TP02	TP03	TP05	TP07
			Depth ~	2.70	0.50	2.20	0.90
			Other ID ~				
			Sample Type ~	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	26/09/2024	26/09/2024	26/09/2024	26/09/2024
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	0.7	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg	< 0.1	3.8	< 0.1	0.1
Anthracene	DETSC 3433	0.1	mg/kg	0.1	1.2	< 0.1	0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg	0.3	2.7	< 0.1	0.2
Pyrene	DETSC 3433	0.1	mg/kg	0.3	2.3	< 0.1	0.2
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	0.1	0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	1.0	< 0.1	0.2
Chrysene	DETSC 3433	0.1	mg/kg	< 0.1	1.0	< 0.1	0.2
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1

Summary of Asbestos Analysis
Soil Samples

Our Ref 24-20913
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No	Sample ID	Sample Location	Material Type*	Result	Comment*
2402143	TP01 0.10		SOIL	NAD	none
2402144	TP01 0.40		Cement	Chrysotile	none
2402146	TP02 0.70		SOIL	Amosite	Amosite present as fibre bundles
2402148	TP03 0.20		SOIL	Amosite	Amosite present as fibre bundles
2402150	TP03 1.20		SOIL	NAD	none
2402151	TP04 0.10		SOIL	NAD	none
2402152	TP05 0.40		SOIL	NAD	none
2402154	TP06 1.00		SOIL	NAD	none
2402157	TP08 0.20		SOIL	NAD	none
2402158	TP09 1.00		SOIL	Amosite Chrysotile	Amosite and Chrysotile present as fibre bundles

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of A
are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbesto
sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -no
laboratory scope of accreditation.

Analyst
Vicky Convery
Vicky Convery
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Information in Support of the Analytical Results

Our Ref 24-20913
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2402143	TP01 0.10 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402144	TP01 0.40 MISC	26/09/24	PG		
2402145	TP02 0.10 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402146	TP02 0.70 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402147	TP02 2.70 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402148	TP03 0.20 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402149	TP03 0.50 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402150	TP03 1.20 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402151	TP04 0.10 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402152	TP05 0.40 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402153	TP05 2.20 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402154	TP06 1.00 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402155	TP07 0.90 SOIL	26/09/24	PG		BTEX / C5-C10, EPH/Aliphatic/Aromatic + Cleanup, SVOC
2402156	TP08 0.05 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402157	TP08 0.20 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2402158	TP09 1.00 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		

Key: G-Glass J-Jar P-Plastic G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Certificate of Analysis

Certificate Number	24-21167	*Issued:*	14-Oct-24
Client	Coopers (Chester) Ltd Park House Sandpiper Court Chester Business Park Chester CH4 9QU		
Our Reference	24-21167		
Client Reference ~	8353		
Order No ~	10203-LP		
Contract Title ~	LAND ADJACENT TO BEALEY INDUSTRIAL		
Description	5 Soil samples.		
Date Received	03-Oct-24		
Date Started	03-Oct-24		
Date Completed	14-Oct-24		
Test Procedures	Identified by prefix DETSn (details on request).		
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.		

Approved By

Kirk Bridgewood
General Manager

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 24-21167
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Sample ID	Depth	Lab No	Completed	Matrix Description
WS101	0.4	2403425	14/10/2024	Dark brown very gravelly, sandy CLAY (Possible made ground - brick)
WS101	3.00-4.00	2403426	14/10/2024	Dark brown very gravelly, sandy CLAY (Possible made ground - brick)
WS102	0.7	2403427	14/10/2024	Dark brown very gravelly, sandy CLAY (Possible made ground - brick)
WS103	0.2	2403428	14/10/2024	Brown gravelly, sandy CLAY
WS104	0.7	2403429	14/10/2024	Black slightly clayey, very gravelly SAND (Possible made ground - brick)

Summary of Chemical Analysis
Soil Samples

Our Ref 24-21167
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

				Lab No	2403425	2403426	2403427	2403428	2403429
				Sample ID ~	WS101	WS101	WS102	WS103	WS104
				Depth ~	0.40	3.00-4.00	0.70	0.20	0.70
				Other ID ~					
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	30/09/2024	30/09/2024	30/09/2024	30/09/2024	30/09/2024
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	41	7.1	11	15	34
Beryllium	DETSC 2301#	0.2	mg/kg	1.1	2.4	0.6	0.6	2.5
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.8	0.5	0.4	< 0.2	0.7
Cadmium	DETSC 2301#	0.1	mg/kg	0.8	0.8	0.8	0.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	62	21	28	16	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	140	33	210	100	130
Lead	DETSC 2301#	0.3	mg/kg	350	110	230	67	53
Mercury	DETSC 2325#	0.05	mg/kg	0.73	0.06	0.72	0.07	< 0.05
Nickel	DETSC 2301#	1	mg/kg	33	17	24	15	59
Selenium	DETSC 2301#	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	59	42	29	24	66
Zinc	DETSC 2301#	1	mg/kg	290	89	290	58	49
Inorganics									
pH	DETSC 2008#		pH	8.3	11.7	10.5	6.7	7.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	1.1	0.2	0.6	0.2	< 0.1
FOC	DETSC 2002	0.001		0.026	0.022	0.027	0.017	0.099
Total Organic Carbon	DETSC 2002	0.1	%	2.6	2.2	2.7	1.7	9.9
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	64	56	120	46	130
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.08	0.16	0.09	0.04	0.11
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01			
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01			
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01			
Aliphatic >EC10-EC12 Cleanup	DETSC 3521*	1.5	mg/kg		< 15.00			
Aliphatic >EC12-EC16 Cleanup	DETSC 3521*	1.2	mg/kg		15.12			
Aliphatic >EC16-EC21 Cleanup	DETSC 3521*	1.5	mg/kg		< 15.00			
Aliphatic >EC21-EC24 Cleanup	DETSC 3521*	3.4	mg/kg		< 34.00			
Aliphatic >EC21-EC35 Cleanup	DETSC 3521*	3.4	mg/kg		< 3.40			
Aliphatic >EC24-EC35 Cleanup	DETSC 3521*	3.4	mg/kg		< 34.00			
Aliphatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg		< 76.00			
Aliphatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg		< 110.00			
Aliphatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg		49.19			
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01			
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01			
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01			
Aromatic >EC10-EC12 Cleanup	DETSC 3521*	0.9	mg/kg		< 9.00			
Aromatic >EC12-EC16 Cleanup	DETSC 3521*	0.5	mg/kg		468.4			
Aromatic >EC16-EC21 Cleanup	DETSC 3521*	0.6	mg/kg		1760			
Aromatic >EC21-EC24 Cleanup	DETSC 3521*	1.4	mg/kg		449.1			

Summary of Chemical Analysis
Soil Samples

Our Ref 24-21167
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

	Lab No	2403425	2403426	2403427	2403428	2403429
	Sample ID ~	WS101	WS101	WS102	WS103	WS104
	Depth ~	0.40	3.00-4.00	0.70	0.20	0.70
	Other ID ~					
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	30/09/2024	30/09/2024	30/09/2024	30/09/2024	30/09/2024
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Aromatic >EC21-EC35 Cleanup	DETSC 3521*	1.4	mg/kg		1362			
Aromatic >EC24-EC35 Cleanup	DETSC 3521*	1.4	mg/kg		912.8			
Aromatic C5-C35 Cleanup	DETSC 3521*	10	mg/kg		3600			
Aromatic >EC10-EC35 Cleanup	DETSC 3521*	10	mg/kg		3590			
Aromatic >EC10-EC40 Cleanup	DETSC 3521*	10	mg/kg		3664			
TPH Ali/Aro Total C5-C35 Cleanup	DETSC 3521*	10	mg/kg		3649			
Benzene	DETSC 3321#	0.01	mg/kg		< 0.01			
Ethylbenzene	DETSC 3321#	0.01	mg/kg		< 0.01			
Toluene	DETSC 3321#	0.01	mg/kg		< 0.01			
Xylene	DETSC 3321#	0.01	mg/kg		< 0.01			
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.56	< 1.00	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.30	< 1.00	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.04	11	< 1.00	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	11	< 1.00	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.30	57	3.0	< 0.03	0.12
Anthracene	DETSC 3303	0.03	mg/kg	0.06	13	< 1.00	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.59	38	4.9	0.05	0.34
Pyrene	DETSC 3303#	0.03	mg/kg	0.54	29	4.1	0.04	0.41
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.28	6.4	2.3	0.04	0.28
Chrysene	DETSC 3303	0.03	mg/kg	0.29	5.1	2.5	< 0.03	0.32
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.41	3.9	3.4	0.03	0.44
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.15	1.8	1.5	< 0.03	0.17
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.29	3.1	3.2	< 0.03	0.34
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.13	1.1	1.3	< 0.03	0.15
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.44	< 1.00	< 0.03	0.06
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.17	1.3	1.8	< 0.03	0.21
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	3.3	180	28	0.13	2.8
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.5	0.9	0.5	0.3	0.9

Summary of Asbestos Analysis
Soil Samples

Our Ref 24-21167
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2403425	WS101 0.40	SOIL	NAD	none	Pierce Booth
2403426	WS101 3.00-4.00	SOIL	NAD	none	Pierce Booth
2403427	WS102 0.70	SOIL	Chrysotile	Chrysotile present in microscopic cement fragment	Pierce Booth
2403428	WS103 0.20	SOIL	NAD	none	Pierce Booth
2403429	WS104 0.70	SOIL	NAD	none	Pierce Booth

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 24-21167
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2403425	WS101 0.40 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		
2403426	WS101 3.00-4.00 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		
2403427	WS102 0.70 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		
2403428	WS103 0.20 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		
2403429	WS104 0.70 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Certificate of Analysis

Certificate Number	24-22201	*Issued:*	22-Oct-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference	24-22201
Client Reference ~	8353
Order No ~	10200-LP
Contract Title ~	LAND ADJACENT TO BEALEY INDUSTRIAL
Description	3 Soil samples, 3 Leachate prepared by DETS samples.
Date Received	01-Oct-24
Date Started	16-Oct-24
Date Completed	22-Oct-24
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Leachate Samples

Our Ref 24-22201
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

	Lab No	2409990	2409991	2409994
	Sample ID ~	TP04	TP05	TP02
	Depth ~	0.10	0.40	0.70
	Other ID ~			
	Sample Type ~	LEACHATE	LEACHATE	LEACHATE
	Sampling Date ~	26/09/2024	26/09/2024	26/09/2024
	Sampling Time ~	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.7	2.3	
Copper, Dissolved	DETSC 2306	0.4	ug/l		1.5	
Lead, Dissolved	DETSC 2306	0.09	ug/l	1.9	1.3	2.9

Summary of Asbestos Analysis

Samples

Our Ref 24-22201
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No	Sample ID	Sample Location	Material Type	Result	Comment*	Analyst

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 24-22201
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No		2409988	2409989	2409992
Sample ID ~		TP02	TP03	TP09
Depth ~		0.70	0.20	1.00
Other ID ~				
Sample Type ~				
Sampling Date ~		26/09/2024	26/09/2024	26/09/2024
Sampling Time ~				

Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %		**0.003**	**0.002**	**0.004**
Gravimetric Quantification (a)	DETSC 1102	Mass %		na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %		0.003	0.002	0.004
Quantification by PCOM (c)	DETSC 1102	Mass %		na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g		na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g		23.01	27.80	23.05
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %		0.003	0.002	0.003
% Chrysotile bundles in sample		Mass %		na	na	0.002
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %		na	na	na
% Chrysotile fibres in sample		Mass %		na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g		na	na	na
Chrysotile fibres		Fibres/g		na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample

Information in Support of the Analytical Results

Our Ref 24-22201
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2409988	TP02 0.70 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2409989	TP03 0.20 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2409990	TP04 0.10 LEACHATE	26/09/24	GJ 250ml x2, GJ 60ml		
2409991	TP05 0.40 LEACHATE	26/09/24	GJ 250ml x2, GJ 60ml		
2409992	TP09 1.00 SOIL	26/09/24	GJ 250ml x2, GJ 60ml		
2409994	TP02 0.70 LEACHATE	26/09/24	GJ 250ml x2, GJ 60ml		

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Certificate of Analysis

Certificate Number	24-22203	*Issued:*	22-Oct-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference 24-22203

Client Reference ~ 8353

Order No ~ 10203-LP

Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Description 1 Soil sample, 3 Leachate prepared by DETS samples.

Date Received 03-Oct-24

Date Started 16-Oct-24

Date Completed 22-Oct-24

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

ilac-MRA UKAS TESTING 2139

Summary of Chemical Analysis
Leachate Samples

Our Ref 24-22203
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

	Lab No	2409995	2409996	2409998
	Sample ID ~	WS101	WS101	WS102
	Depth ~	0.40	3.00-4.00	0.70
	Other ID ~			
	Sample Type ~	LEACHATE	LEACHATE	LEACHATE
	Sampling Date ~	30/09/2024	30/09/2024	30/09/2024
	Sampling Time ~	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	< 0.16		
Copper, Dissolved	DETSC 2306	0.4	ug/l			2.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.22		1.3
PAHs						
Naphthalene	DETSC 3304	0.05	ug/l		0.08	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l		0.66	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l		16	0.02
Fluorene	DETSC 3304	0.01	ug/l		3.6	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l		0.39	0.02
Anthracene	DETSC 3304	0.01	ug/l		0.51	0.01
Fluoranthene	DETSC 3304	0.01	ug/l		3.5	0.04
Pyrene	DETSC 3304	0.01	ug/l		2.5	0.05
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l		0.32	0.03
Chrysene	DETSC 3304	0.01	ug/l		0.23	0.03
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l		0.26	0.06
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l		0.12	0.02
Benzo(a)pyrene	DETSC 3304	0.01	ug/l		0.25	0.05
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l		0.11	0.04
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l		< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l		0.12	0.05
PAH Total	DETSC 3304	0.2	ug/l		29	0.41

Summary of Asbestos Analysis

Samples

Our Ref 24-22203
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No	Sample ID	Sample Location	Material Type	Result	Comment*	Analyst

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 24-22203
Client Ref ~ 8353
Contract Title ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Lab No		2409997
Sample ID ~		WS102
Depth ~		0.70
Other ID ~		
Sample Type ~		
Sampling Date ~		30/09/2024
Sampling Time ~		

Test	**Method**	**Units**		
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %		**0.035**
Gravimetric Quantification (a)	DETSC 1102	Mass %		0.035
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %		na
Quantification by PCOM (c)	DETSC 1102	Mass %		na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g		na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample		g		13.26
ACMs present*		type		Cement
Mass of ACM in sample		g		0.0309
% ACM by mass		%		0.233
% asbestos in ACM		%		15
% asbestos in sample		%		0.035
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample		Mass %		na
% Chrysotile bundles in sample		Mass %		na
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample		Mass %		na
% Chrysotile fibres in sample		Mass %		na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres		Fibres/g		na
Chrysotile fibres		Fibres/g		na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample

Information in Support of the Analytical Results

Our Ref 24-22203
Client Ref ~ 8353
Contract ~ LAND ADJACENT TO BEALEY INDUSTRIAL

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2409995	WS101 0.40 LEACHATE	30/09/24	GJ 250ml x2, GJ 60ml		
2409996	WS101 3.00-4.00 LEACHATE	30/09/24	GJ 250ml x2, GJ 60ml		
2409997	WS102 0.70 SOIL	30/09/24	GJ 250ml x2, GJ 60ml		
2409998	WS102 0.70 LEACHATE	30/09/24	GJ 250ml x2, GJ 60ml		

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

Appendix 9

Geotechnical Test Results



Settlement Calculations

MURRAY RIX

CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client Coopers (Chester) Ltd

Address Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Contract 8353 -
Land Adjacent to Bealey Industrial Estate, Radcliffe

Order Number 8353 (10007-LP)
Job Number MRN 24064/8
Date of Issue 03 May 2024
Page 1 of 6

Approved Signatories

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.

5 The results included within the report are representative of the samples submitted for analysis.

6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

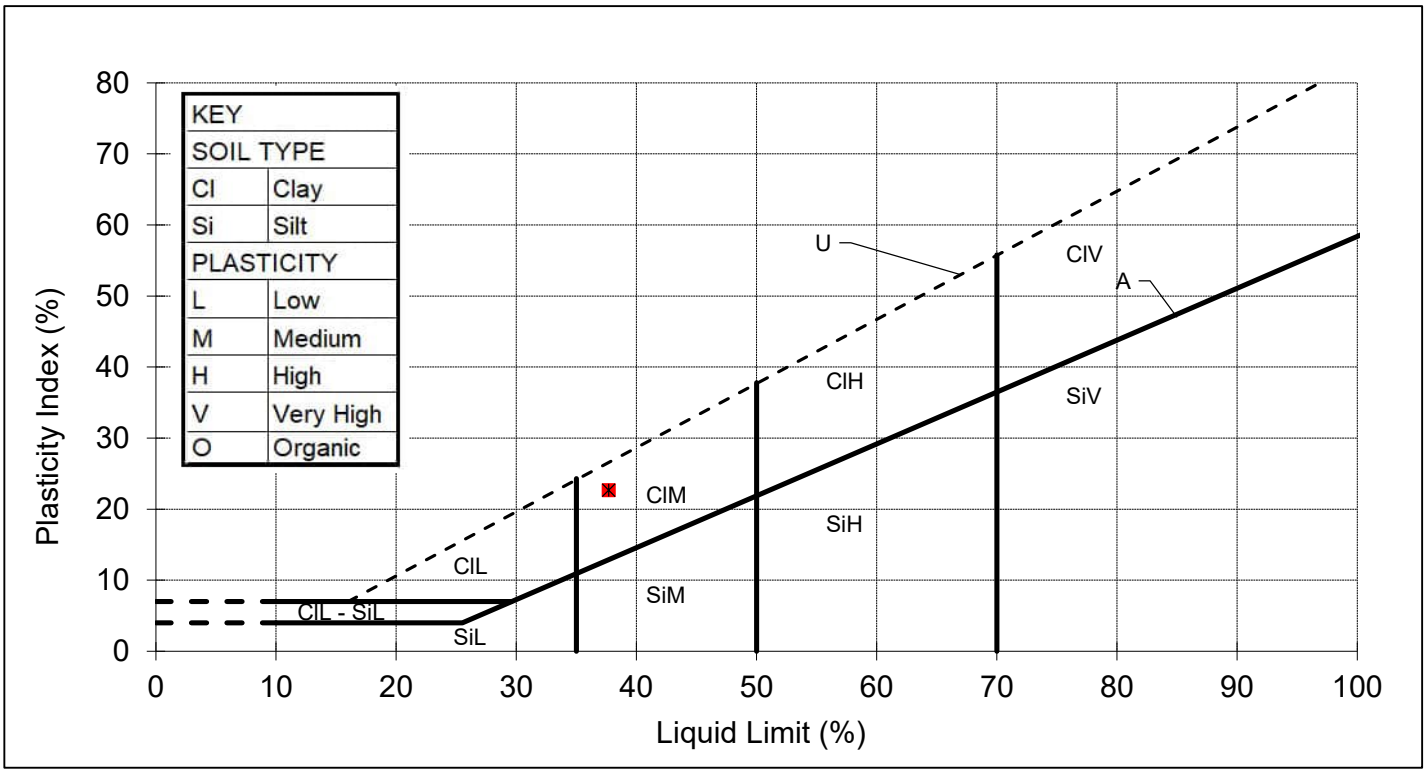
CLIENT	Coopers (Chester) Ltd
SITE	8353 - Land Adjacent to Bealey Industrial Estate, Radcliffe
JOB NUMBER	MRN 24064/8

SAMPLE LABEL	WS01 1.6-2.2m (B)	DATE SAMPLED	21-Mar-24
SAMPLE No.	450601	DATE RECEIVED	08-Apr-24
DATE TESTED	16-Apr-24	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy CLAY.		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Hand Picked

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	18.3	36.8	1.027	
Determination 2 (avg)	18.7	36.6		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
26.0	38	15	23	98



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 03-May-24

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

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PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

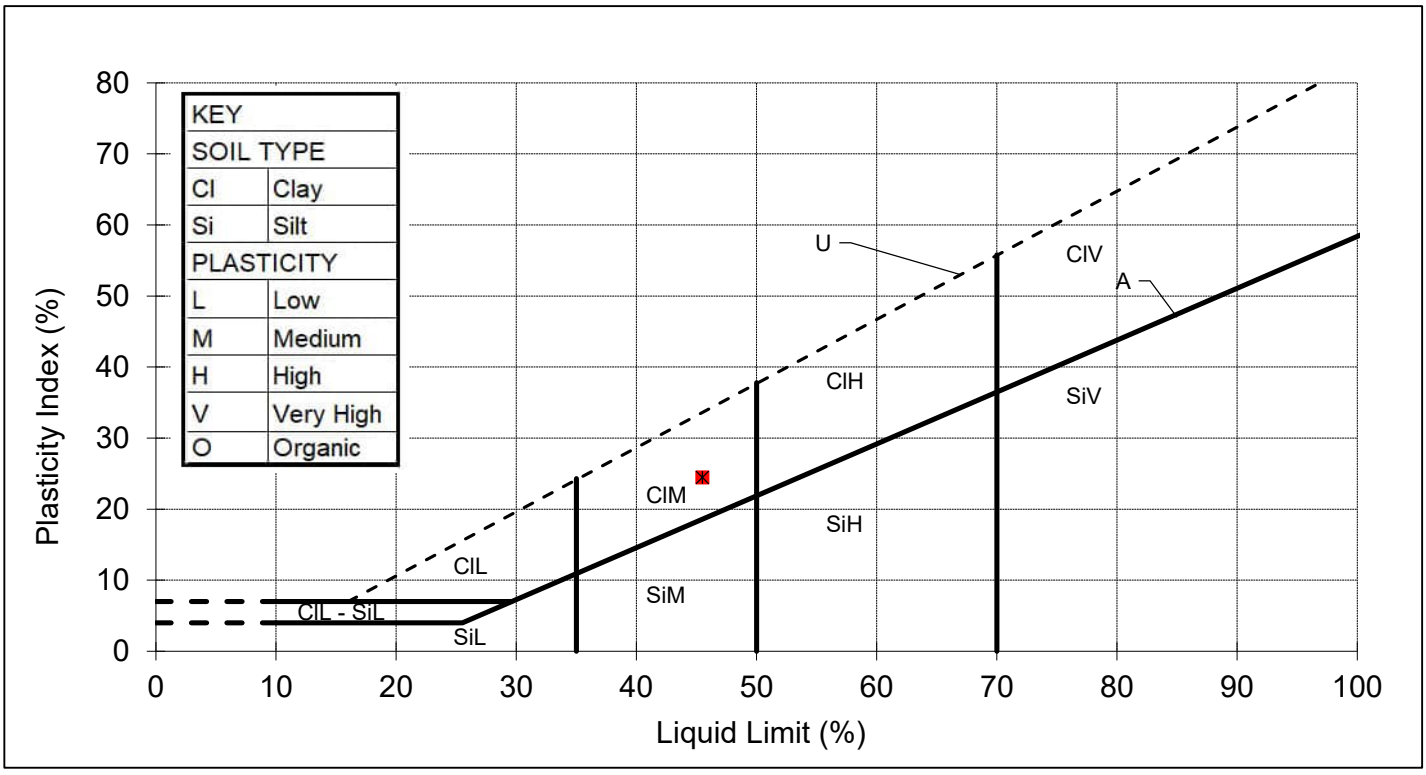
CLIENT	Coopers (Chester) Ltd
SITE	8353 - Land Adjacent to Bealey Industrial Estate, Radcliffe
JOB NUMBER	MRN 24064/8

SAMPLE LABEL	WS02 0.8-1.70m (B)	DATE SAMPLED	21-Mar-24
SAMPLE No.	450602	DATE RECEIVED	08-Apr-24
DATE TESTED	16-Apr-24	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy slightly gravelly CLAY.		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Hand Picked

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	18.5	44.6	1.025	
Determination 2 (avg)	18.7	44.2		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
34.6	45	21	24	89



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 03-May-24

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TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

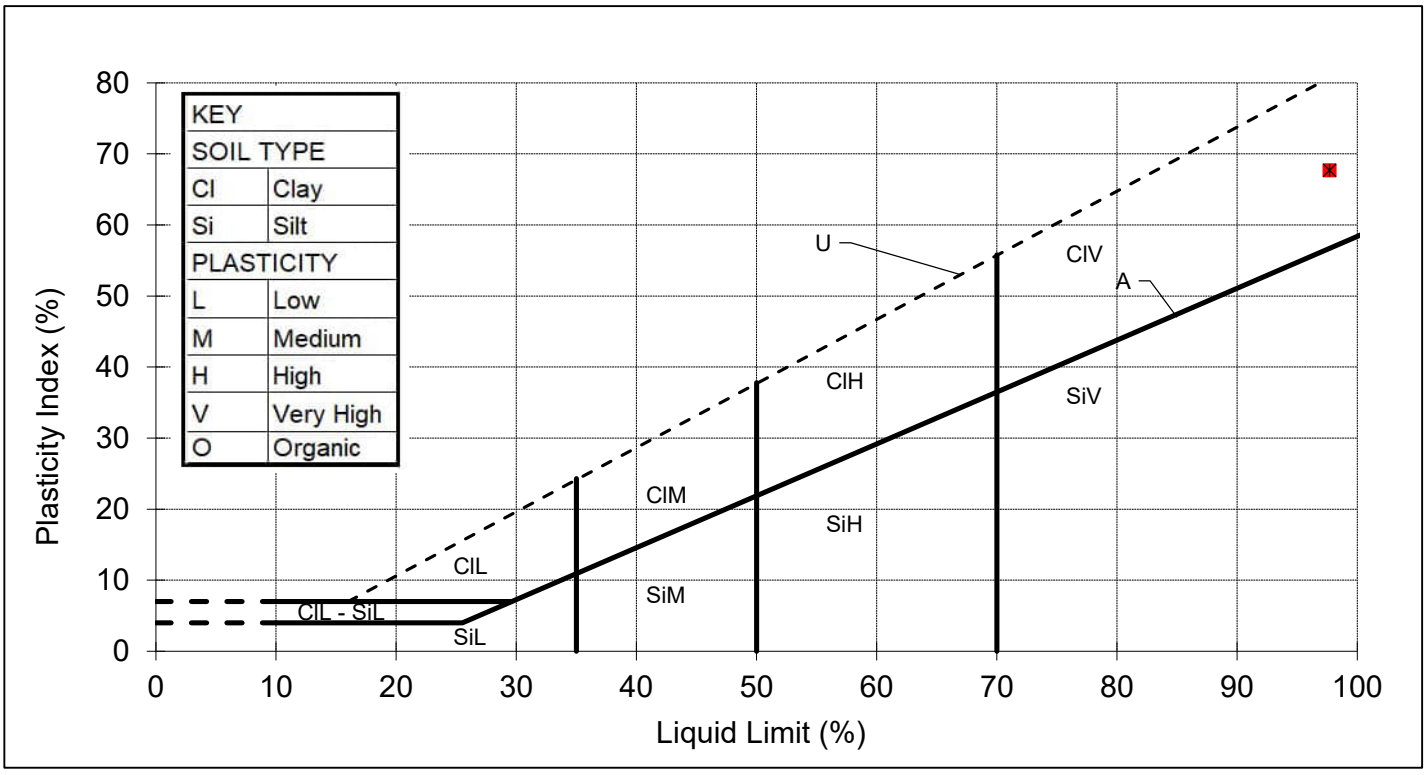
CLIENT	Coopers (Chester) Ltd
SITE	8353 - Land Adjacent to Bealey Industrial Estate, Radcliffe
JOB NUMBER	MRN 24064/8

SAMPLE LABEL	WS06 1.1-1.60m (B)	DATE SAMPLED	22-Mar-24
SAMPLE No.	450603	DATE RECEIVED	08-Apr-24
DATE TESTED	16-Apr-24	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy slightly gravelly organic CLAY.		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Hand Picked

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	24.2	105.6	0.926	
Determination 2 (avg)	24.1	105.4		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
63.2	98	30	68	99



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 03-May-24

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TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

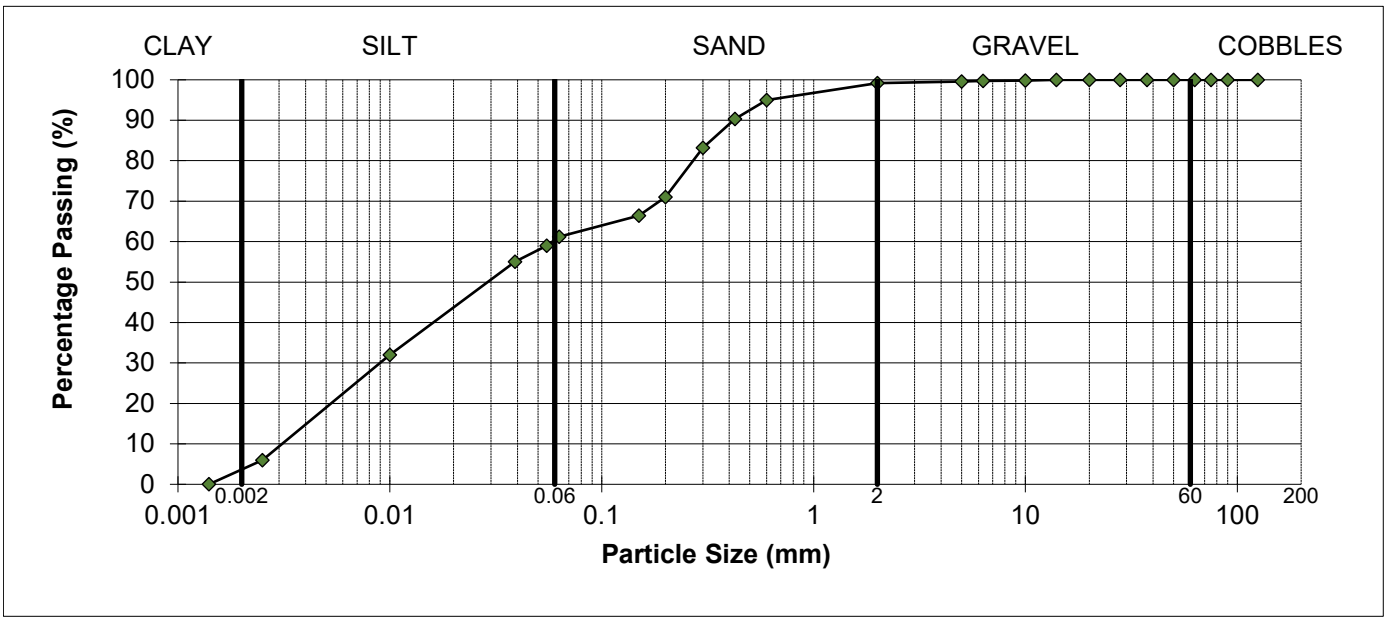
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	Coopers (Chester) Ltd
SITE	8353 - Land Adjacent to Bealey Industrial Estate, Radcliffe
JOB NUMBER	MRN 24064/8

SAMPLE LABEL	WS06 2.00-2.30m (B)	DATE SAMPLED	22-Mar-24
LAB SAMPLE No	450604	DATE RECEIVED	08-Apr-24
DATE TESTED	18-Apr-24	SAMPLED BY	Client

MATERIAL	Brown clayey sandy slightly gravelly SILT.
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		2	99	
90	100		0.6	95	
75	100		0.425	90	
63	100		0.3	83	
50	100		0.2	71	
37.5	100		0.15	66	
28	100		0.063	61	
20	100		0.055	59	
14	100		0.039	55	
10	100		0.01	32	
6.3	100		0.0025	6	
5	100		0.0014	0	



REMARKS
As received water content = 73.4%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 03-May-24

M U R R A Y R I X

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TEL 0161 475 0870

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

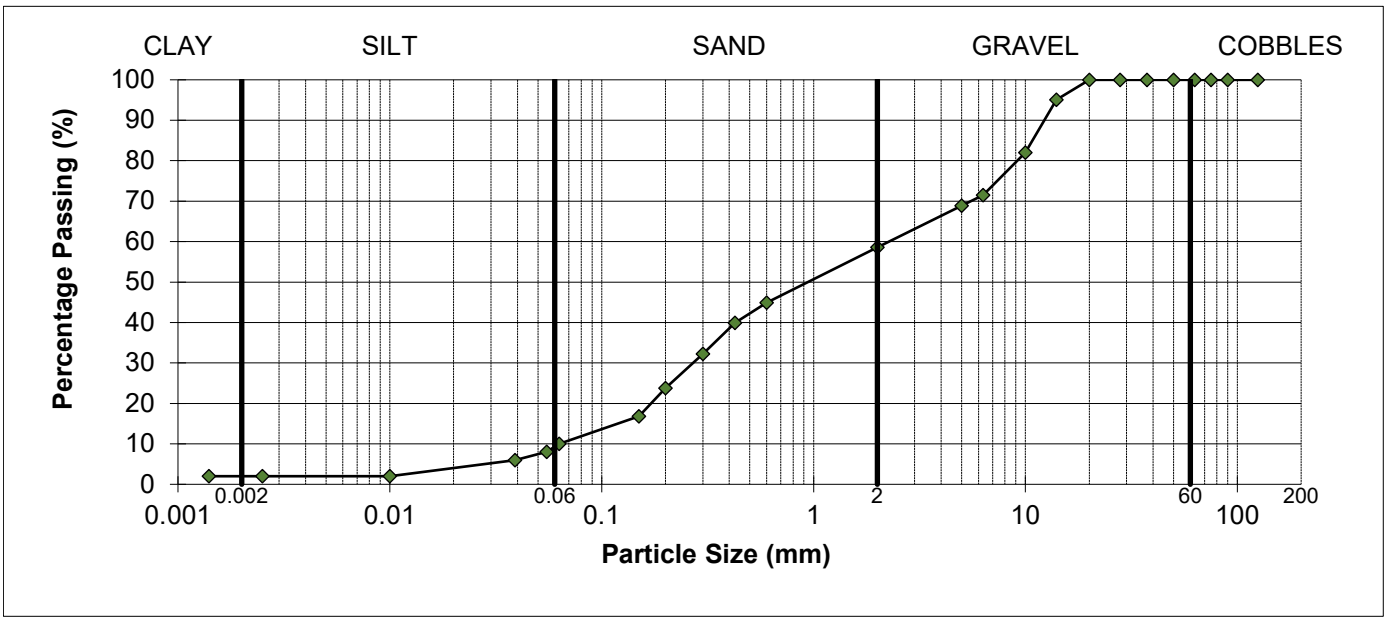
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	Coopers (Chester) Ltd
SITE	8353 - Land Adjacent to Bealey Industrial Estate, Radcliffe
JOB NUMBER	MRN 24064/8

SAMPLE LABEL	WS09 0.6-1.9m (B)	DATE SAMPLED	22-Mar-24
LAB SAMPLE No	450605	DATE RECEIVED	08-Apr-24
DATE TESTED	18-Apr-24	SAMPLED BY	Client

MATERIAL	Brown silty gravelly SAND.
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		2	59	
90	100		0.6	45	
75	100		0.425	40	
63	100		0.3	32	
50	100		0.2	24	
37.5	100		0.15	17	
28	100		0.063	10	
20	100		0.055	8	
14	95		0.039	6	
10	82		0.01	2	
6.3	72		0.0025	2	
5	69		0.0014	2	



REMARKS
As received water content = 24.8%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 03-May-24

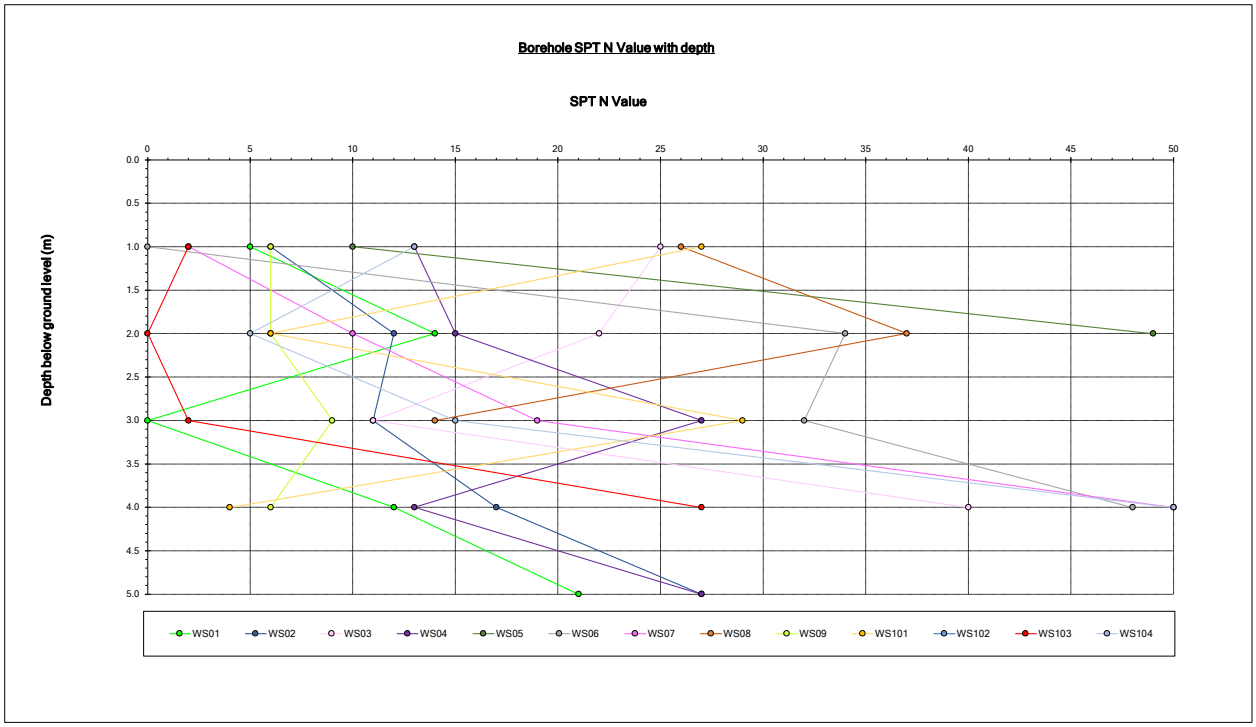
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Land Adjacent to Bealey's Industrial Estate, Radcliffe
SPT N Value Summary Table

Madeground	Gravel	Soft/Firm Clay
Silt	Sand & Gravel	Stiff Clay
Peat	Sand	Borehole Terminated

Water Strike

Depth below ground level (m)	Exploratory Hole References												
	WS01	WS02	WS03	WS04	WS05	WS06	WS07	WS08	WS09	WS101	WS102	WS103	WS104
0.0													
0.1													
0.2													
0.3													
0.4													
0.5													
0.6													
0.7													
0.8													
0.9													
1.0	5	6	25	13	10	0	2	26	6	27		2	13
1.1													
1.2													
1.3													
1.4													
1.5													
1.6													
1.7													
1.8													
1.9													
2.0	14	12	22	15	49	34	10	37	6	6		0	5
2.1													
2.2													
2.3													
2.4													
2.5													
2.6													
2.7													
2.8													
2.9													
3.0	0	11	11	27		32	19	14	9	29		2	15
3.1													
3.2													
3.3													
3.4													
3.5													
3.6													
3.7													
3.8													
3.9													
4.0	12	17	40	13		48	50		6	4		27	50
4.1													
4.2													
4.3													
4.4													
4.5													
4.6													
4.7													
4.8													
4.9													
5.0	21	27		27									
5.1													
5.2													
5.3													
5.4													



Park House, Sandpiper Court,
Chester Business Park,
Chester, CH4 9QU

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email: admin@coopers.co.uk

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Project Name: Land Adj. Bealeys Trading Estate, Radcliffe **Project Reference: 8353**

CALCULATION OF ULTIMATE BEARING CAPACITY - HANSEN'S METHOD

Footing width, B (m)	0.6	B should be <= L
Footing length, L (m)	10	
Founding depth, D (m)	1	
Slope of ground (deg)	0	
Soil bulk density, gb (kN/m3)	18	
Depth to water table (m)	3	
Effective density for calculations, gamma (kN/m3)	18.0	
Effective overburden press. at founding level, q (kPa)	18	

Cohesion, c_u (kPa)			
Angle of shearing res., phi, used (deg)			If blank, value will be based on SPT. Based on Tzeraghi and Peck
SPT N value	9		
Calculated phi based on SPT(deg)	29.6		correlation by Peck, Hanson, Thornburn - see p 2.
Angle of shearing res., phi, used (deg)	29.6	0.5171	= radians

HANSEN'S BEARING CAPACITY FACTORS

N(q)	17.6	= $e^{(pi * tan(phi))} * tan^2(45 + (phi/2))$
N(c)	29.3	= (2 + pi) if phi=0; = (Nq - 1)*cot(phi) if phi > 0
N(g)	18.9	= 2*(Nq - 1)*tan(phi)

HANSEN'S MODIFYING FACTORS

	(c)	(q)	(g)	
Shape factors, s(c), s(q), s(g)	1.04	1.03	0.976	shape factors calculated using
Depth factors, d(c), d(q), d(g)	1.41	1.30	1.00	formulae given by Hansen
Ground slope, g(c), g(q), g(g)	1.00	1.00	1.00	- see page 2 for details.

ULTIMATE BEARING CAPACITY

Cohesion contribution N(c)	0	= c*N(c)*s(c)*d(c)*g(c)
Overburden contribution N(q)	425	= q*N(q)*s(q)*d(q)*g(q)
Friction contribution N(g)	100	= 0.5*gamma*g(c)*g(q)*g(g)
Ultimate bearing capacity (kPa)	**525**	

Allowable bearing capacity*	**175**	**kPa**

* Notes:
(1) for a factor of safety of 3 against ultimate bearing capacity failure.
(2) for granular soils, the allowable bearing capacity is likely to be limited by settlement considerations rather than ultimate bearing capacity. This should be checked.

CALCULATION FOR EFFECTIVE DENSITY

H=.5*B*tan(45+phi/2)	0.516	=0.5*B*tan(45+phi/2)
Water below footing, dw	2.000	if water depth > footing depth, = water depth - footing depth, otherwise 0
1st half of expression, A	18.000	if dw < H, = actual density, gb; otherwise gb * dw*(2H - dw)/H^2
2nd half of expression, B	0.000	if dw < H, 0; otherwise (gb - dens.water)*(H - $dw)^2$/H^2
Eff. dens, gamma = A+B	18.000	

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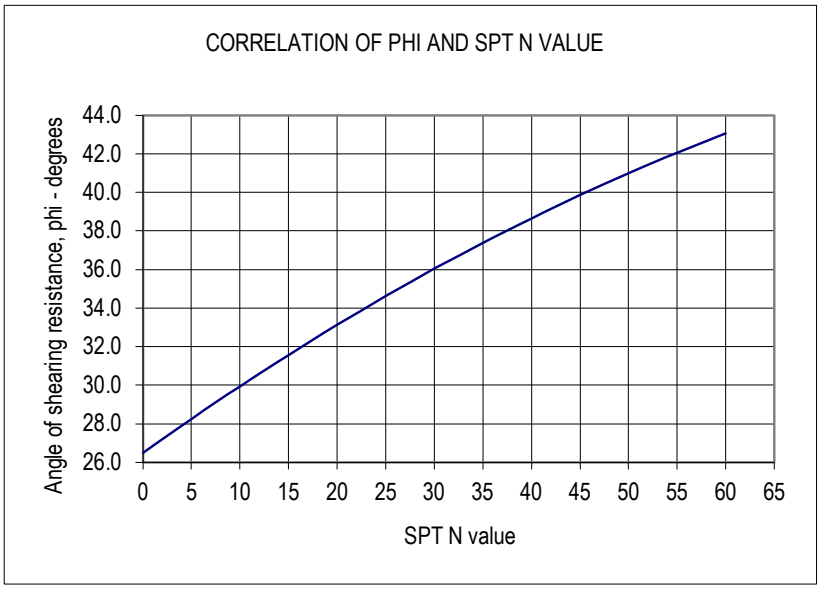
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Company number 09730429.

tel: 01244 684 910
web: www.coopers.co.uk
email: admin@coopers.co.uk

PECK, HANSON AND THORNBURN'S CORRELATION BETWEEN SPT N VALUE AND PHI

SPT N VALUE	PHI (DEG)
0	26.5
5	28.3
10	30.0
15	31.6
20	33.1
25	34.6
30	36.0
35	37.4
40	38.7
45	39.9
50	41.0
55	42.1
60	43.1

Phi calculated as phi = 25.5 + 0.36N + $0.0014N^2$, obtained by curve fitting the published graph (see Tominson, etc.)



EXPRESSIONS FOR HANSEN'S SHAPE FACTORS

s(c) = 1 + (B/L)*(Nq/Nc) s(q) = 1+ (B/L)*sin(phi) s(g) = 1 - 0.4*(B/L)

d(c) = 1 + 0.4*atan(D/B) ** d(q) = 1 + 2*tan(phi)*(1 - sin(phi))^2*atan((D/B) ** d(g) = 1.0

** note that in these expressions, atan(D/B) should be replaced with (D/B) if D<=B, but the error is small, and conservative.

g(c) = 1 - (ground slope)^O/147° g(q) = (1 - tan(ground slope))^5

Burland and Burbidge Settlement Assessment for Sand & Gravel

$$q'_n \times B^{0.7} \times I_c$$

		Recommended		Maximum	
Allowable Bearing Pressure	q'_n	100	kPa	175	
Footing Breadth Index	$B^{0.7}$	0.69936819		0.69936819	
Compressibility Index	I_c	0.078896293		0.07889629	
SPT value	n'	9		9	
Shape Factor	F_s	1.516658982		1.51665898	
Creep Factor over 10 yrs	F_t	1.404575749		1.40457575	
Settlement		11.75427	mm	20.55702	mm

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Appendix 10

Tier 1 Risk Assessment Screening Values

Controlled Water Receptor Threshold Values

Legislation Framework which Drives the Contamination Assessment of Land in England and Wales

JIWG Asbestos Decision Support Tool Calculation Sheet

Source Signature Double Ratio Plots and Explanation Sheets

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Soil Tier 1 Threshold Values (mg/kg) Residential and POS

		Elements and compounds	S4UL	Small Terrace	Med/Large Terrace	Semi-detached	Detached	Residential (without Veg)	POS (Resi)	POS (Park)
				White, yellow & green values are NOAEL with orange values C4SL				C4SL (S4UL) (1% SOM)		
Silty clay	Metals/Semi-metals	Arsenic	37	37 (32.4 CLEA)				40 (40)	79 (79)	168 (170)
		Beryllium	1.7 (inh.)	51 (to be used with caution and superseded)				(1.7)	(2.2)	(63)
		Boron	290	291				(11,000)	(21,000)	(46,000)
		Cadmium	11	22 (11 CLEA)				150 (85)	220 (120)	880 (532)
		Chromium (III)	910	3000				(910)	(1,500)	(33,000)
		Chromium (VI)	6	21 (4.3)				21 (6)	51 (7.7)	250 (220)
		Copper	2,400	2,330 (Phytotoxic pH <6 = 100, pH6-7 = 135, pH >7 = 200)				(7,100)	(12,000)	(44,000)
		Lead	-	200				310	630	1,300
		Mercury (methyl)	11	7.4 (SGV withdrawn)				(15)	(40)	(68)
		Mercury (inorganic)	40	169 (SGV withdrawn)				(56)	(120)	(240)
		Mercury (Hg)	1.2	1.2 (SGV withdrawn)				(1.2)	(16)	(30vap (25.8))
		Nickel	130	(130 S4UL) (Phytotoxic pH <6 = 60, pH6-7 = 75, pH >7 = 110)				(180)	(230)	(800)
		Selenium	250	351				(430)	(1,100)	(1,800)
		Vanadium	410	79				(1,200)	(2,000)	(5,000)
		Zinc	3,700	3,750 (Phytotoxic pH <6 = 200, pH6-7 = 200, pH >7 = 300)				(40,000)	(81,000)	(170,000)
	PAH	Acenaphthene	210	205				(3,000 – 57 s)	(15,000)	(29,000)
		Acenaphthylene	170	168				(2,900 – 86.1 s)	(15,000)	(29,000)
		Anthracene	2,400	2,260				(31,000 – 1.17 v)	(74,000)	(150,000)
		Benzo(a)anthracene	7.2	3.1				(11)	(29)	(49)
		Benzo(a)pyrene	2.2	5 (6% SOM) (0.83 CLEA)				5.3 (3.2)	10 (5.7)	21 (11)
		Benzo(b)fluoranthene	2.6	5.56				(3.9)	(7.1)	(13)
		Benzo(ghi)perylene	320	10.7				(360)	(640)	(1,400)
		Benzo(k)fluoranthene	7.7	8.5				(110)	(190)	(370)
		Chrysene	15	6.0				(30)	(57)	(93)
		Dibenz(ah)anthracene	0.24	0.76				(0.31)	(0.57)	(1.1)
		Fluoranthene	280	257				(1,500)	(3,100)	(6,300)
		Fluorene	170	163				(2,800 – 30.9 s)	(9,900)	(20,000)
		Indeno(123-cd)pyrene	27	3.18				(45)	(82)	(150)
		Phenanthrene	95	91.8				(1,300 – 36 s)	(3,100)	(6,200)
		Pyrene	620	563				(3,700)	(7,400)	(15,000)
Sandy loam		Naphthalene	2.3	1.54	1.71	1.7	1.97	(2.3)	(4,900)	(1,200 – 76.4 s)
	BTEX	Benzene	0.087	0.2 (1%) (0.079 CLEA)	0.082	0.082	0.085	0.89 (0.38)	140 (72)	190 (90)
		Toluene	130	119	122	122	125	(869)	(56,000)	(87,000 v)
		Ethylbenzene	47	62.5	68	67.9	71.6	(83)	(24,000)	(17,000 v)
		Xylene (based on p)	56	41.7	45.5	45.3	50.9	(70)	(41,000)	(17,000 v)
		Phenol	280	184	207	206	224	(750)	(760)	(760)
	Aliphatic	5-6	42	30				(42)	(570,000 – 304 s)	(95,000 – 304 s)
		6-8	100	73				(100)	(600,000)	(150,000 – 144 s)
		8-10	27	19				(27)	(13,000)	(14,000 – 78 s)
		10-12	130 (48)	93 (48)^{vap}				(130 – 48 v)	(13,000)	(21,000 – 48 s)
		12-16	1,100 (24)	740 (24)^{sol}				(1,100 - 24 v)	(13,000)	(25,000 – 24 s)
		16-35	65,000 (8.48)	45,000 (8.48)^{sol}				(65,000)	(250,000)	(450,000)
		35-44	65,000 (8.48)	45,000 (8.48)^{sol}				(65,000)	(250,000)	(450,000)
	Aromatic	8-10	34	27				(47)	(5,000)	(7,200 – 613 v)
		10-12	74	69				(250)	(5,000)	(9,200 – 364 s)
		12-16	140	140				(1,800)	(5,100)	(10,000)
		16-21	260 (	250				(1,900)	(3,800)	(7,600)
		21-35	1,100	890				(1,900)	(3,800)	(7,600)

Notes:

The soil organic matter has been assumed to be 1% as this is the most conservative value for organic compounds. Inorganic compounds unaffected by this parameter.

Silty clay strata appears to prove more conservative threshold values for metals, semi-metals and several PAH compounds. Sandy loam strata appears to prove more conservative threshold values for TPH compounds, phenol and naphthalene.

The assessment of hydrocarbon fractions should be completed additively to determine the total risk of the whole range of compounds present as well as by single TPH fractional units, however this should be undertaken on a sample by sample basis where significant hydrocarbon concentrations have been encountered to derive a compound TPH concentration.

Although benzene has a C4SL value, this has been calculated for small terraced housing and not other housing stock, therefore other housing stock should either adopt the more conservative CLEA thresholds or that of a small terraced property. All thresholds not coloured orange (C4SL) for different housing stock have utilised LQM/CIEH Generic Assessment Criteria for Human Health Risk assessment, 2nd edition, 2009. CLEA values in brackets where C4SL values are available.

Vap denotes where the threshold is exceeded beyond the vapour saturation limit. Sol denotes where the threshold is exceeded beyond the solubility saturation limit.

It should be noted that these threshold values only relate to human health risk assessment and an assessment for potential groundwater risk should be undertaken as a separate risk assessment.

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CONTROLLED WATER RECEPTOR THRESHOLD VALUES (µg/l)

Compound/element		Groundwater Quality Threshold Values[1] Maximum value	Environmental Quality Standards (EQS)			
			Long term (mean) for fresh waters[13]	Short term (95th percentile) for fresh waters[13]	Annual average (AA-EQS) for inland surface waters[14]	Maximum allowable concentration (MAC-EQS)[14] for inland surface waters [15]
Inorganic elements and compounds	Ammonium	500	-	-	-	-
	Arsenic	10	50	-	-	-
	Boron	1000	-	-	-	-
	Cadmium[9]	5.0	-	-	≤0.08 (Class 1)	≤0.45 (Class 1)
		-	-	-	0.08 (Class 2)	0.45 (Class 2)
		-	-	-	0.09 (Class 3)	0.6 (Class 3)
		-	-	-	0.15 (Class 4)	0.9 (Class 4)
		-	-	-	0.25 (Class 5)	1.5 (Class 5)
	Chromium (III)	50	4.7	32	-	-
	Chromium (VI)	-	3.4	-	-	-
	Chloride	250,000	-	-	-	-
	Chlorine	-	2	5	-	-
	Copper	2000	1[5]	-	-	-
	Cyanide	50	1	5	-	-
	Iron	-	1,000	-	-	-
	Lead	10	-	-	1.2[5]	14
	Manganese	-	123[5]	-	-	-
	Mercury	1.0	-	-	-	0.07
	Nickel	20	-	-	4[5]	34
	Nitrate[2]	50,000	-	-	-	-
	Nitrite[2]	500	-	-	-	-

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Compound/element		Groundwater Quality Threshold Values[1] Maximum value	Environmental Quality Standards (EQS)			
			Long term (mean) for fresh waters[13]	Short term (95th percentile) for fresh waters[13]	Annual average (AA-EQS) for inland surface waters[14]	Maximum allowable concentration (MAC-EQS)[14] for inland surface waters[15]
	Selenium	10	-	-	-	-
	Sulphate	250,000	-	-	-	-
	Zinc	-	10.9	-	-	-
PAH compounds	Anthracene	-	-	-	0.1	0.1
	Benzo(a)pyrene	0.01	-	-	$1.7x10^{-4}$	0.27
	Fluoranthene	-	-	-	0.0063	0.12
	Naphthalene	-	-	-	2	130
	PAH compounds (benzo(b)fluoranthene + benzo(k)fluoranthene + benzo(ghi)perylene + indeno(1,2,3-cd)pyrene)	0.1	-	-	$1.7x10^{-4}$[(12)]	0.27[(12)]
	Benzo(b)fluoranthene	-	-	-	-	0.017
	Benzo(k)fluoranthene	-	-	-	-	0.017
	Benzo(ghi)perylene	-	-	-	-	$8.2x10^{-3}$
	Indeno(1,2,3-cd)pyrene	-	-	-	-	n/a
BTEX compounds	Benzene	1.0	-	-	10	50
	Ethene	-	-	-	-	-
	Toluene	-	74	380	-	-
	Xylene	-	-	-	-	-
VOCs	Carbon tetrachloride	-	-	-	12	n/a
	C10-C13 Chloroalkanes (e.g. chloroethane, bromomethane, chloromethane)	-	-	-	0.4	1.4
	1,2-dichloroethane	3.0	-	-	10	n/a
	Trihalomethanes total (trichloromethane (chloroform) + bromoform +	100	-	-	-	-

Compound/element		Groundwater Quality Threshold Values[1] Maximum value	Environmental Quality Standards (EQS)			
			Long term (mean) for fresh waters[13]	Short term (95th percentile) for fresh waters[13]	Annual average (AA-EQS) for inland surface waters[14]	Maximum allowable concentration (MAC-EQS)[14] for inland surface waters[15]
	dibromochloromethane + bromodichloromethane)					
	Vinyl chloride	0.5	-	-	-	-
	1,2 dichloroethane	3.0	-	-	-	-
	Trichlorobenzenes	-	-	-	0.4	n/a
	Tetrachloroethane + trichloroethylene	10	-	-	-	-
	Trichloroethylene	-	-	-	10	n/a
	Tetrachloroethane	-	140	1848		
	Tetrachloroethylene	-	-	-	10	n/a
	Trichloromethane (alternative name chloroform)	-	-	-	2.5	n/a
	Tetrachloromethane	3	-	-	-	-
SVOCs	Benzyl butyl phthalate	-	7.5	51	-	-
	Bis(2-ethylhexyl)phthalate (alternative name: di(2-ethylhexyl)-phthalate	-	-	-	1.3	n/a
	Brominated diphenylethers[8]	-	-	-	na	0.14
	2,4-dichlorophenol	-	4.2	140	-	-
	Hexa-chlorobenzene	-	-	-	-	0.05
	Hexa-chlorobutadiene	-	-	-	-	0.6
	Pentachlorophenol	-	-	-	0.4	1
Other organic comp-ounds	Phenol	-	7.7	46	-	-
Pesticides in	**Pesticides & related products[3]**	-	-	-	-	-

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Compound/element		Groundwater Quality Threshold Values[1] Maximum value	Environmental Quality Standards (EQS)			
			Long term (mean) for fresh waters[13]	Short term (95th percentile) for fresh waters[13]	Annual average (AA-EQS) for inland surface waters[14]	Maximum allowable concentration (MAC-EQS)[14] for inland surface waters[15]
	Aldrin	0.03	-	-	-	-
	Dieldrin	0.03	-	-	-	-
	Heptachlor	0.03	-	-	-	-
	Heptachlo epoxide	0.03	-	-	-	-
	Other pesticides	0.1	-	-	-	-
	Pesticides total[4]	0.5	-	-	-	-
Pesti-cides in surface waters	Atrazine	-	-	-	0.6	2.0
	Chlorfenvinphos	-	-	-	0.1	0.3
	Chlorpyrifos (Chlorpyrifosethyl)	-	-	-	0.03	0.1
	Cyclodiene pesticides: aldrin, dieldrin, endrin[10]	-	-	-	0.01	n/a
	Cypermethrin	-	0.0001	0.0004	$8x10^{-5}$	$6x10^{-4}$
	Diazinon	-	0.01	0.02	-	-
	DDT total[11]	-	-	-	0.025	n/a
	2,4 dichlorophenoxyacetic acid (2,4 D)	-	0.3	1.3	-	-
	Dichlorvos	-	-	-	$6x10^{-4}$	$7x10^{-4}$
	Dimethoate	-	0.48	4.0	-	-
	Endosulfan	-	-	-	0.005	0.01
	Heptachlor and hetachlorepoxide	-	-	-	$2x10^{-7}$	$3x10^{-4}$
	Mecoprop	-	18	187	-	-
	Permethrin	-	0.001	0.01	-	-
	Simazine	-	-	-	1	4
	Terbutryn	-	-	-	0.065	0.34

NOTES

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1. Threshold values based on The Water Supply (Water Quality) Regulations 2018
2. The water must satisfy the formula "[nitrate]/50 + [nitrite]/3 ≤ 1", where the square brackets signify the concentrations in mg/1 for nitrate (NO_3) and nitrite (NO_2).
3. "pesticides and related products" means any of the following, and includes their relevant metabolites, degradation and reaction products— (a) organic insecticide; (b) organic herbicide; (c) organic fungicide; (d) organic nematocide; (e) organic acaricide; (f) organic algicide; (g) organic rodenticide; (h) organic slimicide; (i) any product related to any of (a) to (h) (including any growth regulator).
4. The sum of the concentrations of the individual compounds detected and quantified in the monitoring process.
5. "Bioavailable" meaning the fraction of the dissolved concentration of the metal likely to result in toxic effects as determined using the UKTAG Metal Bioavailability Assessment Tool (also referred to as a PNEC Estimator) for the relevant metal.
6. The Environment Agency (EA) must define the type of river systems according to their alkalinity and altitude and the acid neutralising capacity for the river due to the dissolved carbon content. The definition due to alkalinity and altitude is in Table 1, as follows:

Site altitude	**Table 1 - Alkalinity (as mg/l $CaCO_3$)**				
	<10	≥10 to <50	≥50 to <100	≥100 to <200	>200
Under 80m	Type 1	Type 2	Type 3	Type 5	Type 7
Over 80m			Type 4	Type 6	

The quality of the rivers or river sections will then be categorised by the EA, according to the dissolved oxygen content, biological oxygen demand and ammonia levels relative to the type denoted in Table 1. The ammonia standards would be classified as follows in Table 2.

Table 2 -Ammonia standards for rivers (rivers categorised by type in accordance with river type in Table 1 above.				
Total ammonia as nitrogen (mg/l) (90 percentile)				
Type	High	Good	Moderate	Poor
1, 2, 4 and 6	0.2	0.3	0.75	1.1
3, 5 and 7	0.3	0.6	1.1	2.5

7. Ambient background concentrations have been presented in the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 with regards to the ambient background dissolved zinc concentrations.
8. The EQS refers to the sum of the concentrations of congener numbers 28, 47, 99, 100, 153 and 154.
9. The EQS for cadmium and its compounds is dependent on the water hardness as specified: Class 1: <40mg $CaCO_3$/l, Class 2: 40 to <50mg $CaCO_3$/l, Class 3: 50 to <100mg $CaCO_3$/l, Class 4: 100 to <200mg $CaCO_3$/l and Class 5: ≥200mg $CaCO_3$/l.
10. EQS relates to the sum of aldrin, dieldrin and endrin.

11. DDT total comprises the sum of the isomers 1,1,1-trichloro-2,2 bis (p-chloropheny) ethane, 1,1,1-trichloro-2 (o-chlorophenyl)-2-(p-chlorophenyl) ethane, 1,1 -dichloro-2,2 bis (p-chlorophenyl) ethylene and 1,1-dichloro-2,2 bis (p-chlorophenyl) ethane.
12. For the group of PAH compounds benzo(b)fluoranthene + benzo(k)fluoranthene + benzo(ghi)perylene + indeno(1,2,3-cd)pyrene, the EQS for benzo(a)pyrene must be applied, this being considered to be a marker for these PAH compounds.
13. Fresh water includes rivers and lakes.
14. Where the MAC-EQS is noted as n/a, the AA-EQS values are considered protective against short-term pollution peaks in continuous discharges as they are significantly lower than the values derived on the basis of acute toxicity.
15. Inland surface waters includes rivers and lakes and related artificial or heavily modified water bodies.

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Legislation Framework Which Drives the Contamination Assessment of Land in England and Wales

Foreward

In the UK, historical contaminated land is regulated by the planning and development control system and the contaminated land regime set out in Part IIA of the Environmental Protection Act 1990. The Water Act 2003 amended the Part IIA legislation in respect of controlled waters.

When considering an application for development, the potential for the land to be contaminated is a material consideration, and the planning authority should satisfy itself that any contamination is properly assessed and adequately remediated, based on a suitable for use approach. This is to ensure that the land is made suitable for its proposed new use.

For development sites which introduce new potential sources of pollution on site and these are either suspected of, or known to be causing environmental damage, a remediation notice may be placed on the operator under the Environmental Damages (Prevention and Remediation) Regulations, as applicable to England or Wales. The legislation aims to deter pollution events from occurring. When pollution events do occur, apportionment of the 'blame' for the pollution event follows a specific protocol to assess which party, assuming multiple parties have utilised the site, is responsible. The operator deemed responsible for the pollution will then be expected to clean up the pollution ideally voluntarily, or a remediation notice is served enforcing the polluter to undertake the works, assuming an appeal made is unsuccessful.

As such, developers should give due consideration to the Environmental Damages (Prevention and Remediation) Regulations during management of their site activities, for which they are responsible. Fuel tanks are often on site for the refuelling of plant, providing a potential point source of pollution at one or a number of locations about the site, as they are relocated. In addition, soils (generic term for all non-construction materials) used to raise site levels, form engineering platforms (i.e. piling and roads) and for use in garden areas are imported to site.

The legislation is complex and often is interchangeable and may depend upon the time the contamination was released into the environment and the receptors which have been\may be detrimentally affected by the contamination. A summary of the most relevant legislation and guidance is noted below.

Developers should not take on liability for all previous pollution the vendor and previous owners have left on the site. If some liability has to be taken to progress the sale of the site, a full appreciation of the liabilities of the contamination must be understood. It is common during the course of the ground investigation that all sources of historical contamination are not revealed and hence it is prudent to keep liability for these unknown events with the previous operators.

Interaction of the Planning Regime with the Environmental Protection Act 1990 – Part IIA

Current guidance/legislation applicable to England has been published by the Ministry of Housing, Communities and Local Government, the '*National Planning Policy Framework'*, February 2019, and by the Department of Environment, Food and Rural Affairs (DEFRA), the '*Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance*', April 2012. The Welsh Government has published '*Planning Policy Wales, Edition 11*', February 2021 and '*Contaminated Land Statutory Guidance for Wales 2012',* 2013. Both planning policies continue to promote the 'suitable for use approach', with the emphasis related to ensuring that the future use or development being undertaken would not be designated as contaminated land under Part IIA of the Environmental Protection Act 1990. Where remediation is required this should be undertaken in such a manner that it would not have an adverse impact on the environment.

In order for a planning decision to be made, a site investigation carried out by a specialist must be provided, which assesses the potential hazards to future site users and the local environment arising from past activities or natural factors. Where remediation is required to mitigate these impacts, the remediation scheme must show that the land would not be designated as contaminated land under Part IIA of the Environmental Protection Act 1990. If contamination cannot be overcome satisfactorily, the authority may refuse planning permission.

The responsibility for ensuring the development is undertaken in such a manner lies with the developer/land owner.

The definition of contaminated land is presented in the Environmental Protection Act 1990 as follows: *'any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that—*
(a)significant harm is being caused or there is a significant possibility of such harm being caused; or
(b) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused;.....'

Before the local authority can conclude that land appears to be contaminated land, the authority must assess the risk that a significant pollutant linkage exists.

This means that each of the following has to be present:
(a) a **contaminant**;
(b) a **receptor**; and
(c) a **pathway**.

Guidance defines the risk as the combination of:

'(a) the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and
(b) the scale and seriousness of such harm or pollution if it did occur'.

The Statutory Guidance under Part IIA of the Environmental Protection Act 1990 both in England and Wales promotes the application of a four category test to assess whether land is contaminated or not. Category 1 sites are sites which have a high likelihood of contamination and would be considered as a significant problem. Category 4 sites are sites which are obviously not contaminated on the basis of either desktop information or a basic intrusive investigation. Categories 2 and 3 lie between the obviously uncontaminated and contaminated sites, with the division between these categories being considered as contaminated land under Part IIA. Risk assessment will be required to assess whether a site lies within Category 2 or 3. The risk assessment will initially be determined by health risks, then by socio-economic factors should health risks be uncertain, with a default decision of contaminated should the tests not be adequately met (refer to Figure 1).

For the purpose of determining whether a site may be classified as contaminated land, soil guideline values (SGV)/generic assessment criteria (GAC) should not be utilised as determining factors. These may be applied to confirm Category 4 sites, these showing categorically that it is considered there is no risk of harm to human health on such sites. However, SGV and GAC threshold values are conservative, indicating that there is no risk at all to human health or very minimal risk. As such, these should not be considered to act as threshold values between Category 3 and Category 4 sites. The Statutory Guidance has made provision for generic screening values to be derived, termed as Category 4 Screening Levels (C4SL), which still provide a cautious assessment but relate the risk associated with normal ambient levels of contaminants, termed the low observed adverse effect level (LOAEL), making for a more pragmatic approach to risk assessment. C4SLs may be applied to site investigations undertaken in support of a planning application. To date C4SLs have been derived arsenic, cadmium, chromium (VI), lead, benzo(a)pyrene and benzene and represent. It has been proposed to derive twenty additional C4SLs including the inorganic and organic contaminants. As C4SLs will result in levels of contaminant concentrations in soils that will still be considered to be acceptable in terms of level of risk in relation to the Part IIA of the Environmental Protection Act 1990.

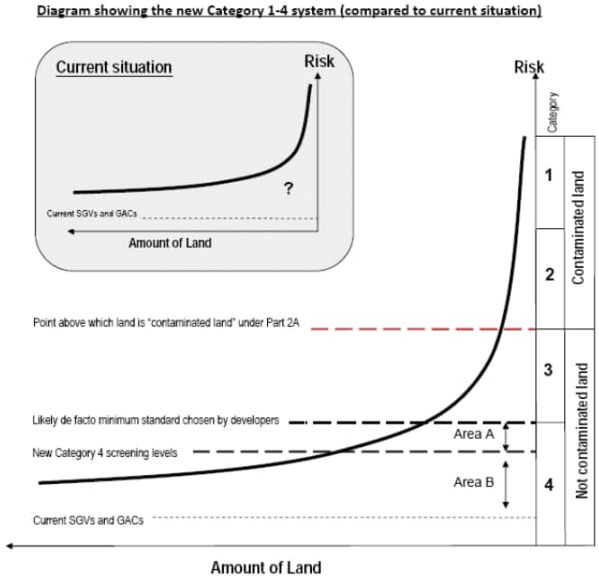


Figure 1: The New Four Category System

Environmental Protection Act 1990 – Part III

It should be noted that under the Environmental Protection Act 1990, the statutory nuisance regime applies to *'premises which may be prejudicial to health or a nuisance'*. In this case the term *'health'* does not apply to contaminated land issues. However, nuisance may apply where the effects of deposits of substances on land cause offence to human senses (such as stenches).

Environmental Damage (Prevention and Remediation) Regulations

The following legislation made in England and Wales respectively, is designed to control new contamination events.

- *The Environmental Damage (Prevention and Remediation) (England) Regulations 2015* (revoking the 2009 Regulations).
- *The Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009*, as amended by *The Environmental Damage (Prevention and Remediation) (Amendment) (Wales) Regulations 2015*.

The meaning of 'environmental damage' has been detailed by DEFRA's guidance document applicable to these Regulations as shown below:

'An important point to note is that the Regulations are a 'backstop', only applying when something has gone wrong and there is an imminent threat or actual 'environmental damage' within the scope of the Regulations. The emphasis should be on proactively putting in place appropriate pollution prevention measures to reduce risks to the environment. Those running businesses and other operations can reduce the likelihood of ever being caught by the Regulations' requirements by minimising risks to the natural resources covered by the Regulations. This means that businesses should be aware, in particular, where they:

- *Operate within or near areas of high biodiversity value, especially Sites of Special Scientific Interest (SSSIs);*
- *Operate near water bodies; and/or*
- *Carry out activities with potential risks to human health*
- *This is so they can take the necessary steps to manage the relevant risks effectively, including implementing and monitoring appropriate pollution prevention measures.*

The Regulations do not cover all types of damage to the environment. They only cover 'environmental damage' which is one or more of damage to:

- *protected species and natural habitats or to a site of special scientific interest (these are referred to collectively in the guidance as* ***damage to species and habitats****);*
- *surface water or groundwater (these are referred to collectively in the guidance as* ***damage to water****); and,*
- *land. (Damage to land is contamination of land by substances, preparations, organisms or micro-organisms that results in a significant risk of adverse effects on human health.*

Both the England and Wales Regulations state they do not apply in relation to:

- damage that occurred before the Regulations originally came into force in 2009, but for marine waters July 2015
- damage that occurs or occurred after these dates, or is or was threatened after these dates, but is caused by an incident, event or emission that took place before these dates; or
- damage caused by an incident, event or emission that takes or took place after these dates, if derived from an activity that took place and finished before these dates.
- environmental damage caused by pollution of a diffuse character if the causal link between the damage and specific activities cannot be defined.

The Regulations state where an operator of an activity has caused environmental damage, or where there is sufficient evidence to indicate that environmental damage will eventually occur, the operator must immediately

- take all practicable steps to prevent further damage; and
- notify all relevant details to the relevant enforcing authority.

JIWG
Joint Industry Working Group
Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for the Qualitative Risk Ranking of Work Activities and Receptors Involved in or Exposed to Asbestos in Soil and Construction & Demolition Materials

VERSION 2

February 2017

CL:AIRE

This spreadsheet tool provides the user with a decision support platform designed by the Joint Industry Working Group for Asbestos in Soil and Construction & Demolition Materials (JIWG) to assist in the risk-rank activities and receptors as part of a preliminary risk assessment under CLR11.

The aim of developing this tool is to provide industry with a consistent decision making format that is aligned with UK health & safety and environmental regulatory policies, and is consistent with the wider objectives of the JIWG.

This is Version 2 of this tool, and has been amended following industry feedback on the BETA version released in 2016. The JIWG would welcome feedback from users of this version on its applicability and validity to the wide range of scenarios that may be encountered when assessing the potential risk from asbestos and asbestos-containing materials in the ground.

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Disclaimer

CL:AIRE and the JIWG will not be responsible for any loss, however arising, the use of, or reliance on, the information contained in this decision support tool and associated user guide, nor do they assume responsibility or liability for errors or omissions contained within. Users are advised to use the information contained herein purely as a guide and to take appropriate professional advice where necessary.

JIWG

Joint Industry Working Group

Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly chrysotile and trace amphibole (no crocidolite)	1
Sub-total		12
Hazard ranking		Medium

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Activity type and effect on deterioration of ACMs	Low disturbance, minimal deterioration expected	2
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		11
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Construction	No score required	
Age of Receptor	Young adult (>16 and <24)	2	
Duration of exposure/site occupancy	> 1hr <10 hr daily exposure (e.g. part-time to full time occupational exposure or extended daily recreational exposure)	3	
Receptor ranking		**5**	**Medium**
Combined hazard, exposure and receptor ranking			**High**
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material visible at the surface, very likely to be disturbed by wind erosion and/or human/animal disturbance of soi	E	
Pathway ranking		4E	**High**
Overall ranking			**High**

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Joint Industry Working Group

Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	Disturbance of fibres/fibre bundles during construction phase without mitigation
Interpretation of scenario ranking by DST	High risk where mitigation measures are likely to be required.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly chrysotile and trace amphibole (no crocidolite)	1
Sub-total		**12**
Hazard ranking		**Medium**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Activity type and effect on deterioration of ACMs	Moderate disturbance, slight deterioration expected	3
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		12
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity

		Score	
Receptor category	Residential (Pre-Remediation)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		**8**	**High**
Combined hazard, exposure and receptor ranking			**High**
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material present near the surface, potential to be disturbed during non-construction/routine use of land	D	
Pathway ranking		4D	**Medium**
Overall ranking			**Medium**

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Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	Disturbance of fibres/fibre bundles in residential gardens if no remediation completed.
Interpretation of scenario ranking by DST	Medium Risk identified where remediation measures are required to mitigate the risk.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly chrysotile and trace amphibole (no crocidolite)	1
Sub-total		**12**
Hazard ranking		**Medium**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Activity type and effect on deterioration of ACMs	No disturbance activity	0
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		9
Exposure ranking		Low

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential (Post Remediation)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			High
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at significant depth, very unlikely to be disturbed.	A	
Pathway ranking		4A	Negligible
Overall ranking			Negligible

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Project Reference	8353

Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes

Run by	BH
Date	08-Nov-24
Reviewed by	BH

Characterisation of scenario being evaluated	Disturbance of fibres/fibre bundles - After Placement of inert cover systems within residential gardens.

Interpretation of scenario ranking by DST	Negligible risk - the remediation works are appropriate

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly chrysotile and trace amphibole (no crocidolite)	1
Sub-total		**12**
Hazard ranking		**Medium**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Activity type and effect on deterioration of ACMs	High disturbance, significant deterioration expected	4
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		13
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential (Adjacent Residents)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			High
Pathway: Distance of Receptor from Source	>10m of edge of area of disturbance	3	
Pathway: Depth to impacted material	Material visible at the surface, very likely to be disturbed by wind erosion and/or human/animal disturbance of so	E	
Pathway ranking		3E	Medium
Overall ranking			Medium

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Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	Disturbance of fibres/fibre bundles - Adjacent residents during construction if no mitigation measures implemented.
Interpretation of scenario ranking by DST	Medium risk - mitigation measures required.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Bonded ACMs: cement, vinyl, composites, textured decorative coatings, bitumen products	0
Extent of degradation of ACMs	Weathered (Slight degradation in ACM; material still retains its basic integrity)	2
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Distribution of Visible Asbestos Across Affected Area	Moderate/frequent occurrences of visible contamination by ACMs	3
Asbestos fibre type	Chrysotile alone	0
Sub-total		5
Hazard ranking		Very Low

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Large quantities - ≥0.1 %wt/wt	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Very low	1
Activity type and effect on deterioration of ACMs	High disturbance, significant deterioration expected	4
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		13
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Construction	No score required	
Age of Receptor	Young adult (>16 and <24)	2	
Duration of exposure/site occupancy	> 1hr <10 hr daily exposure (e.g. part-time to full time occupational exposure or extended daily recreational exposure)	3	
Receptor ranking		5	Medium
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material visible at the surface, very likely to be disturbed by wind erosion and/or human/animal disturbance of soi	E	
Pathway ranking		4E	High
Overall ranking			High

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Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	ACM materials within soil and impact to construction works, soils disturbed by construction works without controls to mitigate risk
Interpretation of scenario ranking by DST	High Risk - controls to mitigate risks are required.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Bonded ACMs: cement, vinyl, composites, textured decorative coatings, bitumen products	0
Extent of degradation of ACMs	Weathered (Slight degradation in ACM; material still retains its basic integrity)	2
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Distribution of Visible Asbestos Across Affected Area	Moderate/frequent occurrences of visible contamination by ACMs	3
Asbestos fibre type	Chrysotile alone	0
Sub-total		**5**
Hazard ranking		**Very Low**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Large quantities - ≥0.1 %wt/wt	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Very low	1
Activity type and effect on deterioration of ACMs	Moderate disturbance, slight deterioration expected	3
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		12
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity

		Score	
Receptor category	Residential (Pre-Remediation)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		**8**	**High**
Combined hazard, exposure and receptor ranking			**High**
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material present near the surface, potential to be disturbed during non-construction/routine use of land	D	
Pathway ranking		4D	**Medium**
Overall ranking			**Medium**

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Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	ACM materials within soil, present within residential gardens if no remediation works completed
Interpretation of scenario ranking by DST	Medium Risk - remediation works required.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Bonded ACMs: cement, vinyl, composites, textured decorative coatings, bitumen products	0
Extent of degradation of ACMs	Weathered (Slight degradation in ACM; material still retains its basic integrity)	2
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Distribution of Visible Asbestos Across Affected Area	Moderate/frequent occurrences of visible contamination by ACMs	3
Asbestos fibre type	Chrysotile alone	0
Sub-total		**5**
Hazard ranking		**Very Low**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Large quantities - ≥0.1 %wt/wt	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Very low	1
Activity type and effect on deterioration of ACMs	No disturbance activity	0
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		9
Exposure ranking		Low

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential (Post Remediation)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			High
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at significant depth, very unlikely to be disturbed.	A	
Pathway ranking		4A	Negligible
Overall ranking			Negligible

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Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	ACM materials within soil, present within residential gardens at depth below a cover system
Interpretation of scenario ranking by DST	Negligible Risk - remediation works suitable.

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Decision Support Tool for Receptor Risk Ranking

Stage 1 Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Bonded ACMs: cement, vinyl, composites, textured decorative coatings, bitumen products	0
Extent of degradation of ACMs	Weathered (Slight degradation in ACM; material still retains its basic integrity)	2
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Distribution of Visible Asbestos Across Affected Area	Moderate/frequent occurrences of visible contamination by ACMs	3
Asbestos fibre type	Chrysotile alone	0
Sub-total		**5**
Hazard ranking		**Very Low**

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Large quantities - ≥0.1 %wt/wt	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Very low	1
Activity type and effect on deterioration of ACMs	High disturbance, significant deterioration expected	4
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4
Sub-total		13
Exposure ranking		Medium

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential (Adjacent Residents)	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			High
Pathway: Distance of Receptor from Source	>10m of edge of area of disturbance	3	
Pathway: Depth to impacted material	Material visible at the surface, very likely to be disturbed by wind erosion and/or human/animal disturbance of so	E	
Pathway ranking		3E	Medium
Overall ranking			Medium

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Joint Industry Working Group

Project Reference	8353
Site Name	Land Adjacent to Bealeys Industrial Estate, Radcliffe
Client	Westchurch Homes
Run by	BH
Date	08-Nov-24
Reviewed by	BH
Characterisation of scenario being evaluated	ACM materials within soil, disturbed by construction works impacted adjacent residentisl without controls to mitigate
Interpretation of scenario ranking by DST	Medium Risk - controls to mitigate risks are required.

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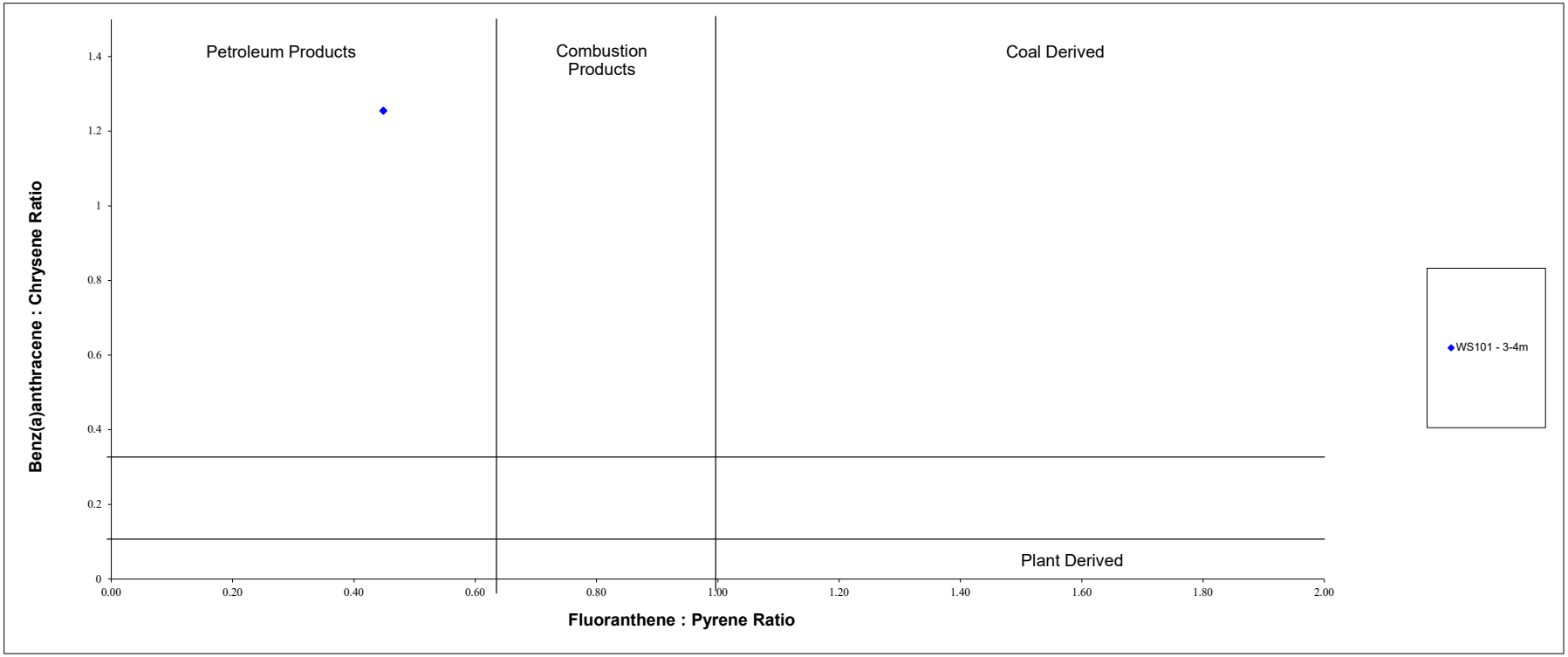
Source Signature Double Ratio Plot

Cooper Associates Project Number:	8353
Laboratory Reference Number:	N/A

Sample Type:	Madeground
Laboratory:	DETS

Sample No.	WS101 - 3-4m						
Benzo(a)anthracene	6.4						
Chrysene	5.1						
Fluoranthene	13						
Pyrene	29						

All concentrations are in mg/kg



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Source Signature Double Ratio Plot Explanation Sheet

When coal forms, organic matter is converted to coal via low grade metamorphism. The geological process which converts the fresh organic matter to a carbon based strata is noted to comprise carbonisation as well as dehydrogenation. The carbonisation process forms methane gases as well as partially converts the material into hydrocarbon based products. As carbonisation progresses, the volume of volatile gases diminish as these are driven from the strata and complex organic compounds are formed. The slow cracking of the organic material over many millions of years, where a constant heat flow is present will eventually strip the material of hydrogen, nitrogen and oxygen, producing purer carbon products. The presence of the PAH concentrations encountered to date within the samples analysed are not beyond what may be expected for a coal. Other methods of PAH formation comprise the partial combustion of fuel such as coal and petroleum.

To determine whether the source of the PAH compounds are petroleum or pyrogenically (from coal fragments) formed, a source signature double ratio plot assessment was undertaken. This method of appraisal compares a ratio of comparative compound pairs for 4 No. PAH compounds. This means that the properties of the comparative PAH compounds are similar (such as aqueous solubility, molecular weight, Kow) and have diagnostic source ratios which should retain their relative concentrations and hence their ratio remain constant. Cooper Associates have adopted a classification of double ratio PAH compounds fluoranthene/pyrene and benzo(a)anthracene/chrysene in accordance with Costa and Sauer 2005. These have been considered the most appropriate pairing to determine a differentiation between petroleum fuels, coal, coal derived products, combustion products and natural plant matter (such as peat and lignin).

The method for differentiating petroleum based hydrocarbon concentrations from natural organic units is by determining the rates of combustion and the relative losses of PAH compounds within samples analysed. Forensic environmental scientists, situated predominately within the United States, have investigated the relationships between many combinations of PAH compounds and it is generally considered the 4 No. compounds mentioned above have a suitable and representative correlation for this assessment.

The method of assessment requires the 2 ratios of the 2 pairs of diagnostic source ratio compounds to be calculated, and the results plotting on a graph. The graph has areas compartmentalised into petroleum, combustion and coal derived sources, with plant derived sources situated in the bottom right hand corner. These designations have been derived from ALcontrol Geochem's extensive knowledge with regards to PAH signatures as well as the extensive work completed by Environmental Forensic scientists such as H J Costa and T C Sauer. ALcontrol Geochem have been using this method for tracing hydrocarbon sources for many years and have pooled their extensive database of material type traces for their graphic representation (refer to Figure 1 below).

PAH compounds can be both created and lost through combustion. With regards to petroleum derived products, the fresh compounds tend to be situated on the mid left hand side of the graph, with combusted and heavier fuels moving north east across the graph. Coal is generally positioned in the top right area of the graph, with combustion products such as ash and clinker, soot and burnt coal being situated between coal and petroleum sections. It should be noted that smokeless fuels appear within the mid petroleum derived column as the processes involved in the formation of this fuel includes the removal of certain PAH compounds.

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Peat forms PAH compounds due to the degradation of organic matter and is represented in the bottom right hand corner of the graph. Asphalt and coal tar derived tarmac can also be determined from this form of analysis.

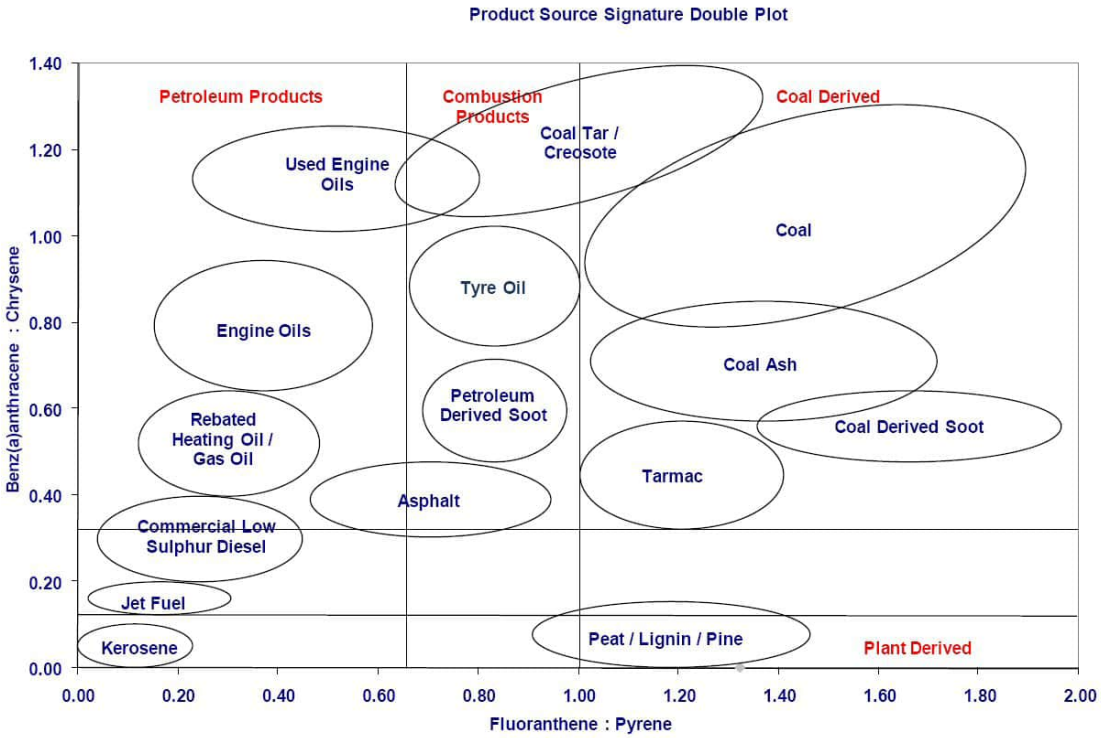


Figure 1: Key to source signature double ratio plots based on conjectured source.

Double ratio plots – references

Double ratio plots have been developed as a result of expanding our Environment Forensic capabilities and is based on the following references amongst others.

Yunker, M. B., Macdonald, R. W., Vingarzin, R., Mitchell, R. H., Goyette, D., and Sylvestre, S. 2002. PAH in the Fraser River basin: A critical appraisal of PAH ratios as indicators of PAH source and composition. *Organic Geochemistry* 33:489-515.

Costa, H. J., and Sauer, T. C., Jr. 2005. Technical Note - Forensic Approaches and Considerations in Identifying PAH Background. *Environmental Forensics*, 6:9-16.

As for how robust the technique is, for low concentrations, or where the PAHs being used to determine the ratios are very similar it will not be completely reliable, but we have found that in most cases it offers a very good correlation with visual and/or site histories. Ratios other than those on the flier can also be used.

Environmental forensics is basically a matter of using the most appropriate ratios to identify sources and correlate spills. There are hundreds of possible combinations, and it is very much a case of experience and knowledge as to which will give the most meaningful answers, as no two sites are the same.

The Fluoranthene:Pyrene vs Benz(a)anthracene:chrysene ratios have been found to be the best in identifying the sources of PAH compounds with regard to petroleum, petrogenic (coal), combustion (ash and clinker) or recently formed (peat).

Appendix 11

United Utilities Potable Water Supply Risk Assessment

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

United Utilities
Water for the North West

Introduction

In January 2011, UK Water Industry Research (UKWIR) published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21; the 'UKWIR Guidance'). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 "Laying Pipes in Contaminated Land" which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as "land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated." The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions *"except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development"*.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the 'UUW Guidance') which includes the Risk Assessment for Water Pipes (the 'RA').

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067
Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or

b) more suitable pipe materials; or

c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011
"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH
"Guidance on comparing soil contamination data with a critical concentration" 2008

Department of the Environment Contaminated Land Research Report
"Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency
"Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination"
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency
"Model Procedures for the Management of Land Contamination" (ref: CLR11), 2004

Environment Agency P5-080/TR3
"The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils", 2005

UK Water Industry Research (UKWIR)
"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03
"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

United Utilities
Water for the North West

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
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LRA1A-11/19v0

11/19/SD/8483f-1

Risk assessment for water pipes (RA)

United Utilities
Water for the North West

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067.**

Section 1: Development details	
Development name *(if it has one)*	N/A
Development address	Land adjacent to Bealey Industrial Estate, Radcliffe
OS Grid reference *(mid point)*	SD 797 082
Developer's name	Westchurch Homes
UUW reference number *(for UU use only)*	

Please provide details below of the current and historical use of the site and adjacent sites.
If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

Onsite:
Current: - open ground, dense vegetation, outside units and storage of trading estate.
Historical: - part of former Broad Dumers Paper Works, including reservoirs, holding/storage tanks, and filter beds and Bealey's Goit. reservoir/tanks recorded as inert lanfill following filling in the 1980's.

Offsite:
Current: Trading estate to the south west and west, open land to the north, residential to the east and south.
Historical: Eaton Hill Cotton Mill (later a dyeing works, then dyeing and finishing), a gasometer, Dumers Paper Works, Radcliffe Bleach and Chemical Works (later bleaching works), a chemical works, engineering works, infilled reservoirs, areas of waste disposal activity and a sewage works.

Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☑ Yes ☐ No

If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.
If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A - investigations undertaken

Section 3: Intrusive site investigation

Have you completed any intrusive site investigation?	☑ Yes ☐ No
Have you completed any none intrusive site investigation?	☐ Yes ☑ No
Date(s) when the site investigation(s) undertaken	21 03 2024 26 09 2024 D D M M Y Y Y Y
At what level has groundwater been encountered?	0.6-3.0 metres below ground level or ☐ Not encountered

Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.

If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.

Refer to Coopers Letter Report 8353si for rationale of selected suites of testing, based upon conceptual site model. Additional investigation required in areas of the site which were inaccessible.

If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

Area of petroleum range hydrocarbon contamination proposed for removal.

Section 4: Site remediation

Please provide details below of any site remediation (which may include a change in site levels) already completed.

If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.

No remediation undertaken at time of assessment (see below for proposals).

Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☑ No ☐ N/A

Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection.

If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.

Subject to additional investigation upon vacant possession of the site, concurrent with demolition works.
Areas of petroleum range hydrocarbons from former reservoir to be removed.
Cover systems intended for proposed gardens.

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

None - Proposed residential end use.

What water pipe materials are intended to be used on site?	☑ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B Other *(please specify):*

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

Refer to Coopers Report 8353si.

The investigation has identified an areas of elevated petroleum range hydrocarbons intended for removal.

The proposed pipeline materials are for initial proposals only based upon the information of the areas accessible for investigation and this assessment should be revised upon completion of the additional investigation.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes	B W Hill BSc(Hons), CSci, MIEnvSc, FGS (Chartered Scientist)
Name and address of risk assessor's company	Coopers (Chester) Ltd, Park House, Sandpiper Court, Chester Business Park Chester CH4 9QU
Date risk assessment performed	0 8 1 1 2 0 2 4

Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information.
I understand that failure to supply any of the required information may delay my application being processed.

Name	Ben Hill	Company	Coopers (Chester) Ltd
Telephone	01244 684920	Date	0 8 1 1 2 0 2 4

Please email the completed form and supporting information to **DeveloperServicesWater@uuplc.co.uk** or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.

United Utilities
Water for the North West

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

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Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below? ☑ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

Coopers Note - further investigation needed, including targeting of former tanks and areas of high risk of elevated TPH.

All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth *See Note [2]*	Maximum site concentration *See Note [3]*	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	0.01	Y	<LOD	<LOD	None
Total BTEX & MTBE		0.1	Pass	0.1	Y	<LOD	<LOD	None
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	0.1	Y	0.1	0.1	None
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.01	Y	<LOD	<LOD	None
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	1.5	Y	483.52	483.52	WS101 (3-4m bgl)
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	3.4	Y	3121.9	3121.9	WS101 (3-4m bgl)
Phenols* (from SVOC analysis)		2	Pass	0.1	Y	<LOD	<LOD	None
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	0.1	Y	<LOD	<LOD	None
Ethers*	Only where identified	0.5	Pass	N/A	N/A	N/A	N/A	N/A
Nitrobenzene*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Ketones*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Aldehydes*		0.5	Pass	N/A	N/A	N/A	N/A	N/A
Amines		Fail	Pass	N/A	N/A	N/A	N/A	N/A
Corrosive	Conductivity, Redox and pH	Pass	*See Note [1]*	N/A	N/A	N/A	N/A	N/A

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

NA = not tested based upon conceptual site model - refer to Coopers Report No. 8353si for justification of testing.

Appendix 12

CDM Information

Client : Westchurch Homes
Project : Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No : 8353

DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
Foundations <1200mm deep and House Drainage (ie Traditional & Nominally Reinforced Strip Footings)	Falls/slips/trips		✓						✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
	Trench Collapse			✓					✓	Ensure excavationsides battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person.
Breaking out existing foundations	Noise /vibration		✓						✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata . Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.
Handling of blocks/bricks and steel mesh	Musculo-Skeletal Injury		✓						✓	Use of mechanical handling plus manual handling risk assessment. Certificate required for mechanical handling. Designer to specify use of blocks/bricks and mesh of suitable unit weight for manual handling. Contractor to ensure mesh lengths take into account manual handling. Mechanical handling where possible.
Concrete pouring/mortars	Skin Irritation/Eczema		✓						✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
	Existing services		✓						✓	Contact utilities managementcompanies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.
Foundations >1200mm deep and Drains/Services (ie Deep Strip footings or Mass Concrete Trench Fill	Trench collapse	✓							✓	Ensure excavationsides supported by propping/trench sheeting, or battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Added risk in areas of groundwater. Ensure that excavation pumped dry at all times.
	Slips/trips/falls	✓							✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata. Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.
	Existing Services			✓					✓	Contact utilities managementcompanies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.

Client : Westchurch Homes
Project : Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No : 8353

DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
Foundations >1200mm deep and Drains/Services	**Continued**									
Installation of polystyrene sheets for heave protection requiring manned entry to unsupported excavations	Trench collapse Slips/trips/falls	✓							✓	Install inaccordance with approved method statement and to include edge protection and adequate cross over points. Alternatively consider integral raft foundation with stone blanket.
Concrete pouring/mortars	Skin Irritation/Eczema	✓							✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
Handling of blocks/bricks and steel mesh	Musculo-Skeletal injury		✓						✓	Use of mechanical handling plus manual handling risk assessment. Certificate required for mechanical handling. Designer to specify use of blocks/bricks and mesh of suitable unit weight for manual handling. Contractor to ensure mesh lengths take into account manual handling. Mechanical handling where possible.
	Asphyxia and confirmed space working	✓							✓	Confined space procedures for working in deep excavations/manholes. Ensure fumes from mechanical plant, such as pumps, are well controlled.
Breaking out existing foundations	Noise/Vibration			✓					✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
Raft Foundations with Integral floor slab	Slips/trips/falls		✓						✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
Strip existing fill material and remove to approved bearing strata. Backfill with approved consolidated granular fill.	Trench collapse	✓							✓	Ensure excavationsides supported by propping/trench sheeting, or battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Added risk in areas of groundwater. Ensure that excavation pumped dry at all times.
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata. Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.

Client : Westchurch Homes
Project : Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No : 8353

DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
Raft Foundations with Integral floor slab	**Continued**									
Construction of granular blanket beneath raft for heave precautions, depth <1200mm.	Trench collapse Slips/trips/falls			✓					✓	Ensure excavationsides battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register.
Breaking out existing foundations	Noise/Vibration			✓					✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
	Existing Services			✓					✓	Contact utilities managementcompanies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.
	Backfilling			✓					✓	Use mechanical excavators to place approved granular fill in layers and lightly compact. Geotextile wrap fills in 1m max. lift heights and use graded granular material with good self compacting properties. Compaction with plant only when excavation depth <1200mm deep.
Steel Fixing	Musculo-Skeletal injury		✓						✓	Designer to schedule bars to take into account manual handling. Avoid long large diameter bars. Use of mechanical handling where possible plus manual handling risk assessment. Certificate required for machanical handling
Concrete pouring/mortars	Skin Irritation/Eczema	✓							✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
Foundations-piled										
Mobilisation of plant	Sequencing of piling work with other construction to avoid unsafe conditions		✓						✓	Tender documents to include site investigation report and current services information. Contractor to plan site access. Provision of stone support blanket where required to protect buried services. Design of piling platform to BR470. Agree working clearances with highway authority
	Damage to buried services		✓						✓	
	Rig overturning		✓						✓	

Client : Westchurch Homes
Project : Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No : 8353

DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
Foundations-piled	**Continued**									
Pile driving - CFA	Hearing loss		✓						✓	Contractor to establish closed working zone inside which PPE to be mandatory (ear defenders, etc)
	Contamination		✓						✓	Any arisings from pile excavation to be segregated and disposed of as controlled waste. Operatives to be provided with adequate welfare provisions for washing and eating.
-CFA auger changes	Musculo-skeletal injury		✓						✓	Limit number of pile sizes to struicture.
- Steel fixing	Musculo-skeletal injury		✓						✓	Schedule bars to take into account manual handling. Avoid long large diameter bars who weight would exceed 20kgs. Consider automated cage reinforcement equipment.
-Reinforcement lifting	Injury from falling steel bars		✓						✓	Design of reinforcement cages to be robust enough for lifting.
- Concrete pouring	Skin irritation/ eczema		✓						✓	Contractor to ensure proper use of barrier cream/ PPE
Pile driving - precast concrete segmental	Hearing loss	✓							✓	Contractor to establish closed working zone inside which PPE to be mandatory (ear defenders, etc)
	Musculo-skeletal injury Trapping/ crushing	✓							✓	Contractor to prepare Method Statement. Provide information and training in handling a jointing piles. COSHH assessment of adhesives used in pile jointing.. Use of PPE.
Pile trimming to cut-off level and expose reinforcement. - Scabbling pile surface	Noise/Vibration Musculo-skeletal injury Trapping/ crushing Cuts & abrasions		✓						✓	Correct use of mechanical pile croppers or other means of trimming that do not involve excessive use of hand held tools. Minimise vibration in hand held breakers by maintenance. Ensure use of thick gloves/appropriate PPE. Use protection caps on exposed bars after trimming.
Ground Beams										
Retained ground "fill": excavation < 1.2m	Trench collapse		✓						✓	Ensure excavation sides battered back to angle of safe repose. Provide information and traini on working in excavations. Use "permit to work" system and daily inspections by competent person.
Retained ground "fill": excavation > 1.2m	Trench collapse/ trips/ falls	✓							✓	Ensure excavation sides supported by propping/ trench sheeting, or battered back to angle safe repose. Provide information and training on working in excavations. Use "permit to work" system and daily inspections by competent person.
Steel fixing	Musculo-skeletal injury		✓						✓	Schedule bars to take into account manual handling. Avoid long large diameter bars whose weight would exceed 20kgs.
Concrete pouring	Skin irritation/ eczema		✓						✓	Contractor to ensure proper use of barrier cream/ PPE

Appendix 13

Reference Drawings

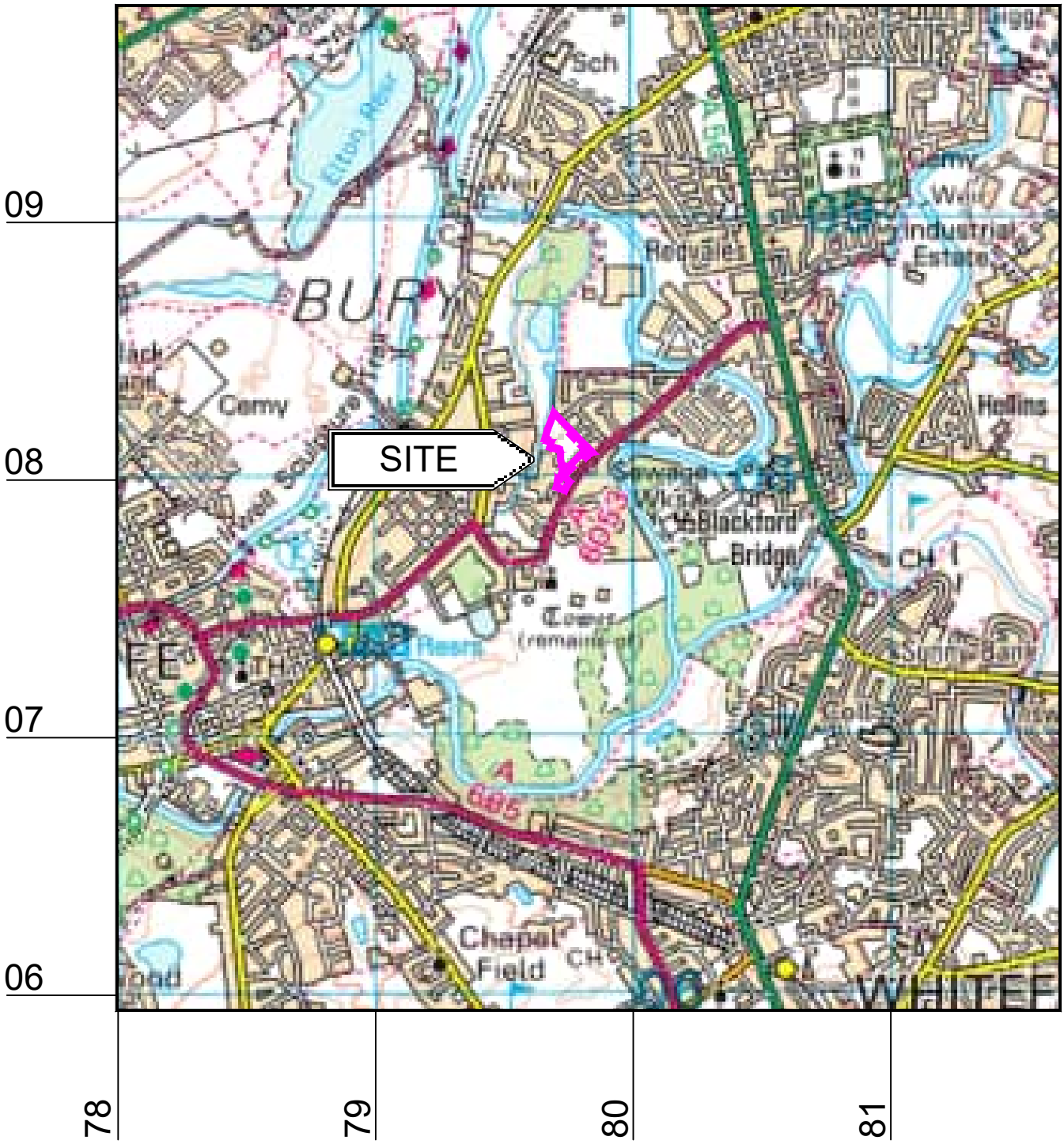
Drawing No.	Revision	Title
8353/L1	-	Site Location Plan
8353/AP	-	Aerial Photograph
8353/01	A	Site Plan
8353/200	-	Hazardous Ground Gas Conceptual Model
8215/RP	-	Remediation Plan
8215/LRH/CS2/PC/PE/G/01	-	Typical Gas Precaution Detail to a Precast Concrete Slav and a Vented Void for CS2

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SCALE	1:25000@A4	Land Adjacent to Bealey Industrial Estate, Radcliffe.	
DATE	17.10.24		
DRAWN	AH	SITE LOCATION PLAN	
CHEK'D	BH	Drg No:	8353 / L1

NORTH

National Grid reference of the proposed site.	SJ 797 081



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SCALE	1:2000 @A4	Land Adjacent to Bealey Industrial Estate, Radcliffe.	
DATE	17.10.24	AERIAL PHOTOGRAPH	
DRAWN	AH		
CHEK'D	BH	Drg No:	8353 / AP

NORTH

KEY

Site boundary



0 10 20 40 60 80 100 120 140 160 180 200

SCALEBAR (m)

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NORTH

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AREA OF JAPANESE KNOTWEED

AREA OF JAPANESE KNOTWEED

BOROUGH AVENUE

DUMERS LANE

WILD STREET

TK. Sluice

Mast (Telecommunication)

El Sub

El Sub Sta

S-TK.

TK.

W

WS01 WS02 WS03 WS04 WS05 WS06 WS07 WS08 WS09 WS101 WS102 WS103 WS104

TP01 TP02 TP03 TP04 TP05 TP06 TP07 TP08 TP09 HDTP01 HDTP02 HDTP03

0 5 10 15 20 25 30 35 40 45 50
SCALEBAR (m)

KEY TO EXPLORATORY HOLES
(All positions are approximate unless otherwise stated)

- Trial pits TP01 - TP09 excavated by Coopers on26 September 2024
- Window sample boreholes WS01 - WS09 drilled for Coopers between 21 & 22 March 2024
- Window sample boreholes WS101 - WS104 drilled for Coopers on 30 September 2024
- Hand dug trial pits excavated by Coopers on 30 September 2024 30 September 2024.

KEY TO EXISTING FEATURES
(All positions are approximate unless otherwise stated)

- Hutchinson's Goit (taken from OS tile)
- Surveyed trees (taken from ref. a)
- Surveyed foliage (taken from ref. a)
- Surveyed building (taken from ref. a)
- Surveyed steel containers (taken from ref. a)
- Surveyed temporary structures (taken from ref. a)
- Presence of Japanese Knotweed observed by Coopers between 21 & 22 March 2024
- Flytipping observed by Coopers between 21 & 22 March 2024
- Flytipping of possible asbestos containing materials observed by coopers between 21 & 22 March 2024
- Surveyed telecommunications mask (taken from ref. a)
- Surveyed overhead cable (taken from ref. a)
- Surveyed fence (taken from ref. a)
- Surveyed bottom of bank (taken from ref. a)
- Topographical contours (taken from ref. a)
- Approximate site boundary

KEY TO FORMER FEATURES
(All positions are approximate unless otherwise stated)

- Former electricity substation (taken from ref. c)
- Former reservoir (taken from ref. c)
- Former extent of Bealey's Goit (taken from ref. c)
- Former water feature with flow direction (taken from ref. c)
- Former well (taken from ref. c)
- Former tank (taken from ref. c)
- Former settling tanks (taken from ref. c)
- Former filter beds (taken from ref. c)
- Former tramway (taken from ref. c)
- Former landfill (taken from ref. d)

KEY TO ACCESS
(All positions are approximate unless otherwise stated)

- Area accessible for SI

KEY TO SURVEYED SERVICES
(All positions are approximate unless otherwise stated)
(Taken from ref. e)

- Foul Drainage
- Surface Drainage
- Electricity
- Gas
- Ground Probing Radar
- Water
- Cable Television
- British Telecom
- Pipe
- Unknown
- Electricity (TFR) Taken From Records
- Gas (TFR) Taken From Records
- Water (TFR) Taken From Records

This drawing is to be read in conjunction with the following:-

a) RJP Surveying Consultants Ltd, Proposed Development at Dummers Lane, Radcliffe, Topographical Survey, ref. WH062 / T00, dated January 2024.

b) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.

c) Groundsure Insights, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GD-HMJ-3VX-27B-I11_1250 & ref. GS-HMJ-3VX-27B-I11_LS, dated 15 February 2024.

d) Groundsure Enviro+Geo Insight, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GS-B5J-QUX-W33-1YT, dated 15 February 2024.

e) Avoin Maa Surveys Ltd, Bealey Industrial Estate, Radcliffe, ref. 0924/WEST/11199, dated 19 September 2024.

REVISION BOX				
Rev.	Date	Revision	By	Appd.
A	03.10.24	Surveyed services added to plan. Site boundary updated, site re-centered and sheet size updated to A1. Latest Coopers exploratory holes added to plan.	AH/OS	BH

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Client
WESTCHURCH HOMES LTD

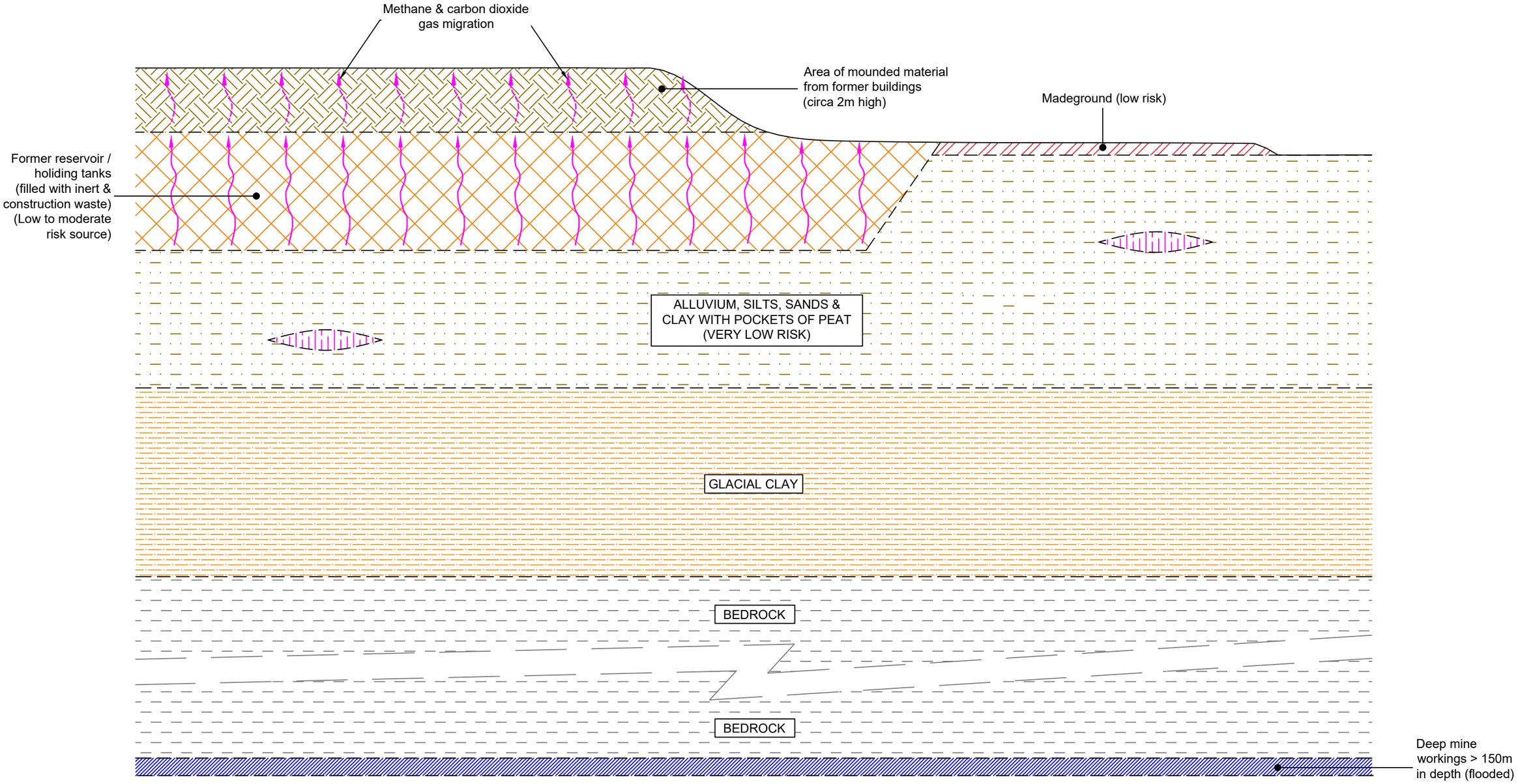
Project
Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title
SITE PLAN

DRAWING NUMBER
8353 / 01

SCALE at A1	1:500	
DATE	11.04.24	REVISION
DRAWN	OS	A
CHECKED	BH	

DO NOT SCALE



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SCALE	NTS @ A3
DATE	09.10.24
DRAWN	AH
CHEK'D	BH

Rev	Drwn	Date	App'd	Comments

Land Adjacent to Bealey Industrial Estate, Radcliffe.

HAZARDOUS GROUND GAS CONCEPTUAL MODEL

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Drawing No. 8353 / 200

Rev. -

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NORTH

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KEY TO REMEDIATION

(All positions are approximate unless otherwise stated)

- Characteristic Situation 2 Gas Mitigation Measures
- Further investigation required concurrent with demolition and site clearance
- Former reservoir - removal of ACMs and TPH impacted soils

All gardens and landscaping to contain cover systems:

- Rear Gardens = 600mm inert cover system (incl. of min 150mm of topsoil) on to geotextile*.

- Frontages = 450mm inert cover system (incl. of min 150mm of topsoil) on to geotextile*.

* no geotextile is required if natural strata identified at <600mm.

KEY TO EXPLORATORY HOLES

(All positions are approximate unless otherwise stated)

- Trial pits TP01 - TP09 excavated by Coopers on26 September 2024
- Window sample boreholes WS01 - WS09 drilled for Coopers between 21 & 22 March 2024
- Window sample boreholes WS101 - WS104 drilled for Coopers on 30 September 2024
- Hand dug trial pits excavated by Coopers on 30 September 2024 30 September 2024.

KEY TO EXISTING FEATURES

(All positions are approximate unless otherwise stated)

- Bealey's Goit (taken from OS tile)
- Surveyed building (taken from ref. a)
- Site boundary (taken from ref. e)

KEY TO FORMER FEATURES

(All positions are approximate unless otherwise stated)

- Former electricity substation (taken from ref. c)
- Former reservoir (taken from ref. c)
- Former extent of Bealey's Goit (taken from ref. c)
- Former water feature with flow direction (taken from ref. c)
- Former well (taken from ref. c)
- Former tank (taken from ref. c)
- Former settling tanks (taken from ref. c)
- Former filter beds (taken from ref. c)
- Former tramway (taken from ref. c)
- Former landfill (taken from ref. d)

This drawing is to be read in conjunction with the following:-

a) RJP Surveying Consultants Ltd, Proposed Development at Dummers Lane, Radcliffe, Topographical Survey, ref. WH062 / T00, dated January 2024.

b) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.

c) Groundsure Insights, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GD-HMJ-3VX-27B-I11_1250 & ref. GS-HMJ-3VX-27B-I11_LS, dated 15 February 2024.

d) Groundsure Enviro+Geo Insight, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GS-B5J-QUX-W33-1YT, dated 15 February 2024.

e) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Proposed Site Layout, ref. 1025-SL01, dated August 2024.

0 5 10 15 20 25 30 35 40 45 50

SCALEBAR (m)

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Client

WESTCHURCH HOMES LTD

Project

Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title

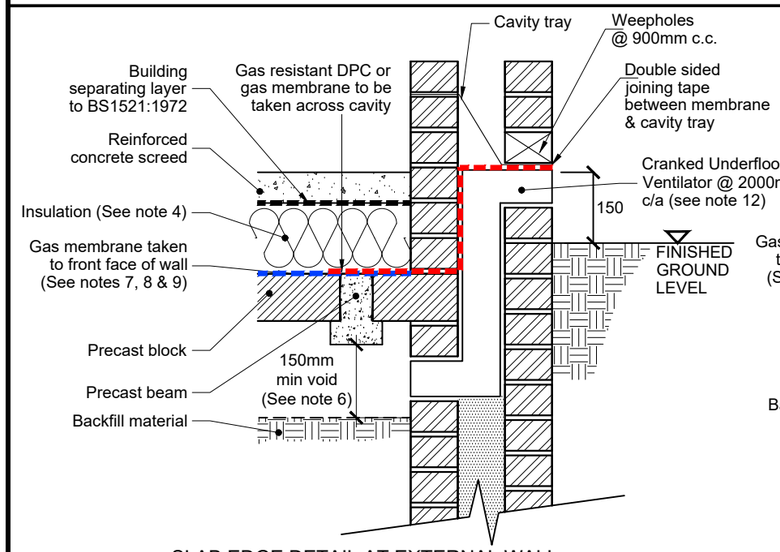
REMEDIATION PLAN

DRAWING NUMBER	SCALE at A1	1:500	
8353 / RP	DATE	06.11.24	REVISION
	DRAWN	AH	-
	CHECKED	BH	

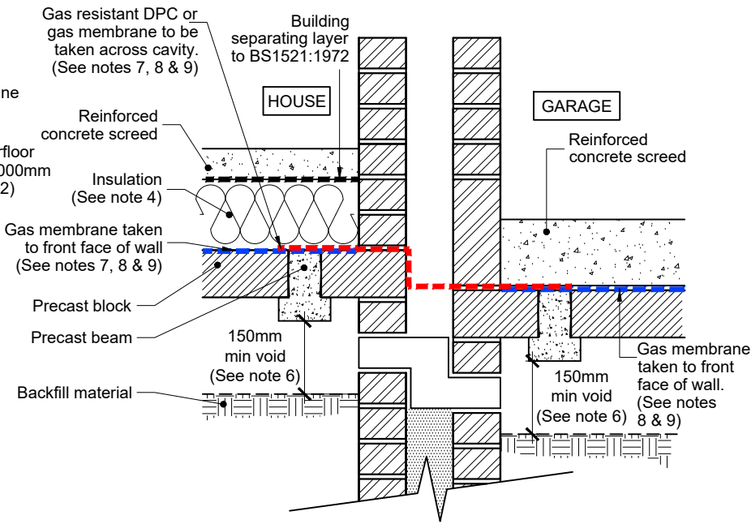
THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC GROUND GAS & SITE INVESTIGATION REPORTS

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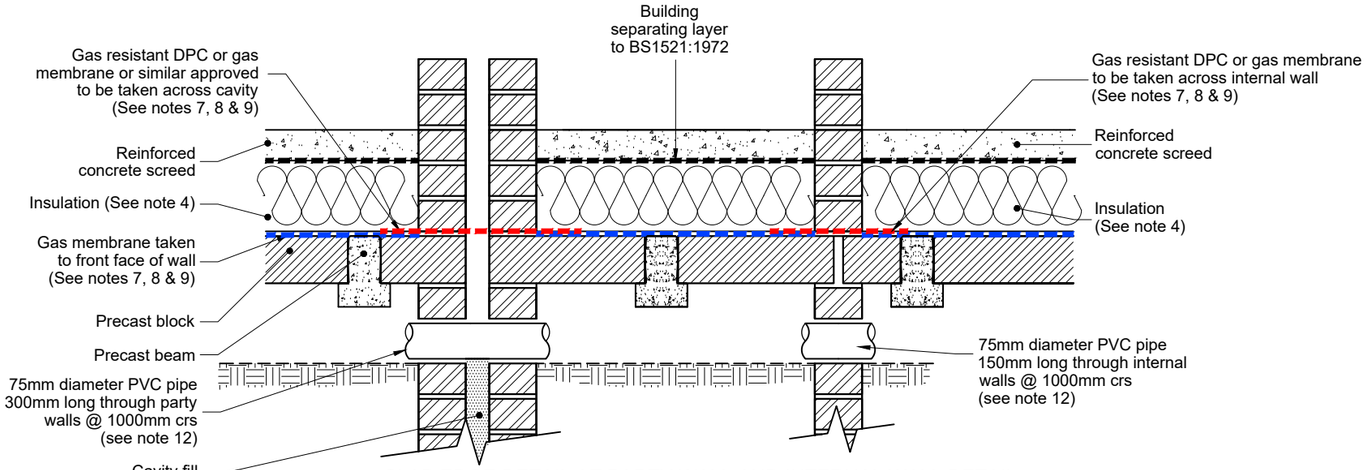
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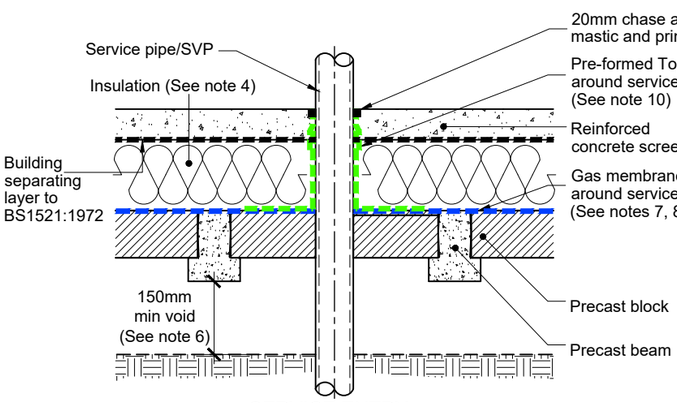
SLAB EDGE DETAIL AT EXTERNAL WALL



SLAB EDGE DETAIL WITH INTERNAL GARAGE

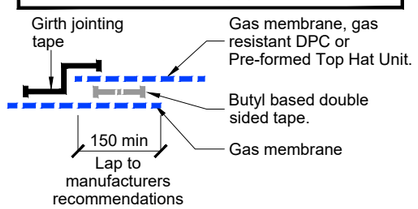


SLAB EDGE DETAIL AT PARTY WALL AND INTERNAL WALL DETAIL



SERVICE ENTRY

Note: If intended contracted installer is proposing heat welded joints these can have <150mm overlaps provided joint integrity not compromised.



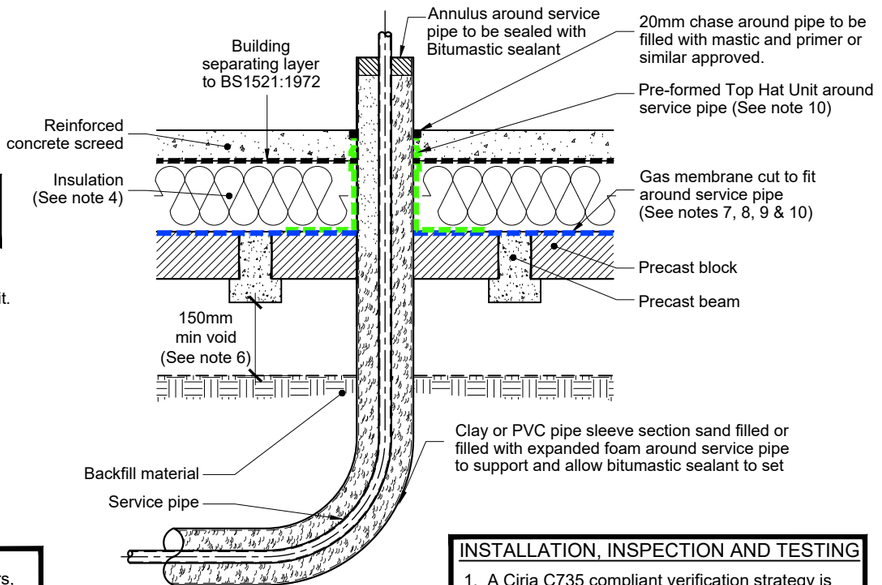
JOINTING DETAIL
(See note 9)

This typical detail is provided as a guide for construction of gas membrane installation only. House type specific variations are required to account for slopes on garage floor slabs, stepped slab levels, full building level access, party wall temporary shuttering, corner unit construction, cloaking units around doors, piers, and other similar specific considerations. We would advocate the contractors hold pre-construction discussions with Coopers (and the verification consultants if another consultant) on the approaches and considerations for specific house type construction prior to commencing installation. Should variations be constructed without prior consent these will be deemed by Coopers as a defect and not suitable for construction or approval by us or third parties.

NOTES

1. Coopers take no responsibility for the inappropriate use of this detail on a development. It is the responsibility of the Developer to commission a suitably qualified geo-environmental consultant to assess the relevant ground gas conditions at a development based upon the findings of in situ monitoring and/or qualitative risk assessment.
2. Coopers drawing is in accordance with current best practice with respect to design of measures and specification of membranes for the adequate protection of dwellings from the ingress of harmful ground gases. The details contained on this drawing are generic and for guidance purposes only. Any proposed amendments to the detail due to variations on specific house types should be referred back to Coopers for review and approval prior to implementation on site.
3. This drawing was prepared for the purpose stated. New products, improved practices and legislation may necessitate an alteration to this drawing in whole or in part after its submission. It is recommended that this drawing is referred to Coopers for reappraisal no later than one year from the date on this drawing. Continued use of this drawing beyond this date is at the Developers own risk.
4. Reference needs to be made to specific design drawings for the relevant housetype for robust details, specifics for the floor slab type, insulation details, acoustic protection etc. as applicable.
5. For details of proposed foundations refer to site specific foundation plan and site investigation report.
6. The minimum clear void below the suspended precast concrete ground floor is to be 150mm (plus heave thickness, where applicable) and should be adequately ventilated in accordance with the Building Regulations. The base of the void is to be within 450mm of the outer ground level unless masonry is designed by a structural engineer. The backfill material should be effectively drained.
7. The gas resistant membrane should be a minimum 500µm (2000 gauge) first generation, high quality polyethylene membrane which has low permeability to carbon dioxide and also acts as a damp proof membrane as well as a barrier to radon. **The specification of the gas resistant membrane should be submitted to Coopers for approval prior to use.**
8. All gas membranes should be installed to the manufacturers guidelines and recommendations. Special care must be taken to ensure that the gas membrane is not snagged, torn, punctured, stretched or in any way damaged during construction. All damaged areas of the gas membrane must be replaced or repaired to manufacturers recommendations.
9. Joints between sheets of gas membrane should be well lapped (150mm min) and taped between sheets with a double sided butyl based tape in accordance with manufacturers recommendations. Depending on the manufacturer, an optional girth jointing strap can be provided, as shown below, for additional security.
10. All service entry points should be fitted with pre-formed gas resistant top hats. Tophats should be sealed to the pipe and gas membrane using butyl based double sided tape and fixed to the pipe with a jubilee clip.
11. Gas Situation is defined in accordance with BS8485:2015+A1:2019.
12. Coopers designs for sub-floor passive ventilation propose external vents on at least 3 sides of the building and venting through all internal walls. These designs account for a range of potential traditional residential houses and contractors should contact the developer's engineers if the house type specific variations of venting differ from these designs. In the event of any discrepancies between the developers house type drawings and this drawing then Coopers drawing takes precedence unless the developer has calculations to prove that this design meets the minimum requirements in accordance with BS8485:2015+A1:2019

FOR GUIDANCE PURPOSES ONLY



SLEEVED SERVICE ENTRY

INSTALLATION, INSPECTION AND TESTING

1. A Ciria C735 compliant verification strategy is likely to be required, subject to approval by the Local Authority and Premier Guarantee.

CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT

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CLIENT

WESTCHURCH HOMES LTD

PROJECT

Land Adjacent to Bealey Industrial Estate, Radcliffe.

TITLE

Typical Gas Precaution Detail to a Precast Concrete Slab and a Vented Void **for CS2**

DRAWN BY	OS
DATE	08.11.2024
SCALE(S)	NTS

DRAWING NUMBER: 8353-LRH-CS2-PC-PE-G-01

REVISION: -