

**Petrol Coedpoeth, High Street,
Coedpoeth**

SUBADRA

Environmental - Geotechnical - Laboratory - Foundations

13 Triangle Business Park, Stoke Mandeville, HP22 5BL

Tel: 01296 739400 Email: consultants@subadra.com

FAO: Angela Guy
Contaminated Land Officer
Wrexham County Borough
The Guildhall,
Wrexham
LL11 1AY

16th January 2020

Dear Angela

**Petrol Coedpoeth, High Street, Coedpoeth
Planning Application Ref. P/2019/0935**

As you are aware, The Co-Operative Group Ltd (The Coop) are redeveloping their Petrol Coedpoeth filling station site.

Conditional planning permission for the redevelopment scheme was granted by Wrexham County Council (Planning Application Ref. P/2018/0463). We completed verification sampling works at the site during the redevelopment, in accordance with the approved remedial and verification sampling strategy, and the details of our verification sampling were provided in December 2019 (our report ref. CP17129 CL 007) in order to satisfy the requirements of Condition 8 and/or 10.

I understand that you have confirmed that the submitted verification sampling report is sufficient. You have, however, recommended that Condition 8 is not discharged until confirmation of the engineering controls that have been incorporated in the design of the site are provided.

As recommended in the approved remedial strategy, I can confirm the following engineering controls have been implemented as part of the standard Coop design:

- Vapour Membrane - A Juta GP TitanFlex vapour barrier membrane has been installed under the new shop building floor slab. This is designed to perform as a methane, carbon dioxide, radon, ground gas, volatile organic compound, air and moisture and hydrocarbon barrier protection system. Specification sheets for the membrane material and also independent testing certificates that verify the installation was completed to manufacturers requirements are included as Attachment Two.
- Barrier Water Supply Pipe - GPS Protecta-Line pipework has been used for the drinking water supply to the new shop building and forecourt. This is a multi-layered plastic pipe with an embedded aluminium barrier layer and is designed to protect drinking water in land that is potentially contaminated, or could become contaminated in the future. Specification sheets are provided as Attachment Two.

I trust the enclosed confirmation and attached information is sufficient to address your outstanding concerned and allow your recommendation for the discharge of Condition 8 and/or 10.

Yours sincerely



James Skinner

Subadra Consulting Ltd

Enc.

Client: The Co-Operative Group Ltd	Subadra Consulting Ltd. Registered in England No. 4586038 Registered Office 13 Triangle Business Park, Stoke Mandeville, HP22 5BL	Our Ref	CP17129 CL 008
		Date	16 th January 2020
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Petrol Coedpoeth, Coedpoeth

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Environmental - Geotechnical - Laboratory - Foundations

13 Triangle Business Park, Wendover Road
Stoke Mandeville, Bucks HP22 5BL

Tel: 01296 739400 Email: consultants@subadra.com

**ATTACHMENT ONE:
NOTICE TO INTERESTED PARTIES**

Client: The Co-operative Group Ltd

Report	CP17129 CL 008
Date	January 2020
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NOTICE TO INTERESTED PARTIES

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

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

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

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

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

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

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

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

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

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

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

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

This report and its contents, together with any supporting correspondence or other documentation, remain the property of Subadra Consulting Limited until paid for in full. The copyright to this report remains vested in Subadra Consulting Ltd at all times.

Client: The Co-operative Group Ltd

Report	CP17129 CL 008
Date	January 2020
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Petrol Coedpoeth, Coedpoeth

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**ATTACHMENT TWO:
DETAILS OF ENGINEERING CONTROLS**

Client: The Co-operative Group Ltd

Report	CP17129 CL 008
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GP TITANFLEX

Generated on 05.12.2018

Detailed description

Gas and hydrocarbon barrier consisting of a multi-layer, polyethylene membrane. Specifically designed to perform as a methane, carbon dioxide, radon, ground gas, volatile organic compound (VOC), air and moisture and hydrocarbon protection system.

Features and benefits:

- Quick and easy installation.
- Can be a fully welded system.
- High resistance to ground gasses.
- Good chemical resistance.
- Compatible with all building materials.
- Long term durability - performance is guaranteed for the lifetime of the building.

Approvals:

- CE marked to EN 13967: 2012.
- NHBC Standards compliant.
- Ciria C748 compliant.
- BS 8485: 2015 compliant.

Applications:

Suitable for use as ground gas/ hydrocarbon protection for a number of site characterisations.

Product guidance - As Standard

Size (w x l):

2 x 50 m.

Thickness:

0.5 mm.

Weight:

500 g/m².

Technical characteristics:

- Water vapour transmission rate (to EN 1931): 0.93–0.95 g/m²/day.
- Watertightness (60 kPa, to EN 1928): Pass.
- Watertightness (196 kPa, 20 m water head for basement application, to EN 1928): Pass.

Juta UK Ltd



JUTA
Ability to Adapt

Juta UK Ltd
Melton Grove Works
Church Road
Lytham
FY8 5PL

Tel: +44 (0)1772 754177

www.juta.co.uk
info@juta.co.uk



- Resistance to static load (to EN 12730-B): >20 kg.
- Tensile strength (MD, to EN 12311-1): >550 N/ 50 mm.
- Tensile strength (CMD, to EN 12311-1): >400 N/ 50 mm.
- Tensile elongation (MD/ CMD, to EN 12311-1): >550%.
- Tear resistance (MD/ CMD, to EN 12310-1): >300 N.
- Resistance to impact (to EN 12691-B): >650 mm.
- Reaction to fire (to EN 13501-1): E Class.
- Resistance to artificial aging (to EN 1296/ EN 1928): Pass.
- Resistance to chemicals (to EN 1847/ EN 1928): Pass.

- Vapour permeability (at 100% concentration):

- Transmission rate of Benzene (to EN ISO 15105-2): 2250 mg/m²/day.
- Transmission rate of Toluene (to EN ISO 15105-2): 2370 mg/m²/day.
- Transmission rate of Ethyl Benzene (to EN ISO 15105-2): 400 mg/m²/day.
- Transmission rate of Xylene (M, P, O, to EN ISO 15105-2): 690 mg/m²/day.
- Transmission rate of Hexane (to EN ISO 15105-2): 0.58 mg/m²/day.
- Transmission rate of Vinyl Chloride (to EN ISO 15105-2): 0.112 mg/m²/day.
- Transmission rate of Trichloroethene (TCE, to EN ISO 15105-2): 54.67 mg/m²/day.
- Transmission rate of Tetrachloroethene (PCE, to EN ISO 15105-2): 25.91 mg/m²/day.
- Transmission rate of Naphthalene (to EN ISO 15105-2): 0.00057 mg/m²/day.
- Transmission rate of CIS-1, 2-Dichloroethene (to EN ISO 15105-2): 3.09 mg/m²/day.

- Gas permeability:

- Methane permeability (to EN ISO 15105-1): 0.13 ml/m²/day/atm.
- Methane permeability (Jointed, to EN ISO 15105-1): 1.00 ml/m²/day/atm.
- Carbon Dioxide permeability (to EN ISO 15105-1): 3.01 ml/m²/day/atm.
- Transmission rate of Vinyl Chloride gas (to EN ISO 15105-1): 0.04 ml/m²/day/atm.
- Radon permeability (to K124/ 02/ 195): 1.0×10^{-12} m²/s.

- Durability and chemical resistance:

- Chemical resistance - sulfuric acid, 10% solution of sulfuric acid (H2504), 50°C for 56 days (to EN14414-A): Pass. Tensile strength retained: 100%.
- Chemical resistance - Basic calcium hydroxide saturated suspension), 50°C for 56 days (to EN 14414-B): Pass. Tensile strength retained: 100%.



- Chemical resistance - Solvents, 35% diesel, 35% paraffin, 30% oil (HD30, vol), 50°C for 56 days (to EN 14414-C): Pass. Tensile strength retained: >80%.
- Chemical resistance - Synthetic leachate, mixture of 14 acids, chlorides, sulphates and phosphate), 50°C for 56 days (to EN 14414-D): Pass. Tensile strength retained: 100%.
- Resistance to leaching - Hot water/ deionised water, 50°C for 56 days (to EN 14415-A): Pass. Tensile strength retained: 100%.
- Resistance to leaching - aqueous alkaline, saturated calcium hydroxide, 50°C for 56 days (to EN14415-B): Pass. Tensile strength retained: 100%.
- Resistance to leaching - organic alcohol, 30% methanol, 30% isopropanol, 40% glycol, 50°C for 56 days (to EN 14415-C): Pass. Tensile strength retained: 100%.
- Chemical resistance - Benzene - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 95%; CMD: 102%.
- Chemical resistance - Toluene - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 94%; CMD: 91%.
- Chemical resistance - Ethyl Benzene - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 99%; CMD: 97%.
- Chemical resistance - Xylenes - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 91%; CMD: 106%.
- Chemical resistance - Trichloroethene (TCE) - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 99%; CMD: 93%.
- Chemical resistance - Tetrachloroethene (PCE) - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 93%; CMD: 93%.
- Chemical resistance - Naphthalene - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 101%; CMD: 93%.
- Chemical resistance - Hexane - 100% saturated concentration (to EN 14414-D): Pass. Tensile strength retained: MD: 99%; CMD: 104%.

Product specification

Manufacturer

- Name: Juta UK Ltd
- Web: www.juta.co.uk
- Email: info@juta.co.uk
- Tel: +44 (0)1772 754177
- Address: Melton Grove Works, Church Road, Lytham FY8 5PL

Product reference GP TITANFLEX



GEOSHIELD

Verification Report



PROJECT REFERENCE: GEO100853

REPORT NUMBER: 001 REPORT DATE: 18th Oct 19

PROJECT: Co-op Coedpoeth

PROJECT ADDRESS: Co-op Coedpoeth Petrol Station

High Street, Wrexham

Clwyd, LL11 3UF

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Installed to CIRIA 735

Juta Titan Flex

SAGM

Bitumen primer

Radon sumps

Vent mat



GEOSHIELD

Verification Report



MEMBRANE SPECIFICATION:

DESIGN DETAILS:



GEOSHIELD Verification Report



VERIFICATION OFFICER: Ross Edwards

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07393626664

EMAIL ADDRESS: Redwrads@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:

☐

NO:

☐

PROJECT: YES:



NO:

☐



GEOSHIELD

Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Andy Collins
CONTACTS ROLE:	Director
MOBILE PHONE:	07789223116
EMAIL ADDRESS:	



CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	
NOTES:	
NOTES:	



GEOSHIELD Verification Report



APPLICATION TEAM LEADERS

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



GEOSHIELD Verification Report



AREA SURVEYED: Perimeter detail.

SITE CONDITIONS:

WEATHER: Light drizzle.

TEMPERATURE: 12C

MEMBRANE TEMPERATURE:

RELATIVE HUMIDITY:

TIME: 12:00-13:00

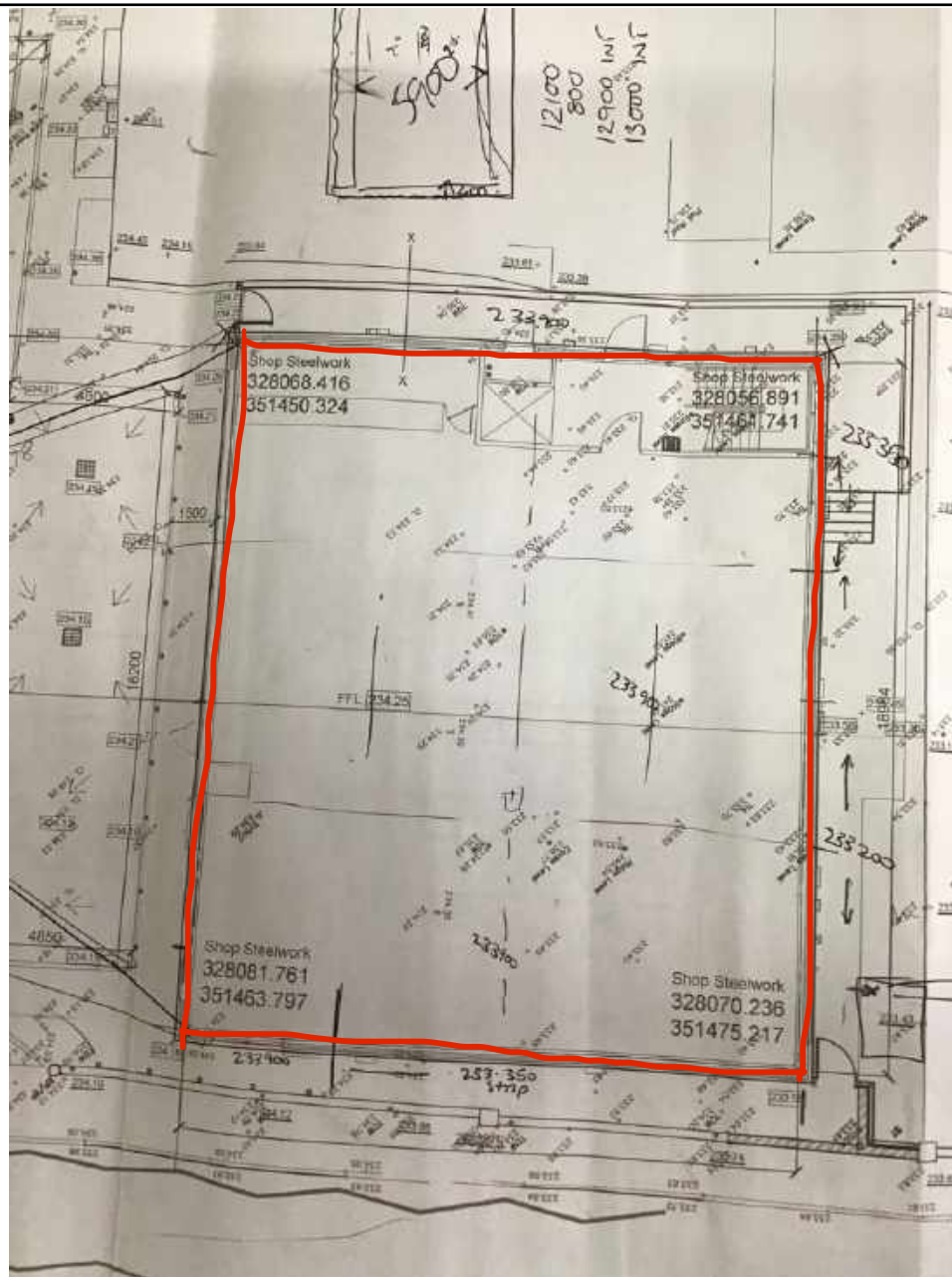
REPORT NUMBER: 001

DATE: 18th October 2019

ACCOMPANIED Krzysztof Plata

GEOSHIELD Verification Report

VERIFICATION LAYOUT



Area highlighted is where verification took place for this report.

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS



Overview photo looking down the perimeter detail.

GEOSHIELD Verification Report



VERIFICATION ITEM ONE

LOCATION/GRID LINE: Perimeter detail.

NOTES: Steel stanchions.

Picture one: is showing a close up of a completed steel stanchion, all the area has been primed prior to the tape being applied. All tapes have been fully heated down and sealed with no gaps showing.



Picture two: the above photo is showing a completed steel column, again fully sealed with SAGM tape and heated down.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE



The above photo is showing a completed steel stanchion, this detail has been fully

Sealed, very high standard of work has been completed.



GEOSHIELD Verification Report



VERIFICATION ITEM TWO

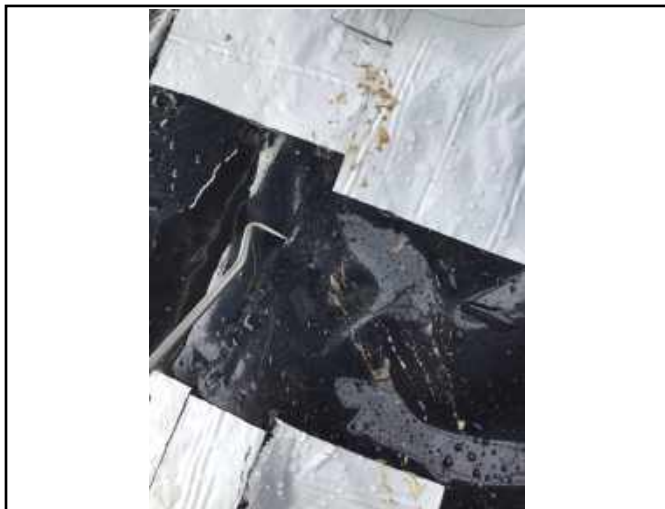
LOCATION/GRID LINE: Perimeter detail.

NOTES: Lap joints.

Picture one: is showing that pick probe testing was carried out to all welded lap

Details, unfortunately air lancing could not be carried out due to parking restrictions

but a Thorough test was carried out.



Picture two: is showing that during the pick probe test one fault was found within

The lap joint, the installer was quick to patch this over with SAGM tape.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO



The above photo is an overview photo showing multiple steel column and stanchion details, around these were welded seems all fine.

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



Steel brace fully sealed with

SAGM tape.



Another completed steel

Stanchion.



Pick probe testing being carried out

to the steel stanchion.



Patch work carried out to the fault

within the joint.

[illegible]



GEOSHIELD Verification Report



VERIFICATION SUMMARY

This was the first visit to site met with site management and the prestige Air installers.

Began a visual pick probe test to all welded joints and tape details, only one fault was found but patched whilst on site.

Air lance testing could not be carried out due to the site being very small and no parking on site.

All tapes were fully heated down and bitumen primer applied.

Overall a very high standard of work has been completed.

Installed in accordance with BS8485 2015 Verified to CIRIA 735



GEOSHIELD

Verification Report



PROJECT REFERENCE: GEO100853

REPORT NUMBER: 003 REPORT DATE: 19th Nov 19

PROJECT: Co-op Coedpoeth

PROJECT ADDRESS: Co-op Coedpoeth Petrol Station

High Street, Wrexham

Clwyd, LL11 3UF

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Installed to CIRIA 735

Juta Titan Flex

SAGM

Bitumen primer

Radon sumps

Vent mat



GEOSHIELD Verification Report



MEMBRANE SPECIFICATION:

DESIGN DETAILS:



GEOSHIELD Verification Report



VERIFICATION OFFICER: Ross Edwards

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07393626664

EMAIL ADDRESS: Redwrads@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:

☐

NO:

☐

PROJECT: YES:



NO:

☐



GEOSHIELD

Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Andy Collins
CONTACTS ROLE:	Director
MOBILE PHONE:	07789223116
EMAIL ADDRESS:	



CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	
NOTES:	
NOTES:	



GEOSHIELD Verification Report



APPLICATION TEAM LEADERS

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



GEOSHIELD Verification Report



AREA SURVEYED: Building infill

SITE CONDITIONS:

WEATHER: Dry

TEMPERATURE: 8C

MEMBRANE TEMPERATURE:

RELATIVE HUMIDITY:

TIME: 10:00-12:00

REPORT NUMBER: 003

DATE: 19th November 2019

ACCOMPANIED Krzysztof Plata



Architectural drawing of a building floor plan. A red outline highlights a specific area. The drawing includes various dimensions, room labels, and contact information for "Shop Steelwork".

Dimensions and labels visible on the drawing:

- Top right: 12100, 800, 12900 W, 13000 W
- Top center: 23210
- Top left: 23210, 23210, 23210
- Left side: 16200, 4050
- Bottom left: 23210, 23210
- Bottom center: 23210, 23210
- Bottom right: 23210, 23210
- Right side: 23210, 23210

Contact information for "Shop Steelwork" (repeated in four locations):

- Top left: 328068.416, 351450.324
- Top right: 328056.891, 351461.741
- Bottom left: 328081.761, 351463.797
- Bottom right: 328070.236, 351475.217

Other labels include: "FFL 234.20", "233.90", "233.30", "233.20", "233.10", "233.00", "232.90", "232.80", "232.70", "232.60", "232.50", "232.40", "232.30", "232.20", "232.10", "232.00", "231.90", "231.80", "231.70", "231.60", "231.50", "231.40", "231.30", "231.20", "231.10", "231.00", "230.90", "230.80", "230.70", "230.60", "230.50", "230.40", "230.30", "230.20", "230.10", "230.00", "229.90", "229.80", "229.70", "229.60", "229.50", "229.40", "229.30", "229.20", "229.10", "229.00", "228.90", "228.80", "228.70", "228.60", "228.50", "228.40", "228.30", "228.20", "228.10", "228.00", "227.90", "227.80", "227.70", "227.60", "227.50", "227.40", "227.30", "227.20", "227.10", "227.00", "226.90", "226.80", "226.70", "226.60", "226.50", "226.40", "226.30", "226.20", "226.10", "226.00", "225.90", "225.80", "225.70", "225.60", "225.50", "225.40", "225.30", "225.20", "225.10", "225.00", "224.90", "224.80", "224.70", "224.60", "224.50", "224.40", "224.30", "224.20", "224.10", "224.00", "223.90", "223.80", "223.70", "223.60", "223.50", "223.40", "223.30", "223.20", "223.10", "223.00", "222.90", "222.80", "222.70", "222.60", "222.50", "222.40", "222.30", "222.20", "222.10", "222.00", "221.90", "221.80", "221.70", "221.60", "221.50", "221.40", "221.30", "221.20", "221.10", "221.00", "220.90", "220.80", "220.70", "220.60", "220.50", "220.40", "220.30", "220.20", "220.10", "220.00", "219.90", "219.80", "219.70", "219.60", "219.50", "219.40", "219.30", "219.20", "219.10", "219.00", "218.90", "218.80", "218.70", "218.60", "218.50", "218.40", "218.30", "218.20", "218.10", "218.00", "217.90", "217.80", "217.70", "217.60", "217.50", "217.40", "217.30", "217.20", "217.10", "217.00", "216.90", "216.80", "216.70", "216.60", "216.50", "216.40", "216.30", "216.20", "216.10", "216.00", "215.90", "215.80", "215.70", "215.60", "215.50", "215.40", "215.30", "215.20", "215.10", "215.00", "214.90", "214.80", "214.70", "214.60", "214.50", "214.40", "214.30", "214.20", "214.10", "214.00", "213.90", "213.80", "213.70", "213.60", "213.50", "213.40", "213.30", "213.20", "213.10", "213.00", "212.90", "212.80", "212.70", "212.60", "212.50", "212.40", "212.30", "212.20", "212.10", "212.00", "211.90", "211.80", "211.70", "211.60", "211.50", "211.40", "211.30", "211.20", "211.10", "211.00", "210.90", "210.80", "210.70", "210.60", "210.50", "210.40", "210.30", "210.20", "210.10", "210.00", "209.90", "209.80", "209.70", "209.60", "209.50", "209.40", "209.30", "209.20", "209.10", "209.00", "208.90", "208.80", "208.70", "208.60", "208.50", "208.40", "208.30", "208.20", "208.10", "208.00", "207.90", "207.80", "207.70", "207.60", "207.50", "207.40", "207.30", "207.20", "207.10", "207.00", "206.90", "206.80", "206.70", "206.60", "206.50", "206.40", "206.30", "206.20", "206.10", "206.00", "205.90", "205.80", "205.70", "205.60", "205.50", "205.40", "205.30", "205.20", "205.10", "205.00", "204.90", "204.80", "204.70", "204.60", "204.50", "204.40", "204.30", "204.20", "204.10", "204.00", "203.90", "203.80", "203.70", "203.60", "203.50", "203.40", "203.30", "203.20", "203.10", "203.00", "202.90", "202.80", "202.70", "202.60", "202.50", "202.40", "202.30", "202.20", "202.10", "202.00", "201.90", "201.80", "201.70", "201.60", "201.50", "201.40", "201.30", "201.20", "201.10", "201.00", "200.90", "200.80", "200.70", "200.60", "200.50", "200.40", "200.30", "200.20", "200.10", "200.00", "199.90", "199.80", "199.70", "199.60", "199.50", "199.40", "199.30", "199.20", "199.10", "199.00", "198.90", "198.80", "198.70", "198.60", "198.50", "198.40", "198.30", "198.20", "198.10", "198.00", "197.90", "197.80", "197.70", "197.60", "197.50", "197.40", "197.30", "197.20", "197.10", "197.00", "196.90", "196.80", "196.70", "196.60", "196.50", "196.40", "196.30", "196.20", "196.10", "196.00", "195.90", "195.80", "195.70", "195.60", "195.50", "195.40", "195.30", "195.20", "195.10", "195.00", "194.90", "194.80", "194.70", "194.60", "194.50", "194.40", "194.30", "194.20", "194.10", "194.00", "193.90", "193.80", "193.70", "193.60", "193.50", "193.40", "193.30", "193.20", "193.10", "193.00", "192.90", "192.80", "192.70", "192.60", "192.50", "192.40", "192.30", "192.20", "192.10", "192.00", "191.90", "191.80", "191.70", "191.60", "191.50", "191.40", "191.30", "191.20", "191.10", "191.00", "190.90", "190.80", "190.70", "190.60", "190.50", "190.40", "190.30", "190.20", "190.10", "190.00", "189.90", "189.80", "189.70", "189.60", "189.50", "189.40", "189.30", "189.20", "189.10", "189.00", "188.90", "188.80", "188.70", "188.60", "188.50", "188.40", "188.30", "188.20", "188.10

Area highlighted is where verification took place for this report the building infill.



GEOSHIELD Verification Report



OVERVIEW PHOTOGRAPHS



Overview photo looking into the building.



GEOSHIELD Verification Report

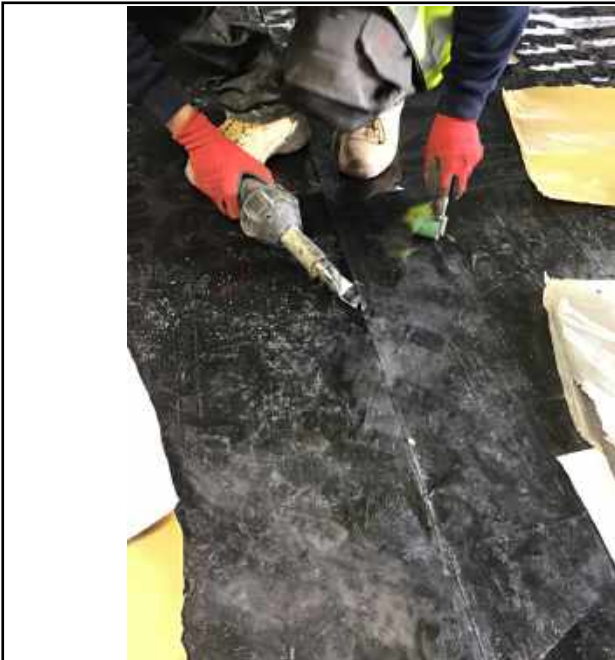


VERIFICATION ITEM ONE

LOCATION/GRID LINE: Building infill.

NOTES: Lap detail.

Picture one: is showing the installer hand welding the lap edge joint together with the leister gun. All joints were fully verified using pick probe testing methods, due to restrictions on site air lance testing could not be carried out.



Picture two: is a close up of the welded lap joint, a consistent 40mm weld joint has been completed by the installer.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE



The above photo is demonstrating that pick probe testing was carried out to the lap edge details, no faults were found on this lap.



GEOSHIELD Verification Report



VERIFICATION ITEM TWO

LOCATION/GRID LINE: Building infill.

NOTES: Steel stanchions.

Picture one: is showing that the installer has prepared this steel stanchion by coating it in bitumen primer, this will allow the detailing tape have a much stronger seal.



Picture two: is showing a completed steel stanchion detail, all detailing tape has been tightly fitted meaning no voids were created. All tape has also been fully sealed and heated down.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO



The above photo is showing that pick probe testing was carried out to the steel stanchion, no faults were found.

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



Pipe penetration detail being sealed
with detailing tape.



Correct amount of lap being
applied.



Close up showing that the surface is
free from any obstructions.



Installer sweeping the floor ready
for install.



GAS MEMBRANE TESTING

VISUAL: ☐ YES ☒ NO ☐ SMOKE TEST: ☐ YES ☐ NO ☒

COMPRESSED AIR: ☐ YES ☐ NO ☒ DILECTIC ☐ YES ☐ NO ☒

DESTRUCTIVE: ☐ YES ☒ NO ☐ OTHER: ☐ YES ☒ NO ☐

Testing checklist attached: ☐ YES ☐ NO ☒

Gridline/Plot Sign off

[illegible]

[illegible]



GEOSHIELD Verification Report



VERIFICATION SUMMARY

This was the third visit to site, met with the site manager and prestige air installer.

Carried out visual pick probe testing as restrictions on site with parking meaning I could not carry out air lance testing.

Three faults were found within the lap detail but Remediated whilst on site.

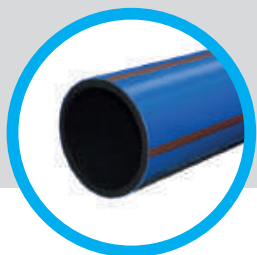
All steel stanchions where fully primed and sealed.

This job is now fully complete.

Installed in accordance with BS8485 2015 Verified to CIRIA 735

PROTECTA-LINE PIPE

PRODUCT DATA SHEET



Protecta-Line pipe is a multi-layered PE pipe with an embedded aluminium barrier layer. It is designed to safely transport drinking water in land which is contaminated or has the potential to be contaminated in the future.

RANGE / PRESSURE RATING

OD (mm)	SDR	Pressure rating	Material
25	11	12.5 bar	PE80
32			
63			
90 to 180	11	16 bar	PE100
	17	10 bar	PE100
225 to 630	11	16 bar	PE100
	17	10 bar	PE100

COLOURS

Material	Description	Colour
PE80	Black core and light blue outer with brown stripes	
PE100	Black core and dark blue outer with brown stripes	

Pipe diameter ≤ 180 mm pipe has four brown stripes; > 180 mm pipe has eight brown stripes.

STANDARDS / APPROVALS

The Water Supply Regulation 31/27/30	BS EN 12201-2
WRAS Approved	WIS 4-32-19

CERTIFICATION



1606501
1511343
1505514
1302025



BS EN 12201-2
KM 508224



WIS 4-32-19
KM 514626

LENGTHS

Pipes ≤ 180 mm in diameter are available in coiled lengths of 25m, 50m or 100m

Pipes 63mm – 630mm in diameter are also available in straight lengths of 6 or 12m.

Other lengths may be produced at customer's request

MARKINGS

As a minimum requirement, the following information is marked indelibly and linearly at intervals along the pipe:

- Manufacturers identification: **GPS**
- System: **Protecta-Line**
- Pipe composition: **PE Pipe with AL Barrier**
- Standard and pipe type: **WIS 4-32-19 TYPE A**
- Material designation: **PE100 or PE80**
- Nominal size: **180mm (example)**
- SDR value: **SDR 17 (example)**
- Continuous pressure rating at 20°C: **10 bar (example)**

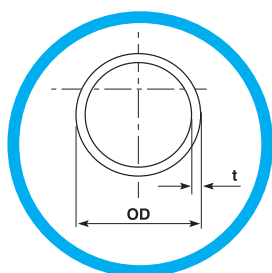
The pipes are marked with the following three times per metre:

- Application: **Water**

BATCH NUMBER FORMAT

8 Digit Code	Extruder Number 1 & 2	Shift Number 3 & 4	Week Number 5 & 6	Year 7 & 8
	01-23	01 - 14	01 - 52	01-99

PIPE DIMENSIONS



* The size is the nominal core pipe outside diameter. Other diameters, SDRs and lengths can be made subject to a minimum order value.

Size* (mm)	SDR	Min OD (mm)	Max OD (mm)	Mean Bore (mm)	Min t (mm)	Max t (mm)	Approx Weight (kg/m)
25	11	26.2	27.4	20.0	3.0	3.7	0.3
32	11	33.3	34.5	26.0	3.7	4.4	0.4
63	11	64.3	65.6	50.9	6.5	7.6	1.3
90	11	92.2	93.5	72.9	9.3	10.7	2.6
	17	92.2	93.5	78.8	6.5	7.5	1.9
110	11	112.2	113.5	89.2	11.1	12.7	3.7
	17	112.2	113.5	96.3	7.7	8.8	2.7
125	11	127.2	128.5	101.2	12.5	14.2	4.7
	17	127.2	128.5	109.6	8.5	9.8	3.4
160	11	163.2	165.1	130.4	15.8	17.9	7.6
	17	163.2	165.1	141.1	10.7	12.4	5.4
180	11	183.3	185.4	146.8	17.6	20.0	9.5
	17	183.3	185.4	158.8	11.9	13.7	6.8
225	11	227.3	229.5	182.5	21.7	24.4	14.5
	17	227.3	229.5	197.4	14.6	16.6	10.3
250	11	252.3	254.9	203.0	23.9	26.8	17.7
	17	252.3	254.9	219.6	16.0	18.3	12.4
280	11	282.3	285.1	227.4	26.6	29.8	22.0
	17	282.3	285.1	245.9	17.8	20.1	15.4
315	11	317.3	320.2	255.7	29.8	33.3	27.6
	17	317.3	320.2	276.6	19.9	22.4	19.3
355	11	357.3	360.6	288.3	33.4	37.3	34.8
	17	357.3	360.6	311.6	22.3	25.1	24.3
400	11	402.3	405.8	324.8	37.5	41.8	43.9
	17	402.3	405.8	351.3	24.9	27.9	30.4
450	11	452.3	456.1	365.4	42.1	46.8	55.3
	17	452.3	456.1	395.2	27.9	31.2	38.2
500	11	502.3	506.4	406.0	46.6	51.8	67.9
	17	502.3	506.4	439.0	30.9	34.5	46.9
560	11	562.3	566.8	454.9	52.0	57.7	84.7
	17	562.3	566.8	491.8	34.4	38.4	58.4
630	11	632.3	637.2	511.6	58.4	64.8	106.9
	17	632.3	637.2	553.2	38.6	43.0	73.6