

GEO-ENVIRONMENTAL AUDIT

PHASE 1 Preliminary Risk Assessment

PHASE 3 Remediation Statement

Proposed Commercial Development

2 Taylors Lane

Bolton

BL2 6QS

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Client: Redford Construction Ltd
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Revision	Date	Reason
0	March 2023	Original to support planning application.

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1. PHASE 1 – PRELIMINARY RISK ASSESSMENT

1.1. Introduction.

T. J. Booth Associates have been appointed by Redford Construction Ltd to undertake an Environmental Audit to support a Town & Country Planning application for a change of use from garage/unit into 1 no. dwelling.

The Application Site is located in a rural part of Bury. The building subject to the application is currently used as a garage/workshop within a small holding.

A planning application has been submitted to the LPA, (application No. 69444). As part of the validation requirements for the application, the LPA have requested a contamination report.

T J Booth Associates have since been employed to undertake an environmental assessment of the Site including the Phase 1 desk study, and subsequent Phase 2 Site investigations/associated Phase 3 remediation statement if required, in accordance current UK guidance for environmental assessment within the construction industry.

Principal to the assessment is the potential for contamination pollutant linkages via the CLR-11 source-pathway-receptor methodology. Assessment of potential pollution linkages is primarily undertaken in strict accordance with BS5930:2015, BS 10175:2011+A2:2017, CIRIA C665, and BS 8485:2015+A1:2019 et al.

1.2. Proposed Development

The proposed development is for a change of use of the garage/workshop to a residential dwelling.

The existing building to be renovated is part of a small holding. The main workshop building to be renovated and subject to the change of use is located to the southwest corner of the Site, beside the general Site entrance.

The entrance opens up to a an unmade courtyard. The courtyard leads also to a parking area to the northwest corner, a storage shed centre north, an enclosed chicken coop & paddock area to the northeast corner, and a static caravan to the southeast Site corner.

The Site is proposed to remain the same apart from conversion of the existing building.

1.3. Historic Maps

DATE	ON-SITE	OFF-SITE/SURROUNDING AREA
c1850	The Site is part of agricultural open fields to the north side of Taylors Lane. The only structure within the Site is a building to the southwest corner (assumed to be the Application workshop).	The local area is predominantly rural. There are some farmhouses/cottages to the south side of Taylors Lane, opposite the Application Site. There are some industrial activity/mills in the wider area nominally within a 175m radius of the Site, generally to the south and at much lower elevation. There are some small ponds and quarries in the wider area. Old shaft noted approximately 260m southeast.
c1893	Additional extensions to workshop now shown to the north side.	Pump noted just offsite to the northwest. Reservoir noted 100-175m northwest. The mill to the southwest is noted as Ainsworth Mill (bleach).
c1910	Additional minor outbuilding noted on-site.	No overall change. Small stream shown at the northwest corner just offsite flowing west. Shaft to the southeast is noted as an old coal shaft.
c1930	Some additional minor buildings/sheds on Site.	Buildings to the south of Taylors Lane now noted as Taylors Farm. Much of the fields around the Site are now shown as

		smaller individual curtilages with single buildings at one end, suggesting individual shelter/field arrangement for grazing animals.
c1937-39	No change.	No change.
c1955	No change.	No change.
c1969	No change.	Surrounding land has by now been returned to general open agricultural fields, and all sheds removed.
c1992	Only the workshop and the storage shed to the centre north side are now noted.	No overall change.
c2000	The storage shed to the centre north side appears to comprise a steel clad shed.	No overall change.
c2020-22	Steel clad shed taken down and replaced with a steel framed shed c/w plastisol cladding.	No overall change.

1.4. Present Day Paper & Electronic Maps/Topographic Surveys

Site Boundaries, Outlines of Structures and Buildings:	The Application Site is enclosed within its own curtilage by timber fencing and mature hedging & trees. The existing workshop, storage shed & caravan are noted. Agricultural fields remain around the Site. To the south side of Taylors Lane remains cottages/farmhouses.
Ground Contours, Natural Drainage Features:	Ground levels fall to the west/southwest over the local area.
Water Courses:	Small stream/drainage ditch to the northwest corner of the Site noted.
Below Ground Obstructions:	None noted.

1.5. Geology

Bedrock Geology:	Pennine Lower Coal Measures Formation - Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 319 and 318 million years ago during the Carboniferous period. Stratigraphic dip is 10deg southwest.
Superficial Geology:	Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.
Coal Seams.	No relevant coal seams in the local area.

1.6. Boreholes Records

Boreholes in the local area suggest nominally 250mm of topsoil over clay subsoil.

1.7. Planning/Other Data.

N/A.

1.8. Landmark Environmental Data

1.8.1. AGENCY & HYDROLOGICAL

BGS groundwater flooding susceptibility:	On-site.
Contaminated land register entries and notices:	No records within 250m.
Discharge consents:	No records within 250m.
Integrated pollution prevention & controls:	2 records within 250m. Both noted as treated effluent discharges by Ainsworth Finishing Co Ltd 189m southwest.
Local Authority pollution prevention and controls:	2 records within 250m. Both noted as treated effluent discharges by Ainsworth Finishing Co Ltd 189m southwest.
Pollution incidents to controlled waters:	No records within 250m.
Water abstractions:	13 records within 250m – closest is Ainsworth Finishing Co Ltd 159m southwest.
Groundwater vulnerability:	No risk.
Bedrock aquifer:	Secondary A Aquifer.
Superficial aquifer:	Secondary Undifferentiated.
Source protection zone:	Not within a Source Protection Zone.

1.8.2. WASTE

BGS recorded landfill sites:	No records within 250m.
Historic landfill sites:	No records within 250m.
License waste management facilities:	No records within 250m.

1.8.3. HAZARDOUS SUBSTANCES

Planning hazardous substance consents:	No records within 250m.
Planning hazardous substance enforcements:	No records within 250m.

1.8.4. GEOLOGICAL

Mining Instability:	In an area that may be affected by coal mining.
Potential for Collapsible Ground Stability Hazards:	Very low.
Potential for Compressible Ground Stability Hazards:	No hazard.
Potential for Ground Dissolution Stability Hazards:	No hazard.
Potential for Landslide Ground Stability Hazards:	Very low.
Potential for Running Sand Ground Stability Hazards:	Very low.
Potential for Shrinking or Swelling Clay Ground Stability Hazards:	Very low.

Radon Potential - Radon Affected Areas:	The property is in a lower probability radon area where <1% of homes are estimated to be at or above the action level.
Radon Potential - Radon Protection Measures:	No radon protection measures are necessary in the construction of new dwellings or extensions.

1.9. Coal Authority

Entries, Adits, Shafts.	Closest min entry to the Site is approximately 260m southeast.
Past Recorded Underground Mining.	Recorded workings to the southeast but not beneath the Site.
Shallow Unrecorded Mining.	Probable workings to the southeast but not beneath the Site.
Shallow Recorded Mining.	None noted beneath the Site.
Development High Risk Area.	The Site is not within a Development High Risk Area.

1.10. Industry Profiles

N/A.

1.11. TJBA Site Reconnaissance – April 2023

Details of Existing Structures & Features:	The Site was accessed via a timber gate off Taylors Lane, nominally to the southwest corner of the Site, adjacent the workshop that is proposed for a change of use. The Site was generally enclosed by timber fencing and mature hedges/trees such as privets, laurels, sycamore ash and leylandii. The workshop was a brick/stone masonry structure, and comprised an ACM corrugate sheet roof complete with ridge. The roof was in good condition with no cracking or breaks noted. The Site entrance opened to an unmade courtyard leads to a parking area to the northwest corner, a new steel framed/plastisol cladded storage shed centre north, an enclosed paddock & chicken coop area to the northeast corner, and a static caravan to the southeast Site corner. The courtyard ground was generally made up of hardcore and/or limestone chippings which had created a hard surface. In the paddock area, soils generally appeared clean/virgin with some limestone around in a small central channel, and leading nominally to the north boundary, presumably a drainage channel for surrounding rainwater runoff management. There was no evidence of current/former fuel tanks noted. Inside the workshop, a stove/wood burner was noted.
Adjacent Properties:	Site is surrounded by agricultural fields to the north, east and west, with cottages/farmhouses to the south across Taylors Lane.
Water Levels, Directions of Flow and Rates in Rivers:	The stream to the northeast boundary of the site was more of a drainage ditch.
Old Mine or Quarry Workings:	No evidence noted.
Areas of Discoloured Soil, Polluted Water, Vegetation, and Significant Odours:	None noted. Some minor areas of hardcore around the trafficked areas of the Site.

1.12. Identification of Source-Pathway-Receptor.

1.12.1. Potential Contaminants.

CURRENT SOURCE/S	ORIGINAL ASSOCIATED SOURCE	CONTAMINANT/S
Minor made ground used as a relatively thin layer of fill for vehicular/car parking areas only.	Minor hardcore fill etc.	Metals, PAH, inorganics, asbestos.
ACM roof to workshop.	ACM roof to workshop.	Usually chrysotile.

1.12.2. Potential Pathways.

The potential pathways to/from the Development Site include (not an exhaustive list but a summary of the main points):

PATHWAY	MEDIA	IS PATHWAY PRESENT AT SITE
Soil and dust ingestion	Soil and indoor dust	✓
Consumption of home-grown fruit and vegetables	Produce	✓
Skin contact (indoors)	Indoor dust	X
Skin contact (outdoors)	Soil	✓
Inhalation of dust (indoors)	Air	X
Inhalation of dust (outdoors)	Air	✓
Vapours (indoors)	Air	X
Vapours (outdoors)	Air	X

1.12.3. Potential Receptors.

Receptors mainly comprise workers in the construction phase, and residential users for the proposed end use.

1.13. Environmental Site Risk Summary/Conclusions

The local area is rural agricultural throughout its history which remains to the present day.

There is little noted in the historic mapping which suggests particular contaminative risk at the Site.

There was no indication of fuel storage and the only notable fuel source was a wood burner in the workshop.

There appears to have been minor amount of fill at the Site, but this is primarily concerned with hardcore/limestone chippings as a vehicle tracking aggregate in the courtyard and driveway area.

No visual contaminative risk was noted on-site apart from the potential ACM roof. However, the roof appeared to be in good condition, potentially mitigating pathways for pollutant linkages.

No landfill Sites are noted in the local area, coal mining is not a risk locally, and radon protection measures are not required.

1.14. Preliminary Conceptual Model.

CURRENT SOURCE/S		ORIGINAL ASSOCIATED USAGE / LOCATION	CONTAMINANT TYPE	PATHWAY	RECEPTOR	POLLUTION LINKAGE	CONSEQUENCE	PROBABILITY	RISK
CHEMICAL (SOLID)	Existing made ground/infilled ground – ex surface/sub-soil.	Hardcore to vehicular car parking areas	Potential for minor COCs inc metals, PAHs, sulphates.	Unlikely to be a dust risk, and any contamination would be locked within coarse grained structure.	Construction operatives & future occupants.	Pollutant linkage unlikely due to lack of credible pathways. Made ground is relatively thin and comprises hardcore and/or limestone chippings only noted in vehicular areas to firm up the ground. Other areas such as the paddock & chicken coop appeared to comprise natural soils.	Medium.	Unlikely.	Low risk.
	Asbestos cement roof to workshop.	Asbestos cement roof to workshop.	Chrysotile, amosite asbestos.	Roof was in very good condition – no cracking or broken sheets noted.	Construction operatives & future occupants.	Pollutant linkage unlikely. Asbestos roof sheets were in good condition – no cracking or broken sheets noted, and thus no credible chance of finding asbestos in soils. Potential contamination can be mitigated by adhering to HSE policy on asbestos removal.	Medium.	Unlikely.	Low risk.
GROUND GAS RISK (VAPOURS)	Anthropogenic ground gas sources/existing made ground/infilled ground – surface/sub-soil.	Former ponds and small quarries in the wider area were small in size and not thought to have been infilled with a credible gassing material.	CH ₄ , CO ₂ , other trace gases.	Diffusion through soil, substructures, aerial inhalation. Unlikely - clay subsoil providing a natural barrier.	Future occupants. Explosion, suffocation.	Included for clarity. Pollutant linkages unlikely. No credible source or pathways.	Medium.	Unlikely.	Low risk.
	Geological ground gas sources.	No shaft or worked seams locally.	CH ₄ , CO ₂ , other trace gases.				Medium.	Unlikely.	Low risk.
		Radon bearing rocks.	Rn	Unlikely – low risk area.	Future occupants.		Medium.	Unlikely.	Low risk.
CHEMICAL (LIQUID)	Existing made ground/infilled ground – surface/sub-soil.	Hardcore to vehicular car parking areas	Potential for minor COCs inc metals, PAHs, sulphates.	Unlikely to be a dust risk, and any contamination would be locked within coarse grained structure.	Ground / surface water. Controlled Waters (watercourses, canal, aquatic habitats & associated wildlife).	Pollutant linkage unlikely due to lack of credible pathways. COCs if present in fill materials would be locked in the stable hardcore structure, and unlikely to be mobile in the water environment.	Mild.	Unlikely.	Very low risk.

2. PHASE 3 - REMEDIATION STATEMENT

2.1. Basic Site Details

Full details included in the Phase 1 Site Investigation Introduction & subsequent sections.

2.2. Site & Remedial Objectives

The Site is for a change of use of a workshop into a residential dwelling.

It is therefore appropriate to ensure that the Site is fit for the proposal end use.

Construction materials, ground contamination, & gas migration; are all appropriate considerations for this type of development.

The receptors considered in the assessment are predominantly the end user. Site construction operatives can mitigate risk by adopting PPE, and risk cannot be reduced further due to construction workers being a necessary part of the construction process.

2.3. Conceptual Model (Final) & Relevant Pollution Linkages

No potential pollutant linkages were noted.

Either the source or pathway for each linkage were considered to be mitigated.

However, there was a source material (asbestos roof sheet) on the workshop that will need to be appropriately handled in the construction process to ensure that contamination is not spread.

2.4. Recommended Remediation.

Remedial measures are not required in general, however the ACM asbestos roof sheet must be carefully handled and taken away from Site in strict accordance with HSE guidance and protocols, and be disposed of to a suitable waste facility.

Removal of ACM sheet from a small roof or shed area can be undertaken by non-licenced construction workers and isn't notifiable, providing that HSE guidance for ACM sheet materials is followed; "*A14. Removing asbestos cement (AC) sheets, gutters, etc. and dismantling a small AC structure*", indicated in summary below:

Preparing the work area

- Ensure safe access – you may need a mobile access platform.
- Restrict access – minimise the number of people present.
- Close doors. Use tape and notices to warn others.
- Ensure adequate lighting.

Procedure

- Check with the premises owner that only AC is present.
- Protect nearby surfaces from contamination. Cover with 500-gauge polythene sheeting and fix with duct tape to non-asbestos surfaces

Removal

- Avoid or minimise breaking the AC.
- If fasteners hold the sheets in place, dampen and remove them and place them in the asbestos waste bag.
- If the sheets are bolted in place, dampen and cut the bolts while avoiding contact with the AC.
- Remove the bolts or fixings carefully and place them in the asbestos waste bag.
- Unbolt, or use cutters to release gutters, drain pipes, ridge caps etc. Avoid contact with the AC.
- Lower large pieces to the ground. Don't drop them or use rubble chutes. Stack sheets carefully.
- Where there are several AC sheets and other large items, place them in a lockable skip.
- Double-wrap large pieces in 1000-gauge polythene sheeting. Seal with duct tape.

- Attach asbestos warning stickers.
- Place small pieces in the asbestos waste bag.

Cleaning and disposal

- Clean the equipment and the area with damp rags.
- Check for debris in fasteners or bolt holes. Clean with damp rags.
- Put debris, used rags, polythene sheeting and other waste in the asbestos waste bag and tape it closed.
- Dispose of contaminated webbing and rope as 'asbestos waste'. Put the asbestos waste bag in a clear polythene bag and tape it closed.
- Disposal – see sheet EM9.

Personal decontamination

- See sheet EM8.

Clearance and checking off

- Visually inspect the area to make sure that it has been cleaned properly.
- Clearance air sampling is not normally required.
- Get the premises owner, duty holder or client to check off the job.

Further detailed and full fact summary sheets can be found on the HSE website.

2.5. Verification (Phase 4 requirements)

Not required.

2.6. Additional Notes

Should any suspected potential contamination be noted within the groundworks or construction phases of development, the associated areas should be isolated and professional environmental advice sought from a suitably qualified environmental consultant.

Before any further work is undertaken, this report should be submitted to and agreed by the Local Planning Authority Contaminated Land Department/Building Control Department as necessary.

We trust that the above clear, but should you require further advice please contact the undersigned.

Signed.....



D.S. Slattery BSc (Hons).

T J Booth Associates.

Authorised...



T J Booth BSc (Hons), C. Eng. C. Env. MICE.

T J Booth Associates.

3. REFERENCES.

BS 8485:2015+A1:2019. Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

BS 10175:2011+A2:2017. Investigation of potentially contaminated sites. Code of practice.

BS5930:2015. Code of practice for site investigations.

CL:AIRE. 2012. Research Bulletin-RB17-A Pragmatic Approach to Ground Gas Risk Assessment.

CIRIA. Report C665.

Environment Agency. 2005. Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination. R&D Technical Report P5-066/TR.

ICE Manual of Geotechnical Engineering Volume I. 2012.

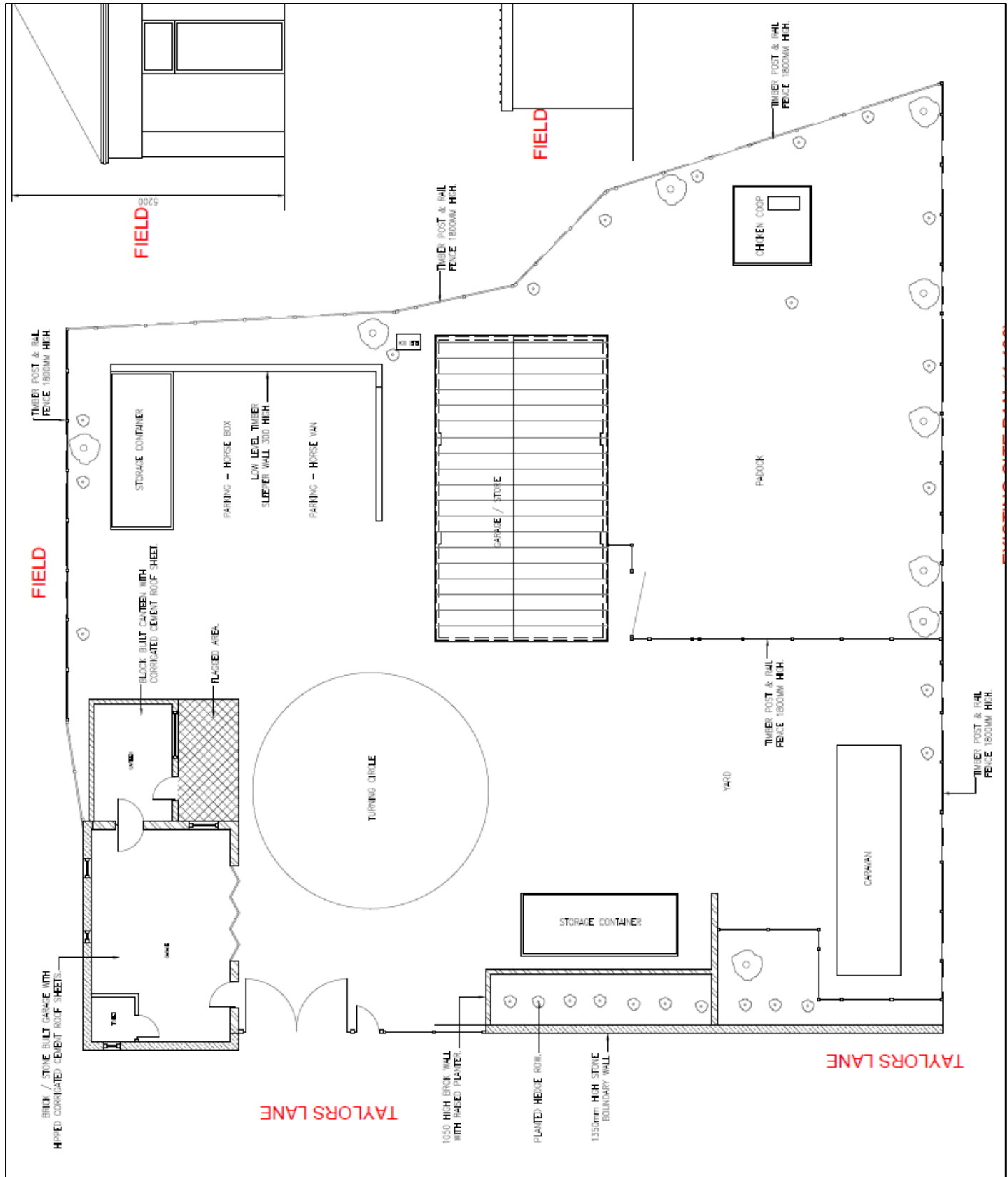
CIRIA. Report SP32.

4. APPENDIX A: PHOTOS & FIGURES.

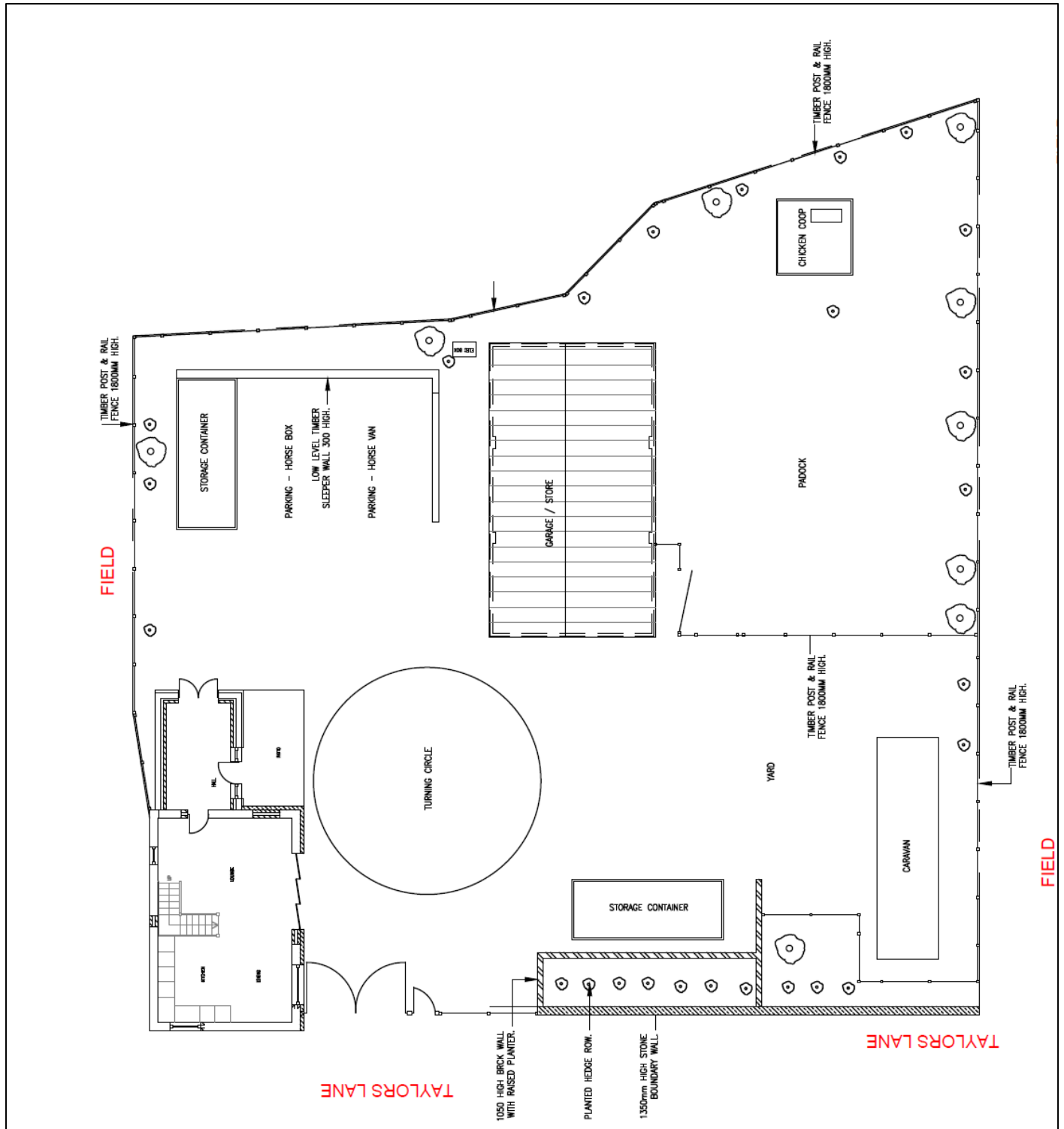
4.1. Location Plan.



4.2. Existing Site Plan.



4.3. Proposed Site Plan.



4.4. Site Investigation Plan.

N/A – Phase 1 only.

4.5. Borehole Logs.

N/A – not required.

4.6. Trial pit and borehole logging (BS5930)

N/A – Phase 1 only.

4.7. Soil Sampling Analysis.

N/A – Phase 1 only.

4.8. Soil Testing Certificates.

N/A – Phase 1 only.

5. APPENDIX B: PHOTOS.



Figure 1 – View north from Site entrance.



Figure 2 – View west showing 'primary elevation' of existing workshop.



Figure 3 – View to northeast corner showing paddock and chicken coop area.



Figure 4 – View to southeast corner showing static caravan area.

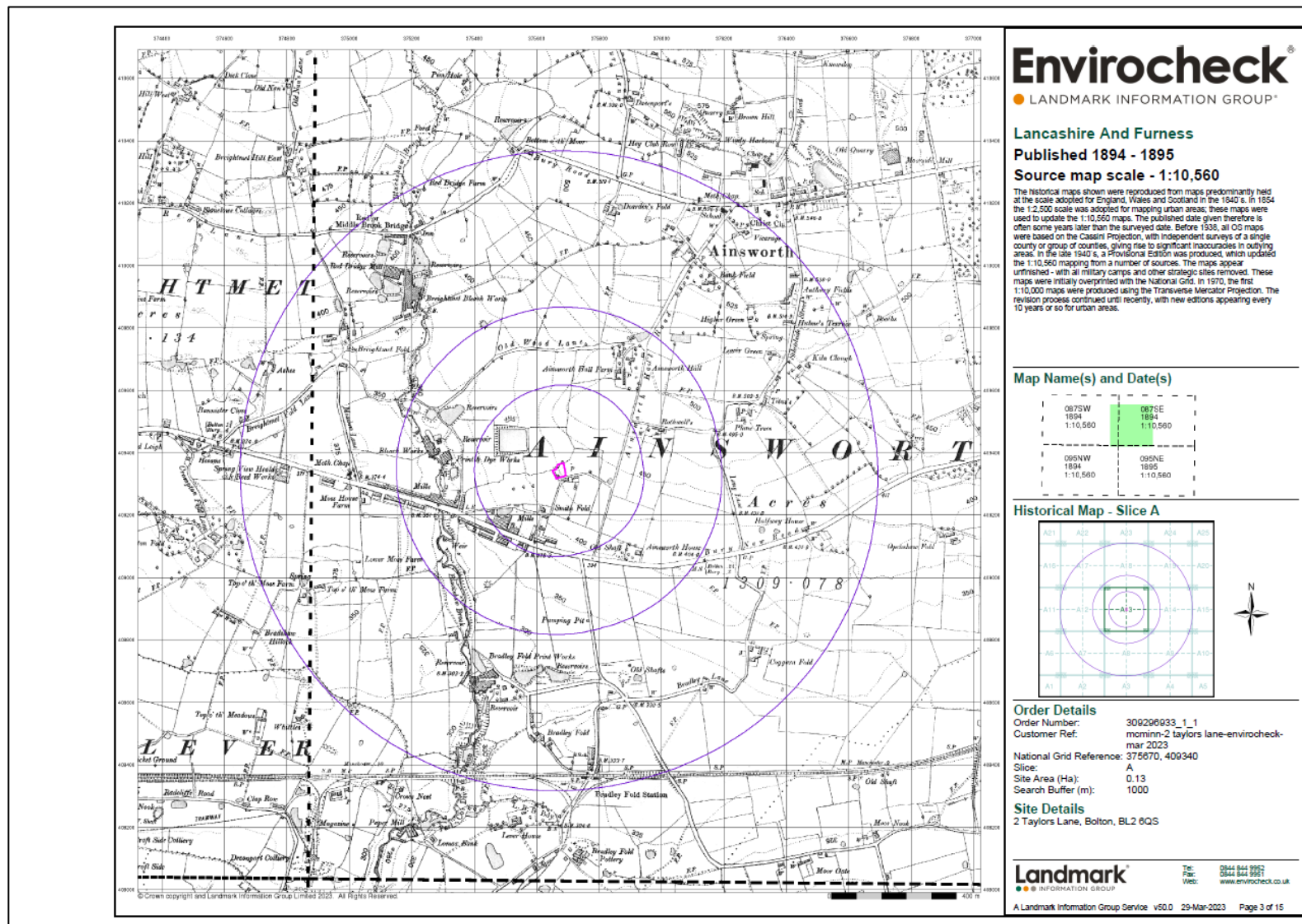


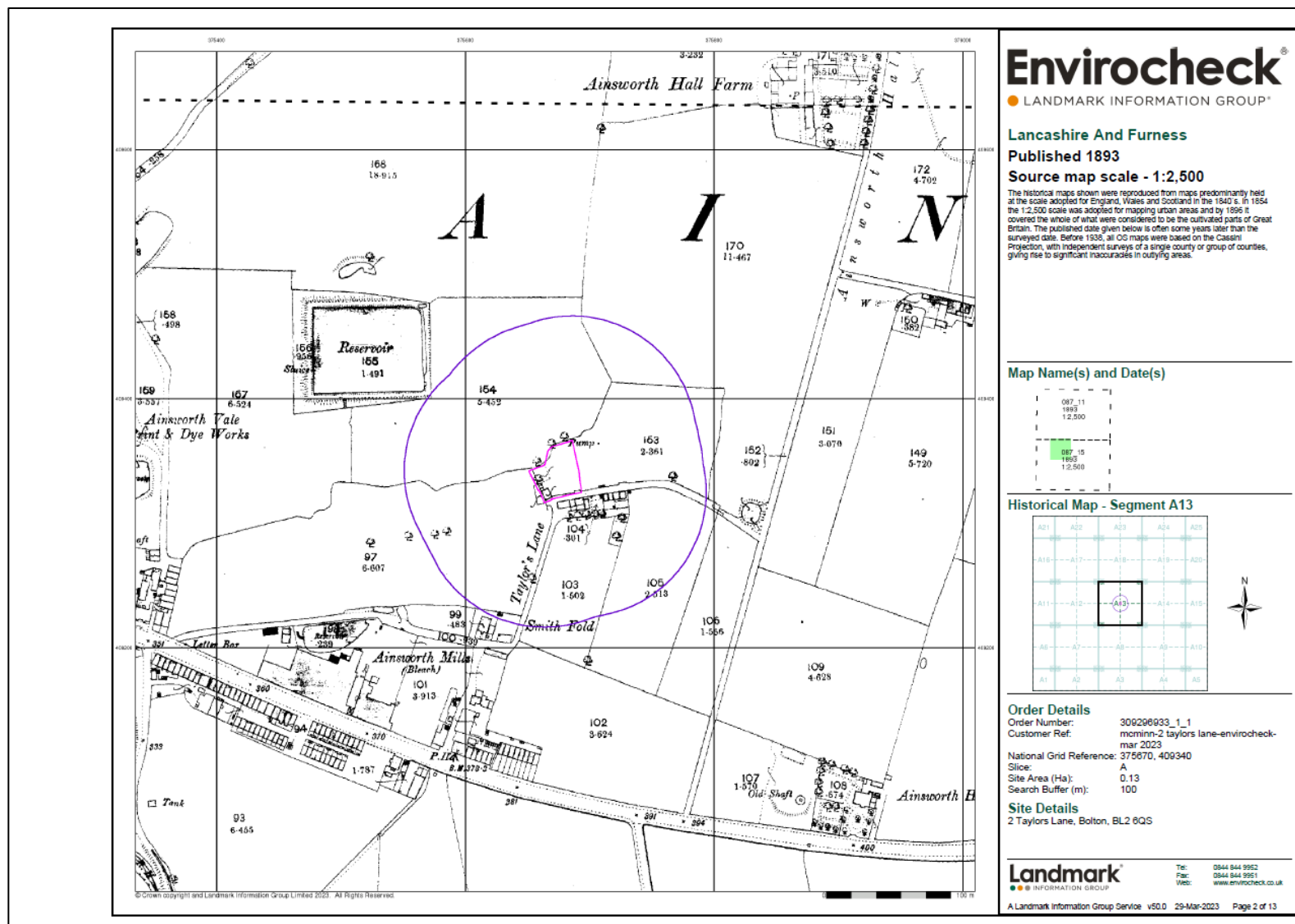
Figure 5 – View to south boundary/entrance.

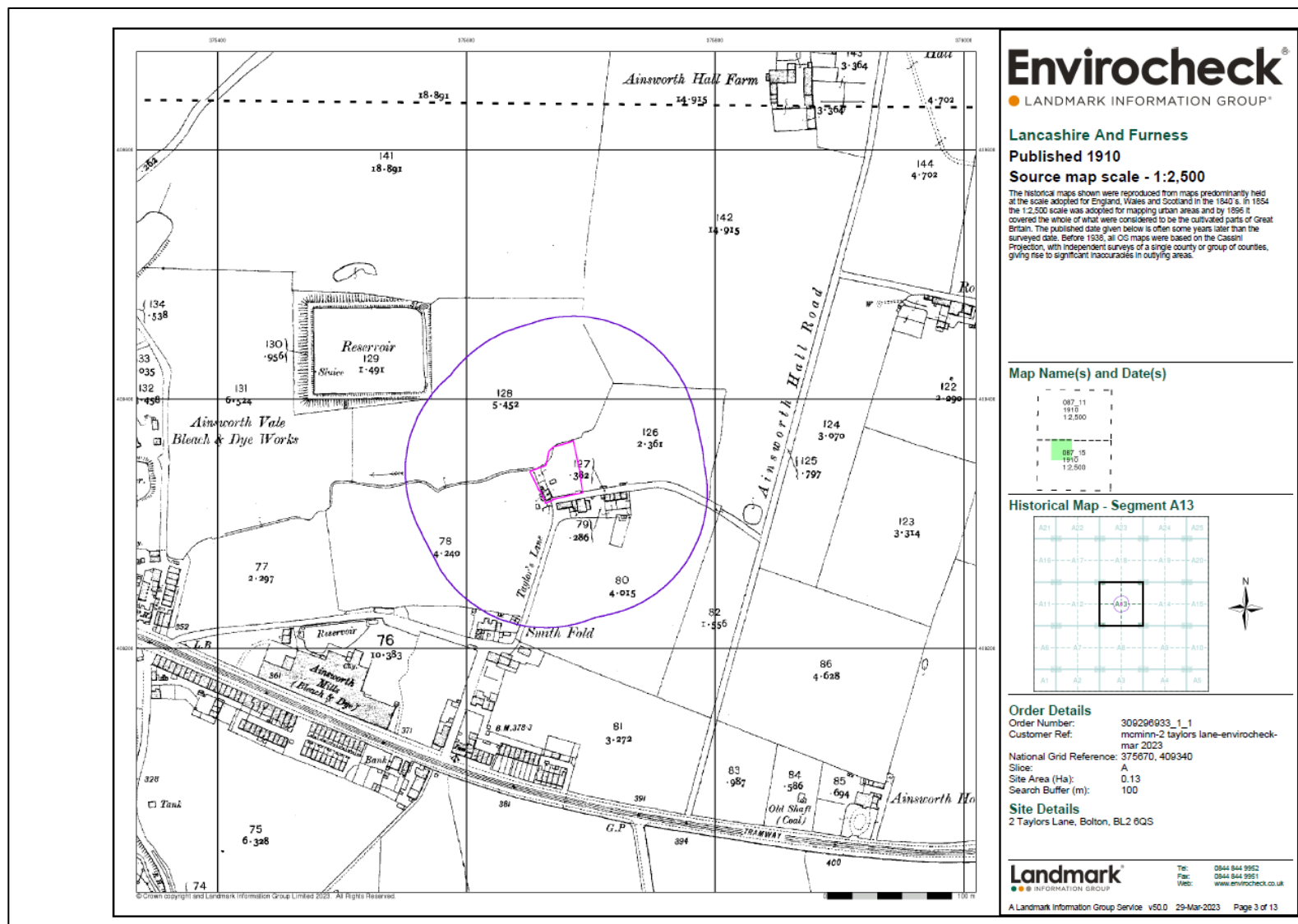


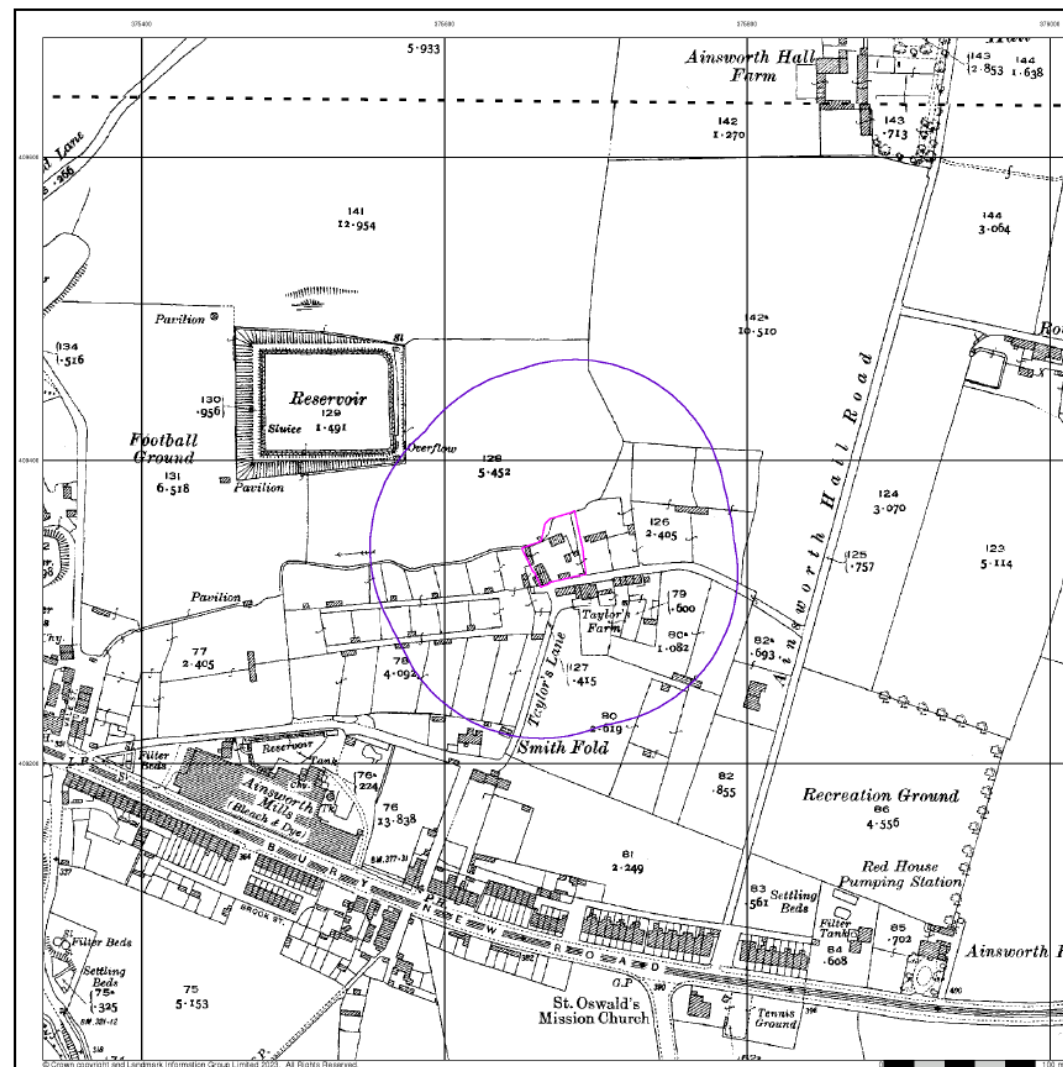
Figure 6 – View towards the northeast & workshop outside of the Site.

6. APPENDIX C: LANDMARK ENVIROCHECK.









Envirocheck
 LANDMARK INFORMATION GROUP

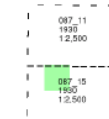
Lancashire And Furness

Published 1930

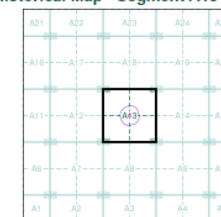
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1940's. In 1954 the 1:2,500 scale was adopted for mapping urban areas and by 1996 it covered the whole of what were considered to be the outvalued parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1936, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 306296933_1_1
 Customer Ref: mcmnn-2 taylors lane-envirocheck-mar 2023
 National Grid Reference: 375670, 409340
 Slice: A
 Site Area (Ha): 0.13
 Search Buffer (m): 100

Site Details

2 Taylors Lane, Bolton, BL2 6QS

Landmark
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 Web: www.envirocheck.co.uk

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