

**STRUCTURAL SURVEY REPORT:
621 BURNAGE LANE, MANCHESTER, M19 1WB**

JUNE 25

RP-H1137-01-R0

**STRUCTURAL SURVEY OF:
621 BURNAGE LANE, MANCHESTER, M19 1WB**

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REVISION HISTORY FOR RP-H1137-01-R0

Revision	Date	Comment	Originator	Checker	Authorised
R0	07/06/25	Initial Issue	KH	AH	✓

1 INTRODUCTION

Hadra Consulting Engineers (HCE) were commissioned by the Client, Ms. Shahbana Masud to undertake a non-intrusive, visual inspection of specific areas of interest at 621 Burnage Lane, Manchester, M19 1WB. It is understood that the Client has concerns relating to damage to the property arising from the presence of a large tree (London Plane) located approximately 6m from the front elevation of the property. The subject tree is located within the Client's property boundary and is adjacent to the public footpath.

The Client requested that we report on the structural significance of the defects in proximity to the subject tree and comment on its influence on the property. To aid our assessment, we were supplied with documentation (dated June/September 2021) regarding damage to the neighbouring property (i.e. 623 Burnage Lane) which was attributed to the subject tree.

Prior to the structural survey, a desktop survey was undertaken on the subject property and its surrounding areas. This was done via the utilisation of various mapping programmes, websites and reference documents. A review of Manchester City Council's tree preservation order database identified a TPO across the full extent of the Client's property (Ref: 16/00423/TPO), it is understood that the TPO was introduced in 2016 following discussions between the Client's late father, Mr. Iftikhar Khalid Masud and Manchester City Council.

2 EXECUTIVE SUMMARY

In our opinion, the property shows signs of having sustained widespread foundation movements by virtue of the slight inclinations and cracks observed throughout the property. In our opinion, there does not appear to be any significant signs to suggest that the structure is currently unstable however, the property is within the radial zone of influence of the tree (i.e. within 19.5m of the tree) and active structural movements appear to be taking place which may necessitate major and costly reconstruction works in the near future.

Additionally a supplementary CCTV drainage survey was also undertaken to investigate the condition of the subterranean drains within the Client's property in proximity to the subject tree; this survey confirmed that major root damage had occurred in multiple locations to underground drainage system adjacent to the front and side elevations of the property.

Due to restricted access, an inspection of the concealed sections of timber flooring, roof elements etc. was not possible at the time of our visit.

The external walls of the property show evidence of slight movements (i.e. up to 8mm per meter) and localised areas of stepped cracking <5mm wide particularly to the side elevation. It

also appears that a slight gap has developed between the original structure and newer ground floor extension. Basic level checks also confirm that the walls at these locations appear to have experienced slight 5mm - 8mm in 1m tilts. An external lintel above the side entrance was also observed to have cracked and will require remediation.

Cracks attributed to structural movements were noted throughout the property interior. Spot checks on the verticality of all of the interior walls indicated that they have undergone slight inclinations of up to 13mm per meter.

In our opinion, the defects observed throughout the property primarily relate the presence of the mature tree in close proximity to the front elevation. The CCTV drainage survey also identified significant root related blockages and damage at various areas of the sub terranean drainages system. The tree at the property boundary should be managed (removed or pruned) as recommended by a registered Arboriculturalist who is able to comply with BS 3998: 2010. The management of these trees would reduce this potential long term risk to the Client's property.

In considering the current extent of the damage to the property and the recommendations for remedial measures, reference should be made to the Building Research Establishment Digest No 251 (a copy of Table 1 detailing the classifications is enclosed in Appendix C of this report). The damage to the walls of this property have been categorised in accordance with the categories suggested in this digest and we consider that the extent of the damage comes within the range of Category 2. It follows from this classification that the recommendations for remedial action are to manage/ remove the mature tree and undertake further monitoring and upon cessation of further movement, repairs may be undertaken. It is our opinion that if these works are undertaken prior to the management/removal of the mature London Plane tree, it is likely that many of the defects observed may reoccur.

3 BACKGROUND INFORMATION

The subject property comprises a two-storey semi-detached structure, situated on Burnage Lane, a review of publicly available planning records indicate that the property was constructed between 1930 - 1949.

We have not conducted any prior inspections of the property and, as a result, are unaware of the specific history of any defects or remedial work that may have taken place.

The property appears to be of a conventional construction; the exterior main load bearing walls are of brick masonry cavity construction. The roof appears to be of a traditional timber construction with a slate covering.

At the time of inspection, details regarding the property's structural arrangement and foundations were unavailable. It is expected that the property's foundations consist of shallow spread footings placed directly on the natural sub-soils below ground level.

A perusal of historical borehole records from the British Geological Survey of a location within 200m of the Client's property (SJ89SE35) indicates that the natural ground between 1.5m – 7.5m below ground level comprises of "... *Brown Clay*" (overlain by 1.5m of made ground). A visual inspection of the ground to the rear of the Client's property suggests that the surface level soils comprise a clayey material however, the exact nature of the soil will require confirmation.

A mature London Plane tree was observed adjacent to the front of the property. The Client informed us that her late father Mr. Iftikhar Khalid Masud raised concerns to Manchester City Council regarding a number of issues detrimental to their property (i.e. health and safety, maintenance and the progressive structural damage related issues).

We are also aware that the neighbouring property i.e. 623 Burnage Lane experienced structural damage to its front elevation wall following the introduction of the TPO in 2016, the effects of the tree were independently assessed in a report by A.D. Marsland BSc (Hons). C.Eng. M.I Struct.E of AMSD Ltd dated September 2021 (Appendix D) which concluded following:

"Due to the damage that has and could still occur from the nearby tree, I would strongly recommend the tree be removed. It is obvious the tree is causing significant structural damage and is affecting the properties foundations and drainage system. Once the tree is removed, I would recommend the entire bay structure be underpinned due to the shallow foundations. The area where the large tree root has passed through the brickwork should also be rebuilt..."

The presence and effect of the mature London Plane tree on the Client's property is the primary subject of our survey.

3.1 PROPERTY LOCATION

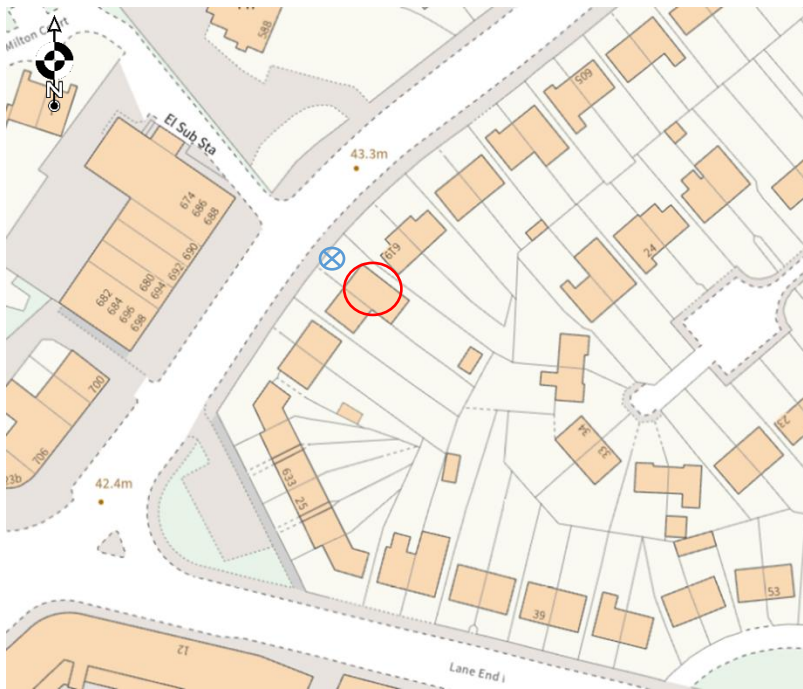


Figure 1 – Location Plan, indicative locations of mature London Plane tree shown in blue.



Figure 2 –Satellite View
(Grid Reference SJ8610891616)

4 INSPECTION DETAILS

The structural survey was undertaken on the afternoon of the 9th of June 2025 by Hadra Consulting Engineers (HCE).

Weather	Approximately 17°C, cloudy
Access	On foot
Areas Inspected	External elevations of property and property interior.
Specialist Equipment	Digital inclinometer, measuring tape, crack ruler, distometer and laser levelling equipment

4.1 REVIEW OF THE MATURE TREE ADJACENT TO THE FRONT ELEVATION AND DAMAGE TO UNDERGROUND DRAINAGE SYSTEM

- (i.) The subject tree was found to be growing in close proximity to the front elevation of the Client's property (i.e. 6.05m away). The influence distance (radius) of the tree is 19.5m as described in the NHBC chapter 4.2.
- (ii.) The tree was measured to have a trunk girth of 3.3m (i.e. diameter of 1.05m) and an estimated height of 19m.
- (iii.) The distance from the subject tree to the previously damaged areas of the neighbour's property (i.e. front bay structure) was noted as 7.85m. It should be noted that the Client's property is closer to the subject tree's zone of influence.
- (iv.) Significant undulations and displacements of the concrete flags linked to the trunk and lateral root growth of the subject tree were observed within the Client's property. Similar undulations and cracks to the surfacing were also observed on the pedestrian footpath adjacent to the tree. This also poses a trip hazard to the members of the public using this area.
- (v.) A CCTV drainage survey was undertaken on the 2nd of July 2025, which inspected a total of 42.46 metres of the drainage network at the property.
- (vi.) The investigation identified a number of defective areas at the front and side elevations that had been adversely affected by root growth.
- (vii.) The magnitude of blockage varied between 50% and 95%, relevant extracts of the CCTV footage have been included below. See Appendix E for the complete CCTV survey report.
- (viii.) In addition to the root related blockages identified within the underground sewer system, a number of displaced and cracked pipe sections were also observed adjacent to the areas of root damage.



Photo 1 – View of property frontage and mature London Plane



Photo 2 – Alternative view of tree, identifying its location within the Client's property boundary



Photo 3 – View of base of tree and damage to concrete flagstones and surfacing of public footway



Photo 4 – The distance between the tree and Client's property was measured as 6.05m. The zone of influence of this tree is 19.5m.



Photo 5 – View of raised flagstones and localised undulations in the front garden



Photo 6 – Undulations observed in the surfacing adjacent to the front and side elevations. The client highlighted that the drains were previously inspected and significant root ingress was observed.



Photo 7 – The distance between the tree and neighbouring property which had previously been damaged and subsequently repaired was measured as 7.85m. The zone of influence of this tree is 19.5m.



Photo 8 – The tree trunk girth was measured as approx. 3.3m i.e. 1.05m diameter.

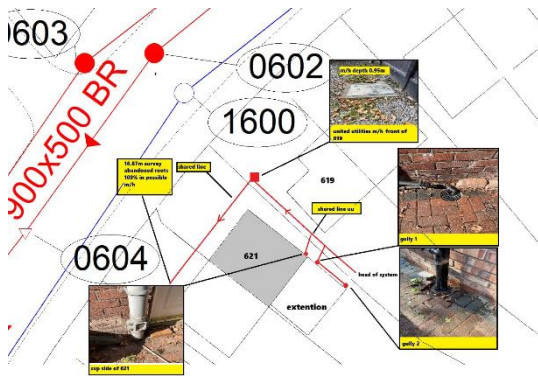


Photo 9 – Extract of the drainage survey general arrangement plan



Photo 10 – 50% blockage observed in the drain pipe at the front of the property (Ch. 6.59m)



Photo 11 – 95% blockage at the front of the property (Ch. 16.54m, see drainage report)



Photo 12 – 50% blockage to the side elevation (Ch. 0.14m)

4.2 REVIEW OF DEFECTS TO EXTERNAL ELEVATIONS

- (i.) A digital inclinometer was used to undertake verticality checks of the external elevation walls, these indicated that the walls had endured slight inclinations of up to 8mm per meter.
- (ii.) Slight separation between the front elevation wall and bay window structure was noted.
- (iii.) Slight separation between the original structure and newer rear extension was observed, however, in the absence of monitoring it is not known whether this linked to progressive ground movement or natural settlement of the new structure.
- (iv.) Diagonal stepped crack observed above the ground-floor 'segmental arch' lintel on the side elevation.
- (v.) The external brick masonry walls away from the above mentioned defects were found to be in a relatively fair condition.



Photo 13 – View of the front elevation of the property



Photo 14 – Inclination of front elevation wall measured having an incline of up to 8mm per meter

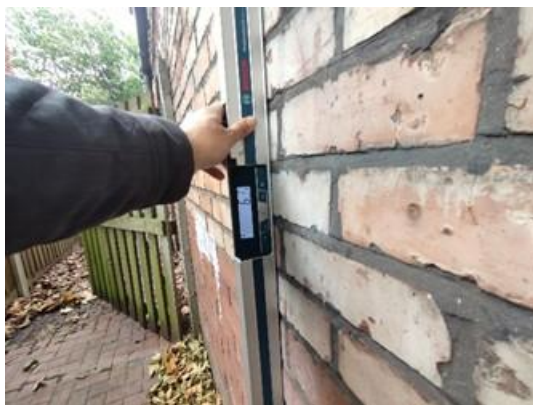


Photo 15 – Inclination of side elevation wall measured having an incline of up to 6mm per meter



Photo 16 – Diagonal stepped cracking noted above the ground-floor segmental arch lintel (cracking to right).

4.3 INTERNAL REVIEW OF PROPERTY

Ground Floor Level

- (i.) Verticality tests using a digital inclinometer were undertaken on all internal walls and readings between 3 to 10mm in 1m were generally noted.
- (ii.) There were widespread surface cracks indicative of structural movements. The condition of the cracks on the plastered finishes on the walls and ceilings indicate that movements are recent.
- (iii.) Checks on the horizontal levels to the rooms at the front of the property indicated slight inclinations of the floors, the bay window was noted to have a slight 7mm in 1m inclination. Diagonal cracks were also observed at walls perpendicular to the front elevation wall.
- (iv.) Diagonal cracks (<1mm wide) were observed on the party wall; this is indicative that movement is likely affecting both properties.
- (v.) Evident signs of floor inclination noted in the kitchen marble flooring; this was accompanied by a 20mm tapering gap between the flooring and skirting boards. The presence of failed sealant at this location strongly indicates that the floor was originally at a higher level.
- (vi.) Widespread cracks (approx. < 1.0mm wide) were noted in the brittle finishes in the ceiling and main load bearing walls.



Photo 17 – View of the room overlooking the front garden, cracks observed on walls perpendicular to front elevation wall and bay window construction measured/observed to incline slightly



Photo 18 – Horizontal checks of the bay window area indicate inclinations of 7mm per meter, cracks also noted on the walls perpendicular to this wall



Photo 19 – Widespread diagonal cracks (<1mm wide), indicative of ongoing movements

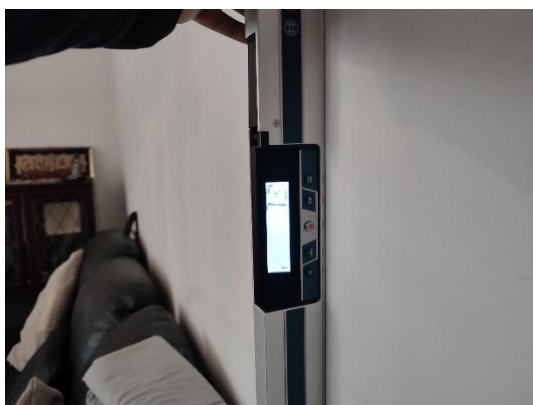


Photo 20 – Slight vertical inclinations of 7mm per meter to main load bearing walls.

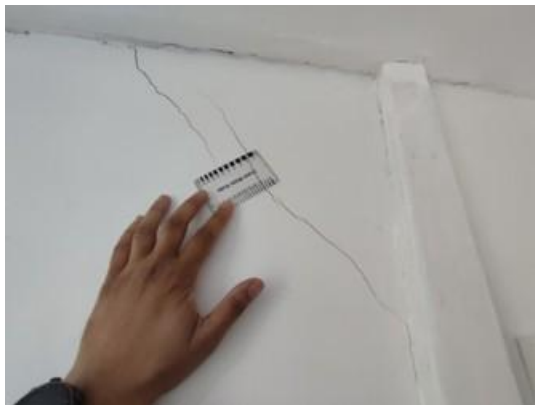


Photo 21 – Diagonal cracks measured as 1mm wide



Photo 22 – Diagonal cracks extending to party wall with neighbouring property



Photo 23 – Floor dropping in areas, 20mm gap noted between flooring and skirting boards, horizontal inclinations of up to 12mm per meter recorded.



Photo 24 – 20mm gap between flooring and skirting boards, the presence of sealant on the tiles is indicative that this has occurred in the recent past.

First Floor Level

- (i.) Inclinometer level readings taken on all loadbearing and interior dividing walls, inclinations of up to 13 mm per meter were recorded.
- (ii.) Horizontal level checks were undertaken on the floors of the various first floor rooms, readings between 2mm to 11mm per metre were recorded.
- (iii.) Widespread internal cracks ranging between 1mm to 2mm wide. The condition of the cracks indicate recent movement and were noted on all load bearing walls including the party wall.
- (iv.) Deep horizontal and diagonal cracks of up to 2mm per metre were observed in proximity to the first floor windows (i.e. beneath the windows and at corners).
- (v.) Numerous cracks in the brittle finishes on the ceiling were observed.



Photo 25 – View of bedroom overlooking mature tree at the front of the property



Photo 26 – Close up of bay window. Slight inclination of 4mm per metre observed. 2mm wide diagonal stepped crack located at the bottom corner of the window. Further diagonal crack observed behind the wardrobe at the top right of this window.



Photo 27 – View of the 2mm wide diagonal stepped crack to the bottom left corner of the window



Photo 28 – Crack measured as 2mm wide



Photo 29 – Inclination of floor recorded as 11mm per meter in areas.



Photo 30 – Verticality checks on the walls indicate inclinations of up to 13mm per metre in areas



Photo 31 – Horizontal cracks beneath the window and inclinations of 3mm per metre observed on the window sill

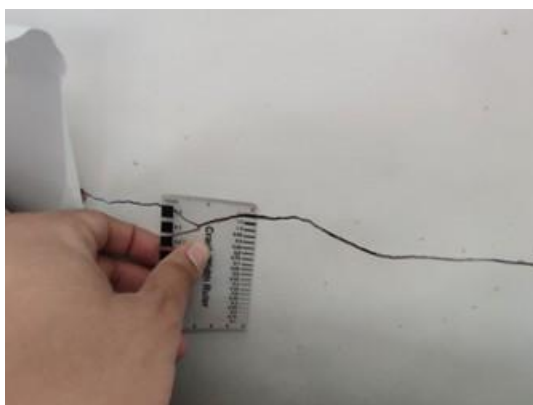


Photo 32 – The cracks beneath the window sill were observed to be relatively deep and 2mm wide

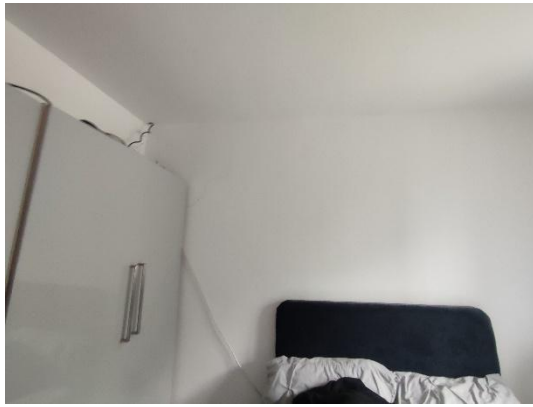


Photo 33 – Partially obscured diagonal crack extending across the side elevation wall, the crack was noted to be 1.5mm wide

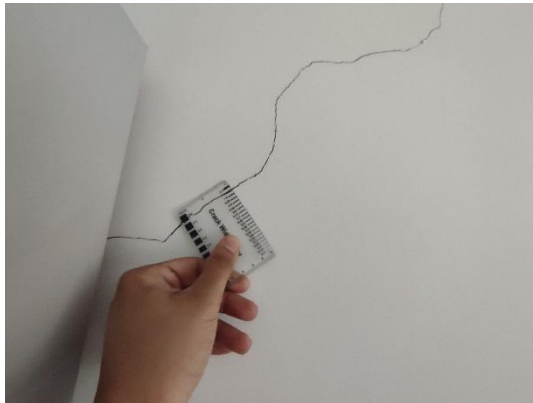


Photo 34 – Closeup of crack.

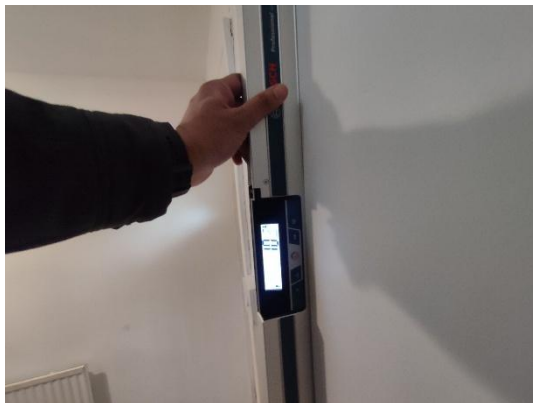


Photo 35 – Verticality checks indicate inclinations of 10mm per metre



Photo 36 – Diagonal cracks observed on the party wall indicative of slight movements of the foundations potentially affecting both properties

5 CONCLUSION AND RECOMMENDATIONS

In our opinion, the property appears to show signs of having suffered from slight foundation movements by virtue of the leans and cracks noted throughout the property. There do not appear to be any indications that suggest that movement has ceased and it is likely that ongoing movement related defects will reoccur. At this stage, there are no visible signs of structural instability however, as the property is in close proximity to the tree (i.e. approx. 6m) and the radial zone of influence of this tree is 19.5m, it is likely that the property will suffer from structural distress over time if suitable interventions are not undertaken to address the presence of the subject tree located at the front of the property.

In a general sense, the cracks observed within the property and the foundation movements that have caused them can be due to one or a combination of the following factors:

- i. Seasonal movement due to shallow depth of the foundations beneath ground level where they are founded on clay sub soils which are susceptible to changes of moisture content.
- ii. Consolidation settlement of the foundations due to the applied loadings from the building.
- iii. Differential settlement due to variable strata onto which the foundations are placed.
- iv. Subsidence related to changes in the volume of the soils due to an additional extraction of moisture from clay sub soils from water demand of the nearby trees.
- v. Subsidence related to a localised reduction in ground bearing pressure due to defective underground drainage.

Whilst detailed investigations will be needed to confirm the most likely cause for the movements observed in this specific property, we are of the opinion that the movement was as a result of **(iv)** and **(v)**.

In our opinion, the defects observed throughout the property primarily relate to the presence of the mature tree which is located in close proximity to the front elevation. The CCTV drainage survey also identified significant root related damages (i.e. blockages, cracks and displacements) in various areas of the sub terranean drainages system. The defects identified in the drainage system, may have conceivably exacerbated the situation by encouraging root growth but also may have caused some localised reduction in the load bearing capacity of sub soils beneath the foundations. The subject tree and its roots should therefore be managed (removed or pruned) as recommended by a registered Arboriculturalist who is able to comply

with BS 3998: 2010. The management of these trees would reduce this potential long term risk to the Client's property.

In considering the influence of trees on house foundations in clay soils, reference should be made to the Building Research Establishment Digest No 298, (Extract in Appendix B). It is well documented, that additional moisture can be extracted by tree root systems from clayey sub-soils particularly following prolonged periods of dry weather, and this can lead to localised movement of buildings adjacent to the zone of influence of trees. The management of the tree would reduce this potential risk to the Client's property.

When pruning or removing a tree, specialist advice should be sought from a registered Arboriculturalist as due account will need to be taken to minimise the future effects of any management activities (e.g. ground heave) on the surrounding ground. We are not aware of the precise nature of the underlying soils and cannot therefore guarantee that future movement related to the removal of any such trees will not take place.

It should be noted that these observations are made from limited visual inspection of the property at the time of inspection. We are not aware of the precise nature of the underlying soils or subterranean root systems and cannot therefore guarantee that future movement related to the tree will/ will not take place.

In considering the current extent of the damage to the property and the recommendations for remedial measures, reference should be made to the Building Research Establishment Digest No 251 (a copy of Table 1 detailing the classifications is enclosed in Appendix C of this report). The damage to the walls of this property have been categorised in accordance with the categories suggested in this digest and we consider that the extent of the damage comes within the range of Category 2. It follows from this classification that the recommendations for remedial action are to manage/ remove the mature tree and undertake further monitoring and upon cessation of further movement, repairs may be undertaken.

These recommended repairs are only valid if the movement of the foundations can be established as non-progressive and has now ceased. It is recommended that periodic inspection of the property should be carried out to ensure this is the case. We have not been instructed to carry out this and once the cracking has been filled/repointed, should this persist or deteriorate then we recommend that further investigations and appropriate action be undertaken. If movement of the front and side elevation walls continue, it is recommended that the base of the walls are uncovered and investigated.

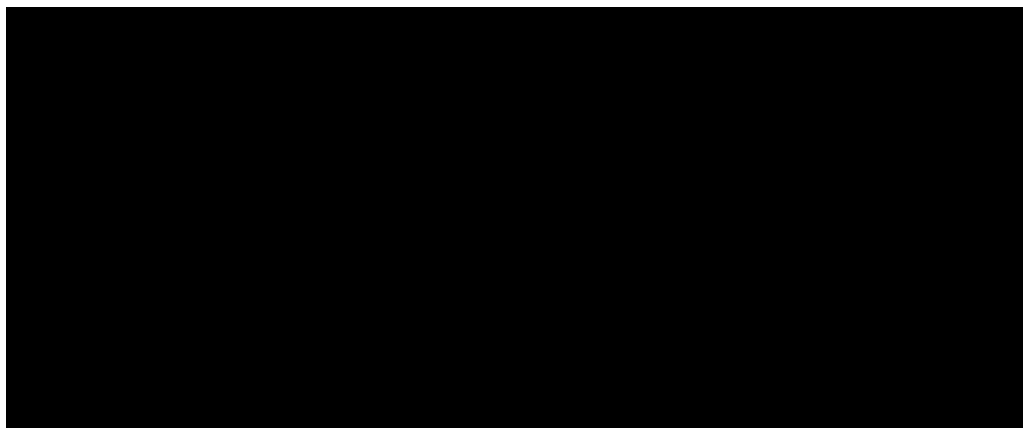
On the basis that the property is stable then repair works can be carried out as follows:

- i) With regards to the findings of the CCTV drainage survey, the drains are to be remediated and it is expected this will involve a combination of remote root removal techniques and where the root damage is excessive (i.e. thick root growth, cracked and displaced pipes), localised excavation and replacement of the affected sections of drainage.
- ii) Investigate the foundations of the property particularly the front and side elevation walls and underpin if required.
- iii) Replace/repair the cracked lintel above the entrance at the side elevation.
- iv) Repair surface undulations, raised flagstones and trip hazards to the front of the property.
- v) Masonry stitch repairs should be carried out to the areas of stepped cracking. Specification for masonry stitch repairs:
 - a. Rake out every third mortar bed joint across the width of the crack to a depth of 45mm install/resin bond stainless steel stitching bars and re-point all using a matching mortar not stronger than a 1:1:6 cement:lime:sand mix.
 - b. All stainless-steel stitching bars are to extend 450 mm past any cracks.
- vi) Along the line of the minor/ isolated cracking in the rear elevation, rake out the mortar joints to a depth of 25 mm and re-point with a matching mortar not stronger than a 1:1:6 mix of cement:lime:sand.
- vii) Any damaged masonry, bricks or blocks should be replaced with matching materials.
- viii) For internal cracks: Remove the plaster 100 mm each side of the cracks in the internal walls, rake out any cracked mortar joints to a depth of 15 mm and re-point using a matching mortar not stronger than a 1:1:6 cement:lime:sand mix. Fix expanded metal sheet over the area and make good the plasterwork.

It is our opinion that if these works are undertaken prior to the management/removal of the mature London Plane tree, it is likely that many of the defects may reoccur.

It should be noted that these observations are made from limited visual inspections and should further movement occur of a more significant nature, further investigations should be undertaken.

Signed on behalf of Hadra Consulting Engineers:



6 DISCLAIMER AND LIMITATIONS

- 6.1 *The structural survey and any associated documentation, correspondence etc. only concerns the subject property/ structures that we were appointed to inspect. Any other areas are explicitly not considered unless specifically noted otherwise.*
- 6.2 *The structural survey and any associated documentation, correspondence etc. only concerns the structural aspects of the subject property. (e.g. walls, floors and foundations). We have not concerned ourselves with the condition of non-structural elements (e.g. services, doors, windows, gutters, drainage, fixtures or fittings, architectural finishes or decorations) unless specifically noted otherwise.*
- 6.3 *This report is based on a visual examination of the subject property only, and did not include any intrusive investigations unless specifically noted otherwise. Where reasonably practicable, we have attempted to access and inspect all safely accessible areas.*
- 6.4 *Our inspection did not include the removal of the floorboards, floor, wall coverings, the excavation of trial holes, exposure of foundations or investigation of other inaccessible areas or areas what were not visible at the time of our survey. We are therefore unable to confirm that any such area of the subject property is currently free from defect.*
- 6.5 *The sampling of materials/building fabric from the subject property and any associated testing is beyond the scope of this structural survey report.*
- 6.6 *No testing or enquiries as to the presence of or susceptibility to pollution contamination, radiation, methane, radon and toxic mould, fungus or spore or other hazardous substances has been carried out.*
- 6.7 *This report (and any associated documentation, correspondence etc.) is only applicable to the condition and state of the subject property at the time of our survey; The professional views and opinions contained within this report may require revision if the subject property undergoes deterioration in the future (i.e. after the date of inspection).*
- 6.8 *This report is limited to the subject property. It does not consider the effects that adjoining properties may have on the subject property or vice versa. An inspections of adjoining properties can be made (independent of this commission) however, will require prior agreement with all stakeholders.*
- 6.9 *The recommendations contained within this report, do not constitute an exhaustive schedule of repair works and only refer to the structural repairs associated with the defects observed during our visual inspection (i.e. under the limitations of our inspection).*
- 6.10 *Regarding any recommended repairs, the Client should be aware that the required works must comply with the CDM Regulations 2015 and should be aware of the Client's explicit responsibilities.*

- 6.13 *This report does not concern specialist items such as the testing of services, dampness, asbestos, the presence of timber infestation/ rot, hazardous materials etc. Any comments regarding these items are to be taken as indicative and are to be confirmed by a specialist consultant or contractor.*
- 6.14 *This report is exclusively compiled for the use of our Client and is confidential to the Client. No responsibility is accepted to any third party for the whole or part of the contents of this report. No third party should rely on it, and if they choose to do so, do so at their own risk. For the avoidance of doubt, the Contracts (Rights of Third Parties) Act 1999 shall not apply to this contract.*
- 6.16 *If this report applies to an area of a specific defect, it should not be taken to include the whole of the structure.*
- 6.17 *The Client should note that this report is not a form of guarantee but is considered a professional opinion based on the findings of our visual inspection and under the limitations of our inspection. The Client should also be aware that, unless the entire property is dismantled, our findings are only be based on the areas visible and investigated and it is assumed that these investigated areas are representative.*
- 6.18 *The Client should note that liability to the Client, whether in Contract or Tort, shall not exceed the amount, if any, recoverable by way of indemnity insurance taken out by Hadra Consulting Engineers (i.e. HADRA LIMITED) at the time we received instruction from the Client.*

**APPENDIX A – DEFINITIONS,
TERMS AND MEASUREMENTS**

The following definitions are used where reference to cracks are made

<i>Hairline</i>	up to 0.1 mm wide
<i>Fine</i>	over 0.1 mm up to 1 mm wide
<i>Slight</i>	over 1 mm up to 5 mm wide
<i>Moderate</i>	over 5 mm up to 15 mm wide
<i>Severe</i>	over 15 mm up to 25 mm wide
<i>Very Severe</i>	over 25 mm wide

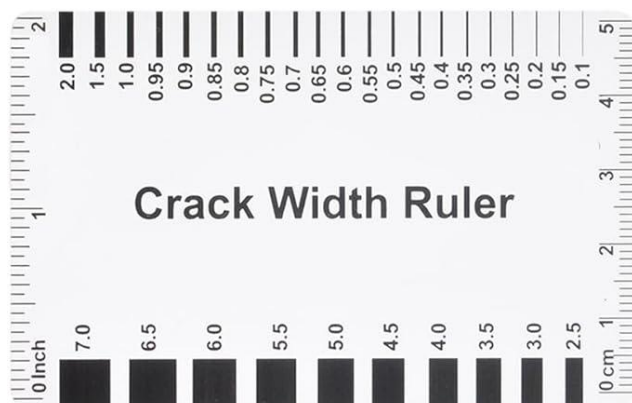
The following definitions are used where reference to movement are made

<i>Slight</i>	up to 10 mm per metre
<i>Moderate</i>	10 mm to 25 mm per metre
<i>Severe</i>	over 25 mm per metre

Environment or material condition	%rh	Equilibrium moisture content - %mc guidance values						Protimeter WME
		generic wood	generic plaster	generic brick	generic cement mortar	generic sand & cement screed	generic concrete	
safe air dry	25	6						6
	30	7						7
	35	8						8
	40	9						9
	45	10						10
	50	11						11
	55	12						12
	60	13				4.7	3.9	12
	65	14	0.1	1.0	1.5	5.1	4.2	13
	70	15	0.2	1.3	2.0	5.5	4.5	14
at risk	75	17	0.4	1.6	3.0	6.4	5.2	17
	80	18	0.6	2.4	4.0	6.8	5.4	18
	85	20	1.0	3.0	5.0	7.3	5.7	20
damp	90	23	1.5	4.0	6.0	8.0	6.0	23
	95	26	2.2	5.5	7.7	9.0	7.0	26
	100							27
								28
								relative relative relative 100

Protimeter WME - wood moisture equivalent. This is the theoretical %mc value that would be attained by a piece of wood in contact with and in moisture equilibrium with the material under test. Protimeter WME measurements can be used directly to establish if materials are in a dry, at risk or damp condition as the critical %mc thresholds for wood are known.

Where reference to a Protimeter is made, the following WME (Wood Moisture Equivalent) readings should be used as guidance.



Where reference to a crack width ruler is made in a photograph, the following should be used as guidance.

APPENDIX B – EXTRACTS FROM BRE DIGEST 298:
LOW RISE BUILDING FOUNDATIONS THE INFLUENCE OF TREES IN CLAY SOILS

Table 1 Risk of damage by different tree species			
Species	Max tree height H in metres	Max distance in metres for 75% of cases	Max distance in metres for 90% of cases
Oak	16 – 23	13	18
Poplar	24	15	20
Ash	23	10	13
Elm [•]	20 – 25	12	19
False acacia	18 – 20	8.5	10.5
Horse chestnut	16 – 25	10	15
Hawthorn	10	7	8.7
Lime	16 – 24	8	11
Willow	15	11	18
Beech	20	9	11
Plane	25 – 30	7.5	10
Apple, Pear	8 – 12	6	8
Sycamore, Maples	17 – 24	9	12
Cherries, Plums, Damsons, etc	6 – 12	6	7.5
Birch	12 – 14	7	8
Cypresses, Cupressus	18 – 25	3.5	5
Rowan, Service tree	8 – 12	7	8.5
• Ranking obtained by assuming a planting frequency of 1%			

**APPENDIX C – EXTRACTS FROM BRE DIGEST 251:
ASSESSMENT OF DAMAGE IN LOW-RISE BUILDINGS**

Assessment of damage in low-rise buildings with particular reference to progressive foundation movement

This Digest discusses the assessment and classification of visible damage resulting from structural distortion. The assessment is based on a description of work considered necessary to repair the building fabric; classification into six categories is recommended, taking into account the nature, location and type of damage.

The most common causes of damage are discussed. It is concluded that for damage of Category 2 or less, cracking may result from a combination of causes which are difficult to identify and the cost and effort involved in carrying out an identification would be disproportionate to the scale of the damage, except for circumstances where the movement is likely to be progressive. It is rare for damage to progress beyond Category 2; when it does ground movement is usually the cause. The various causes of ground movement giving rise to damage are described briefly and emphasis is placed on the identification of conditions where the movement might lead to progressive deterioration.

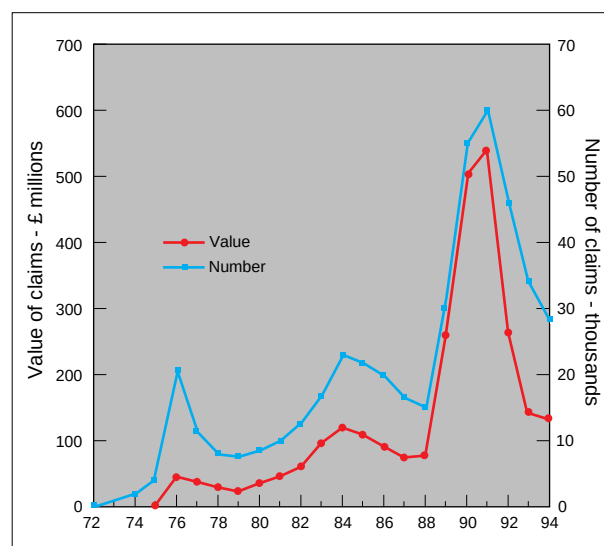
This Digest will assist building professionals, property valuers and insurance advisors both in putting building damage into its true perspective and in determining necessary action, either in the form of seeking expert advice or in recommending simple repairs.

The severe droughts of 1975/6 and 1989/90 brought to the public's attention the fact that low-rise buildings are susceptible to cracking of the materials from which the buildings are constructed. That widespread publicity and some alarm were generated reflects not so much the severity of the damage as the general ignorance of both causes of damage and the amounts which masonry structures can tolerate. It is important to realise that very few buildings, if any, exist without some form of damage. How much can be tolerated depends on a number of factors: the type of building, the function it is to perform, the location and nature of the damage, the expectations of the user and the cost of repair work in relation to the value of the building. Many of the ways in which cracking can be produced in buildings are discussed in Digests 359 and 361.

One of the many causes of damage is foundation movement resulting especially from the drying shrinkage of clay subsoil. This is not a new phenomenon and has been experienced many times in the past. However, the 1975/76 drought, whilst admittedly being more extensive than previous dry spells,

Fig 1 Annual value of insurance claims for subsidence and heave damage to housing

Note the substantial increase following 1989 and 1990 – dry years



Describe how the serviceability of the building has been impaired

For example, doors and windows jamming, window panes cracked, draughts and rainwater penetrating cracks, and service pipes fractured.

Give a thorough description of the materials of walls and finishes and their condition, especially that of mortar

Information of this type can often enable the identification of causes other than ground movement, for example shrinkage of concrete products, or differential thermal expansion of dissimilar materials, as well as assisting in the selection of suitable methods of structural repair.

Record details of the construction

This can have a very significant effect, on both degree and location of structural cracking. Every effort should be made to establish basic information about the structure, for example whether it has solid or cavity walls and the way in which the floor has been constructed. Whether or not the floor slab has been carried off the inner leaf, for example, or is floating (see Fig 7) can affect significantly the response of the structure to foundation movement, the way in which damage may occur and the form of remedial works.

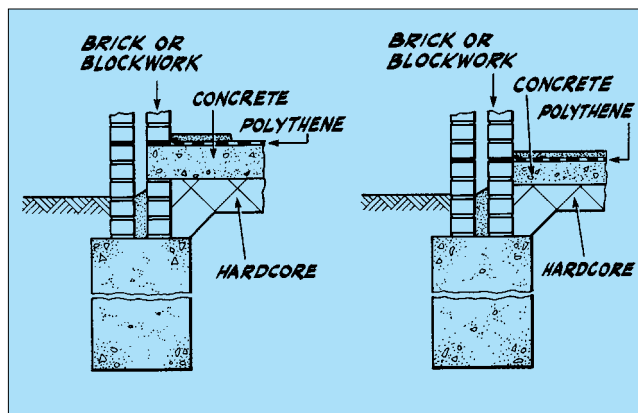


Fig 7 Alternative forms of floor construction

Where the cause of damage is believed to be foundation movement, additional factors may need to be considered depending on the scale of the damage sustained

It may be necessary to carry out a thorough examination of the foundations in the area of most movement and also to determine the nature of the underlying ground (see *Assessing the possibility of severe damage due to progressive ground movement*). In both these cases it may be necessary to call for the services of a suitably qualified civil or structural engineer.

CLASSIFICATION OF DAMAGE

Three broad categories of damage should initially be considered: 'aesthetic', 'serviceability' and 'stability'. The first comprises damage which affects only the appearance of the property. The second includes cracking and distortion which impair the weathertightness or other function of the wall (eg sound insulation of a party wall may be degraded), fracturing of service pipes and jamming of doors and windows. In the third category are cases where there is an unacceptable risk that some part of the structure will collapse unless preventative action is taken. Very often when damage is described, no distinction is made between these three categories, making it impossible to gauge the severity of the problem.

It is only a short step from the three, general descriptions of damage to the more detailed classification shown in Table 1; this defines six categories of damage, numbered 0 to 5 in increasing severity.

The classification is based on the ease of repair of visible damage to the building fabric and structure and has been derived from a number of previous studies⁽¹⁻⁵⁾. In order to classify visible damage it is, therefore, necessary when carrying out the survey to assess what type of work would be required to repair the damage both externally and internally. The following points should be noted:

- The classification applies only to brick or blockwork and is not intended to apply to reinforced concrete elements.
- The classification relates only to visible damage at a given time and not its cause or possible progression which should be considered separately.
- Great care must be taken to ensure that the classification of damage is not based solely on crack width since this factor alone can produce a misleading concept of the true scale of the damage. It is the ease of repair of the damage which is the key factor in determining the overall category of damage for the whole building.
- It must be emphasised that Table 1 relates to visible damage and more stringent criteria may be necessary where damage may lead to corrosion, penetration or leakage of harmful liquids and gases or structural failure.

For most cases, Categories 0, 1 and 2 can be taken to represent 'aesthetic' damage, Categories 3 and 4 'serviceability' damage and Category 5 'stability' damage. However, these relationships will not always exist since localised effects, such as the instability of an arch over a doorway, may influence the categorisation. Judgement is always required in ascribing an appropriate category to a given situation.

CAUSES OF DAMAGE

So far, only the reporting of damage and its classification have been discussed. However, it is the cause of the damage and whether it will be progressive that is of great concern. There are many causes of damage brought about by differential movements. Broadly, they can be divided into those associated with the structure itself, and those associated with the ground beneath the structure.

Causes associated with the structure include such items as:

- material shrinkage and creep;
- corrosion or decay;
- differential thermal movements in dissimilar materials;
- poor detail design or workmanship.

It is rare for damage due to such causes to exceed or to deteriorate beyond Category 2 in Table 1, except perhaps very locally in a building.

Causes associated with the ground include:

- ground subsidence and heave due to volume changes in clay soils;
- settlement and heave of floor slabs on unsuitable or poorly-compacted in-fill beneath the slab;
- instability of sloping ground;
- movement due to consolidation of poor ground or made-ground;
- mining subsidence;
- movement caused by nearby excavations;
- chemical attack on foundation concrete or erosion of fine soil particles due to the passage of water, for example from a leaking pipe.

Table 1 Classification of visible damage to walls with particular reference to ease of repair of plaster and brickwork or masonry

Crack width is one factor in assessing category of damage and should not be used on its own as a direct measure of it.

Category of damage	Description of typical damage <i>Ease of repair in italic type</i>
0	Hairline cracks of less than about 0.1 mm which are classed as negligible. <i>No action required.</i>
1	Fine cracks which can be treated easily using normal decoration. Damage generally restricted to internal wall finishes; cracks rarely visible in external brickwork. Typical crack widths up to 1 mm.
2	<i>Cracks easily filled. Recurrent cracks can be masked by suitable linings.</i> Cracks not necessarily visible externally; some external repointing may be required to ensure weather-tightness. Doors and windows may stick slightly and require easing and adjusting. Typical crack widths up to 5 mm.
3	Cracks which require some opening up and can be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather-tightness often impaired. Typical crack widths are 5 to 15 mm, or several of, say, 3 mm.
4	Extensive damage which requires breaking-out and replacing sections of walls, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably*. Walls leaning or bulging noticeably*, some loss of bearing in beams. Service pipes disrupted. Typical crack widths are 15 to 25 mm, but also depends on number of cracks.
5	Structural damage which requires a major repair job, involving partial or complete rebuilding. Beams lose bearing, walls lean badly and require shoring. Windows broken with distortion. Danger of instability. Typical crack widths are greater than 25 mm, but depends on number of cracks.

* Local deviation of slope, from the horizontal or vertical, of more than 1/100 will normally be clearly visible. Overall deviations in excess of 1/150 are undesirable.

Also included is differential settlement induced by unequal foundation pressures arising from such factors as extensions added to existing buildings or concentrations of load, for example under chimneys. Damage from these causes can fall within any of the categories described in Table 1.

Thus Category 2 damage can result from a variety of causes which are frequently very difficult to identify. Indeed, at this level damage may result from a combination of the above factors. If damage exceeds Category 2 it is often much easier to identify the cause (which is frequently associated with ground movement) and hence prescribe a suitable remedy.

Category 2 defines the stage above which repair work requires the services of a builder. For domestic dwellings, which constitute the majority of cases, damage at or below Category 2 does not normally justify remedial work other than the restoration of the appearance of the building. For the cause of damage at this level to be accurately identified it may be necessary to conduct detailed examinations of the structure, its materials, the foundations and the local clear ground conditions. Consequently, unless there are clear indications that damage is progressing to a higher level it may be expensive and inappropriate to carry out extensive work for what amounts to aesthetic damage.

Cases of progressive damage are rare and since they are mainly associated with ground movement a brief discussion of the factors involved follows. It should, however, be emphasised that it is a highly specialised topic usually requiring the advice of an expert structural or civil engineer. The aim of this discussion is to give advice on when to call in such an expert.

**APPENDIX D – STRUCTURAL ENGINEERS REPORT FOR
NO. 623 BURNAGE LANE**

ADM /151021



59 Constable Drive
Marple Bridge
Stockport
SK6 5BG
0161 449 0670
07925 304710

andrew-
marsland@sky.com

Ms J Bartlett
623 Burnage Lane
Manchester

Dear Ms Bartlett

Re 623 Burnage Lane Manchester-Structural Assessment of Cracking

I visited your property Thursday 16.9.21. The purpose of the visit was to inspect the cracking to the front of your property.

The property is a right-hand side semidetached residence over two levels.

Construction is load bearing masonry cavity walls. Timber suspended first floor. Slated roof supported on a timber hipped frame.

To the front elevation there is a bay window to the front room with a low-level roof over. There is a cantilever canopy above the front door.

To the front of the property is a garden area. There is a mature maple tree in the front of the neighbouring property's garden (No 621) 20m high and 10m away from the bay window. To the opposite side (No 625) there is silver birch tree 7m high and 5-7 m away from the bay window.

External inspection to the front of the property shows that in general the masonry dips at the gable corner.

From ground level to cill level the front of the bay window has been re-built. There is a near vertical crack on the lower right-hand side of the bay. The crack is 2- 3mm wide and travels from ground level to the underside of the cill. The joint in the concrete cill above the crack has opened to 10mm wide.

The brick above the front door is cracked. Diagonal cracks, 2-3mm wide have formed above the door and the bricks above the door opening have dropped.

Internal inspection of the front room shows cracking approximately 2-3mm wide in the bay window wall below cill level. There is also cracking at higher level at the junction between the hall wall and the front wall. Some hairline cracking as observed in the ceiling above the bay window.

Inspection of the ground floor hallway revealed hairline cracking in the plasterwork around the internal door casements. Cracking to the wall around the front door was also observed.

The front entrance door to the property was difficult to open and close, an indication that the door frame is distorted.

Upstairs the bathroom faces onto the front of the property. Cracking has formed around the window to the front elevation. Lower down the wall the joints in the tiling have opened.

A trial pit was excavated to expose the base of the bay window and to examine a rainwater pipe and gulley close to the bay window.

The underground connections of the pipe to the gulley were found to be tight with no signs of leakage.

The material removed from the pit was dry and slightly sandy.

At a depth of approximately 300mm below ground level a tree root was uncovered. The root was measured at 75mm in diameter and was found to travel in a direction towards the bay window wall and then running along the wall behind the gulley.

The dip in the masonry bed joints at the front corner of the property is old and not considered to have been caused by any recent movement of the structure. It is possible that the wall was originally built this way.

The cracking of the masonry above the front door and internally to the front of the hallway and in the upstairs bathroom is caused by the failure of the lintel above the front door. It is recommended that the lintel is replaced with a new proprietary lintel sized accordingly. The masonry could be repaired using crack stitching techniques however a better solution would be to re-build the masonry locally.

The hairline cracking to the internal doors in the hallway should be repaired with filler and re-decorated but observed to check for further movement.

The damage to the bay window has been caused by root damage from the tree in the neighbouring front garden. The root exposed in the trial pit has applied pressure on the base of the wall causing cracking and movement.

It is recommended that a trial trench is excavated 1m away from the front of the property to check for any more roots. An Arboriculturist should be consulted to advise on whether the roots can be severed without killing the tree and on an appropriate root barrier that could be installed to prevent further damage.

Once the root barrier has been installed it is advised that the masonry at the bottom of the bay window is rebuilt with a brick to match the brick used on the front elevation.

Yours Sincerely



A D Marsland
BSc (Hons). C.Eng. M.I Struct.E

AMSD Ltd



Photograph 1

Front Elevation



Photograph 2

Bottom of Bay Window



Photograph 3

Masonry above Front Door



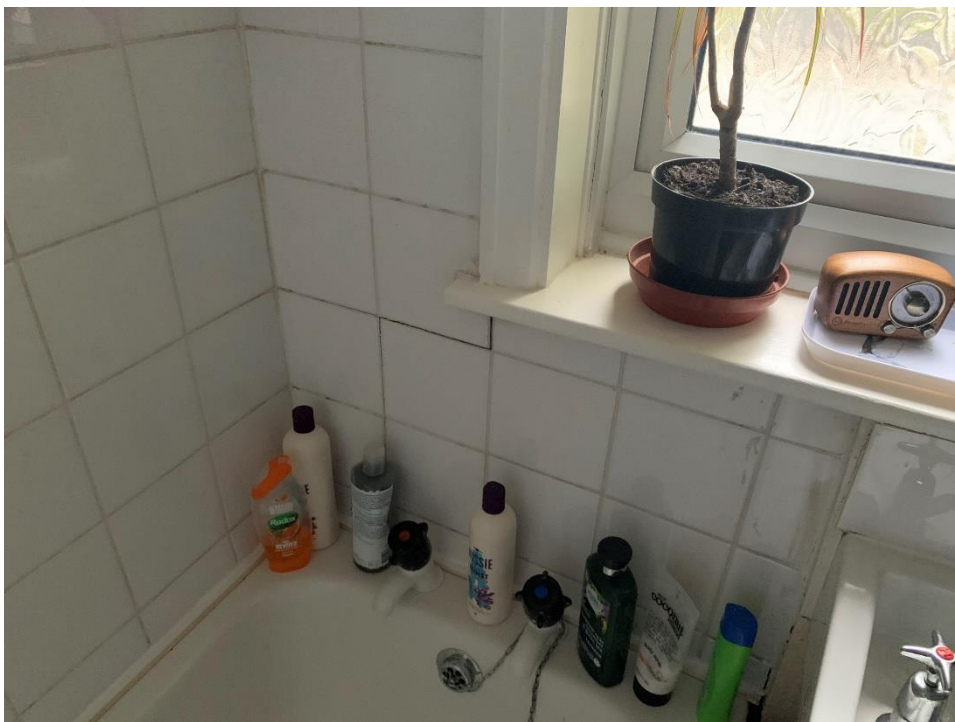
Photograph 4

Crack to Inside of Bay Window



Photograph 5

Crack at hall wall,



Photograph 6

Cracking to Tiling in Bathroom



Photograph 4

Trial Pit Showing Root



Photograph 4

Trial Pit with Root and Crack Shown

**APPENDIX E – CCTV
DRAINAGE SURVEY**

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Section: 5, ROP --- MH 619	22



/ Main sections

 Project name :
621 Burnage Lane M19 1LW

Project number :

Contact :

 Date :
02/07/2025

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
1	SVP	FOH		621 Burnage Lane		Vitrified clay	7.86	7.86
2	Gully	Shared		621 Burnage Lane		Vitrified clay	2.05	2.05
3	Gully 2	Gully 1		621 Burnage Lane		Polyvinyl chloride	5.99	5.99

Pipe size: CIRCULAR 100 = 15.9 m (15.9 m)

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
4	MH 619	D/S		621 Burnage Lane		Polyvinyl chloride	16.54	16.54
5	ROP	MH 619		621 Burnage Lane		Polyvinyl chloride	10.02	10.02

Pipe size: CIRCULAR 150 = 26.56 m (26.56 m)

All sections = 42.46 m (42.46 m)

Inspection Summary

Project Name: 621 Burnage Lane M19	Project number:	Contact:	Date: 02/07/2025	
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Total Length of sewer network	42.46 m
Inspected Length of sewer network	42.46 m
Not inspected Length of sewer network	0.00 m
Total Length of sewer network (abandoned)	0.00 m
Inspected Length of Sewer network (abandoned)	0.00 m
Not inspected Length of sewer network (abandoned)	0.00 m
Total Length of house connections (satellite)	0.00 m
Inspected Length of house connections (satellite)	0.00 m
Not inspected Length of house connections (satellite)	0.00 m
Number of Sections	5
Number of sections (abandoned)	0
Number of house connections	0
Number of Photos	32

Inspection Summary

Project Name: 621 Burnage Lane M19	Project Number:	Contact:	Date: 02/07/2025	
---------------------------------------	-----------------	----------	---------------------	--

Place: Road: U/S MH: D/S MH:	Manchester 621 Burnage Lane SVP FOH	Section length: Pipe length: Material: Shape:	7.86 m Vitrified clay Circular
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	0.00	MH	Start node type, manhole, reference number : SVP	0
	0.00	WL	Water level, 05% of the vertical dimension	0
	0.00	FCJ	Fracture, circumferential at joint, from 7 to 5 o'clock	3
	0.08	FCJ	Fracture, circumferential at joint, from 1 to 4 o'clock	3
	0.39	LD	Line deviates down Remarks: sharp	0
	2.39	REM	General remark Remarks: Joining Carrier Line	0
	4.10	DEG	Attached deposits, grease, from 9 to 3 o'clock, 5% cross-sectional area loss, Start	3
	4.60	RFJ	Roots, fine at joint	2
	5.30	RFJ	Roots, fine at joint	2
	5.86	RFJ	Roots, fine at joint	2
	6.48	RMJ	Roots, mass at joint, 50% cross-sectional area loss	5
	7.41	LL	Line deviates left Remarks: Slight	0
	7.86	DEG	Attached deposits, grease, from 9 to 3 o'clock, 5% cross-sectional area loss, End	3
	7.86	MHF	Finish node type, manhole reference number: FOH Remarks: MH Front of House (FOH)	0



Inspection Summary

Project Name: 621 Burnage Lane M19	Project Number:	Contact:	Date: 02/07/2025	
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Place: Road: U/S MH: D/S MH:	Manchester 621 Burnage Lane Gully Shared	Section length: Pipe length: Material: Shape:	2.05 m Vitrified clay Circular
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	Gully	0.00	LR	Line deviates right Remarks: slight	0
		0.00	OC	Start node type, other special chamber, reference number : Gully Remarks: Gully access	0
		0.01	CC	Crack, circumferential, from 7 to 5 o'clock	2
		0.13	DEC	Settled deposits, hard or compacted, 20% cross-sectional area loss Remarks: Grout	4
		0.14	JDL	Joint displaced, large	1
		0.81	FCJ	Fracture, circumferential at joint, from 7 to 5 o'clock	3
		1.52	JDL	Joint displaced, large	1
	Shared	2.05	OCF	Finish node type, other special chamber reference number: Shared Line Remarks: Complete Junction with shared line	0

Place: Road: U/S MH: D/S MH:	Manchester 621 Burnage Lane Gully 2 Gully 1	Section length: Pipe length: Material: Shape:	5.99 m Polyvinyl chloride Circular
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	Gully 2	0.00	OC	Start node type, other special chamber, reference number : Gully 2 Remarks: Gully Access	0
		0.00	WL	Water level, 05% of the vertical dimension	0
		0.93	WL	Water level, 20% of the vertical dimension	0
		5.25	WL	Water level, 10% of the vertical dimension	0
	Gully 1	5.99	OCF	Finish node type, other special chamber reference number: Gully 1 Remarks: Complete	0



Inspection Summary

Project Name: 621 Burnage Lane M19	Project Number:	Contact:	Date: 02/07/2025	
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Place: Road: U/S MH: D/S MH:	Manchester 621 Burnage Lane MH 619 D/S	Section length: Pipe length: Material: Shape:	16.54 m Polyvinyl chloride Circular
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	MH 619	0.00	MH	Start node type, manhole, reference number : MH 619	0
		0.00	WL	Water level, 05% of the vertical dimension	0
		0.99	RFJ	Roots, fine at joint	2
		2.98	JN	Junction, at 11 o'clock, diameter 100mm Remarks: Roots coming out from junction	0
		4.19	RMJ	Roots, mass at joint, 10% cross-sectional area loss	3
		4.19	FCJ	Fracture, circumferential at joint, from 11 to 5 o'clock	3
		5.42	RFJ	Roots, fine at joint	2
		5.83	DEEJ	Attached deposits, encrustation at joint, from 7 to 5 o'clock, 5% cross-sectional area loss	3
		5.83	FCJ	Fracture, circumferential at joint, from 11 to 1 o'clock	3
		6.67	DEEJ	Attached deposits, encrustation at joint, from 7 to 5 o'clock, 10% cross-sectional area loss	3
		7.85	RFJ	Roots, fine at joint	2
		9.24	JN	Junction, at 10 o'clock, diameter 100mm Remarks: Full of Roots	0
		10.30	JN	Junction, at 10 o'clock, diameter 100mm Remarks: Full of roots	0
		15.87	JN	Junction, at 9 o'clock, diameter 100mm	0
		16.45	LR	Line deviates right Remarks: Slight	0
		16.54	DES	Settled deposits, fine, 95% cross-sectional area loss Remarks: Roots	5
	D/S	16.54	OCF	Finish node type, other special chamber reference number: D/S Remarks: survey complete	0

Inspection Summary

Project Name: 621 Burnage Lane M19	Project Number:	Contact:	Date: 02/07/2025	
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Place: Road: U/S MH: D/S MH:	Manchester 621 Burnage Lane ROP MH 619	Section length: Pipe length: Material: Shape:	10.02 m Polyvinyl chloride Circular
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		0.00	MH	Start node type, manhole, reference number : MH 619	0
		0.00	WL	Water level, 05% of the vertical dimension	0
		0.01	RMJ	Roots, mass at joint, 50% cross-sectional area loss	5
		4.19	JN	Junction, at 3 o'clock, diameter 150mm	0
		5.03	JN	Junction, at 2 o'clock, diameter 100mm	0
		5.51	JN	Junction, at 10 o'clock, diameter 100mm	0
		10.02	JN	Junction, at 9 o'clock, diameter 100mm	0
		10.02	OCF	Finish node type, other special chamber reference number: ROP Remarks: Head of System Rear Of Property	0

Inspection report

Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 1	PLR SUFFIX: X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera :	Preset :	Cleaned :	Operator : Rob

Place : Road : Location Inspection	Manchester 621 Burnage Lane Gardens SVP (D/S) FOH	Location details: Catchment: NW Tape number : Pipe Length	U/S MH : SVP U/S Depth : D/S MH : FOH D/S Depth :
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Direction Use: Year laid : Purpose : Total length :	Combined Z Routine inspection of condition 7.86 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 100 mm Vitrified clay
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Comment :

1:70	Position	Observation	Grade						
	0.00	Start node type, manhole, reference number : SVP	0						
	0.00	Water level, 05% of the vertical dimension	0						
	0.00	Fracture, circumferential at joint, from 7 to 5 o'clock	3						
	0.08	Fracture, circumferential at joint, from 1 to 4 o'clock	3						
	0.39	Line deviates down Remarks: sharp	0						
	2.39	General remark Remarks: Joining Carrier Line	0						
	4.10	S01 Attached deposits, grease, from 9 to 3 o'clock, 5% cross-sectional area loss, Start	3						
	4.60	Roots, fine at joint	2						
	5.30	Roots, fine at joint	2						
	5.86	Roots, fine at joint	2						
	6.48	Roots, mass at joint, 50% cross-sectional area loss	5						
	7.41	Line deviates left Remarks: Slight	0						
	7.86	F01 Attached deposits, grease, from 9 to 3 o'clock, 5% cross-sectional area loss, End	3						
	7.86	Finish node type, manhole reference number: FOH Remarks: MH Front of House (FOH)	0						
0 m // 00:00:01									
0.08 m // 00:00:13									
2.39 m // 00:00:36									
4.1 m // 00:00:46									
4.6 m // 00:00:49									
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	1	2	0.94	7.4	3



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 1	PLR Suffix : X
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Photo: 1_1_4_A.jpg, 00:00:01
 0m, Fracture, circumferential at joint, from 7 to 5 o'clock



Photo: 1_1_5_A.jpg, 00:00:13
 0.08m, Fracture, circumferential at joint, from 1 to 4 o'clock



Photo: 1_1_9_A.jpg, 00:00:36
 2.39m, General remark Remarks: Joining Carrier Line



Photo: 1_1_10_A.jpg, 00:00:46
 4.1m, Attached deposits, grease, from 9 to 3 o'clock, 5% cross-sectional area loss, Start



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 1	PLR Suffix : X
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Photo: 1_1_11_A.jpg, 00:00:49
4.6m, Roots, fine at joint

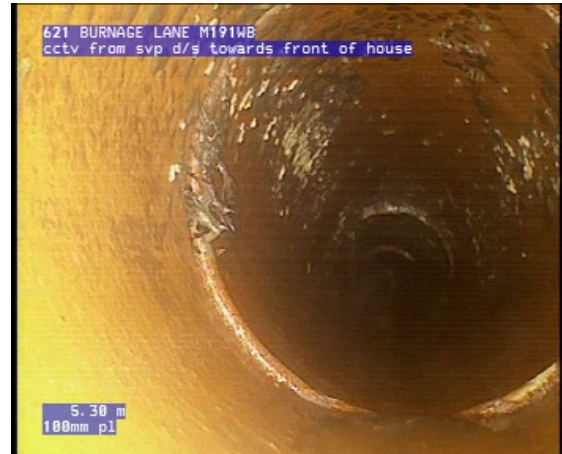


Photo: 1_1_12_A.jpg, 00:00:53
5.3m, Roots, fine at joint



Photo: 1_1_13_A.jpg, 00:00:59
5.86m, Roots, fine at joint



Photo: 1_1_14_A.jpg, 00:01:07
6.48m, Roots, mass at joint, 50% cross-sectional area loss



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 1	PLR Suffix : X
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Photo: 1_1_17_A.jpg, 00:01:40

7.86m, Finish node type, manhole reference number: FOH

Remarks: MH Front of House (FOH)

Inspection report

Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 2	PLR SUFFIX: X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Operator : Rob

Place : Road : Location Inspection	Manchester 621 Burnage Lane Gardens Gully (D/S) Shared	Location details: Catchment: NW Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	Gully 0.95 Shared
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Direction Use: Year laid : Purpose : Total length :	Surface water Z Routine inspection of condition 2.05 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 100 mm Vitrified clay
--	---	--	---

Comment :

1:50	Position	Observation	Grade						
Depth: 0.95									
	Gully	Line deviates right Remarks: slight	0						
	0.00	Start node type, other special chamber, reference number : Gully Remarks: Gully access	0						
	0.01	Crack, circumferential, from 7 to 5 o'clock	2						
	0.13	Settled deposits, hard or compacted, 20% cross-sectional area loss Remarks: Grout	4						
	0.14	Joint displaced, large	1						
	0.81	Fracture, circumferential at joint, from 7 to 5 o'clock	3						
Shared	1.52	Joint displaced, large	1						
	2.05	Finish node type, other special chamber reference number: Shared Line Remarks: Complete Junction with shared line	0						
			0.13 m // 00:00:16						
			0.14 m // 00:00:19						
		0.81 m // 00:00:26							
		1.52 m // 00:00:32							
		2.05 m // 00:00:41							
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	10	4.88	10	2	1	5	2.44	5	4



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 2	PLR Suffix : X
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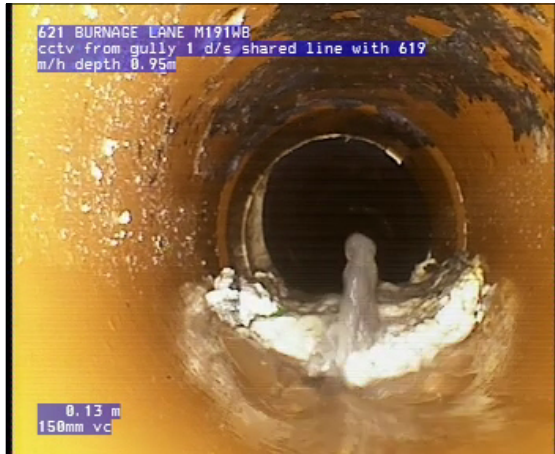


Photo: 3_3_22_A.jpg, 00:00:16
 0.13m, Settled deposits, hard or compacted, 20% cross-sectional area loss
 Remarks: Grout



Photo: 3_3_23_A.jpg, 00:00:19
 0.14m, Joint displaced, large

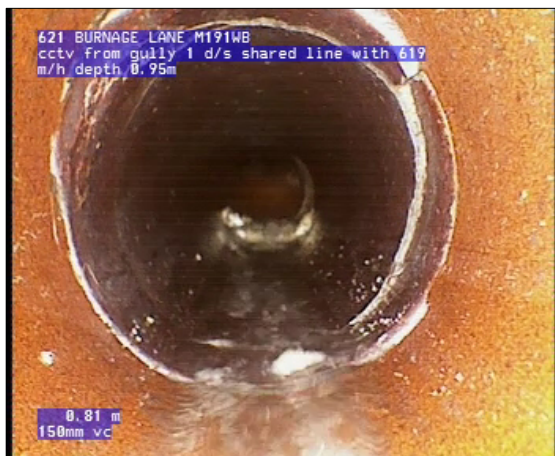


Photo: 3_3_24_A.jpg, 00:00:26
 0.81m, Fracture, circumferential at joint, from 7 to 5 o'clock



Photo: 3_3_25_A.jpg, 00:00:32
 1.52m, Joint displaced, large



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 2	PLR Suffix : X
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Photo: 3_3_26_A.jpg, 00:00:41

2.05m, Finish node type, other special chamber reference
 number: Shared Line Remarks: Complete Junction with shared
 line

Inspection report

Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 3	PLR SUFFIX: X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Operator : Rob

Place : Road : Location Inspection	Manchester 621 Burnage Lane Gardens Gully 2 (D/S) Gully 1	Location details: Catchment: NW Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	Gully 2 Gully 1
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Direction Use: Year laid : Purpose : Total length :	Surface water Z Routine inspection of condition 5.99 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 100 mm Polyvinyl chloride
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Comment :

1:56

Position

Observation

Grade

Gully 2

0.00

0.00

0.93

5.25

5.99

Gully 1

Start node type, other special chamber, reference number : Gully 2 Remarks: Gully Access

Water level, 05% of the vertical dimension

Water level, 20% of the vertical dimension

Water level, 10% of the vertical dimension

Finish node type, other special chamber reference number: Gully 1 Remarks: Complete

0

0

0

0

0

621 Burnage Lane 111110

Cctv from gully 2 to Gully 1

5.99 m

100mm p1

5.99 m // 00:01:34

STR no def

STR peak

STR mean

STR total

STR grade

SER no def

SER peak

SER mean

SER total

SER grade

0

0

0

0

1

0

0

0

0

1



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 3	PLR Suffix : X
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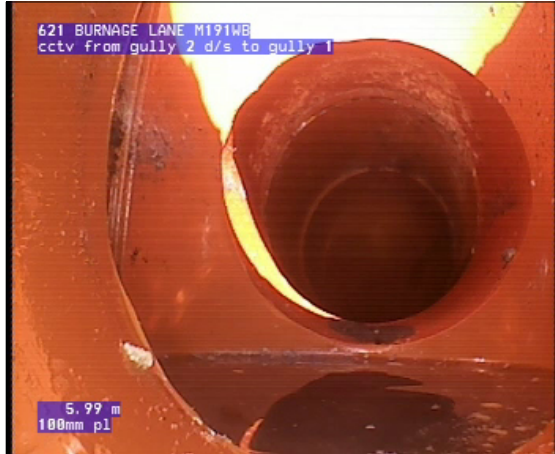


Photo: 4_4_31_A.jpg, 00:01:34

5.99m, Finish node type, other special chamber reference
number: Gully 1 Remarks: Complete

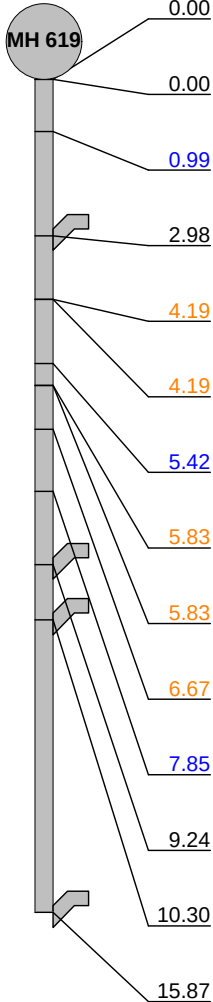
Inspection report

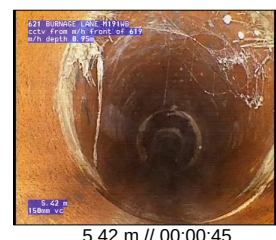
Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 4	PLR SUFFIX: X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Operator : Rob

Place : Road : Location Inspection	Manchester 621 Burnage Lane Gardens MH 619 (D/S) D/S	Location details: Catchment: NW Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	MH 619 0.95 D/S
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Direction Use: Year laid : Purpose : Total length :	Combined Z Routine inspection of condition 16.54 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 150 mm Polyvinyl chloride
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Comment :

1:144 Position	Observation	Grade
Depth: 0.95		
		
0.00	Start node type, manhole, reference number : MH 619	0
0.00	Water level, 05% of the vertical dimension	0
0.99	Roots, fine at joint	2
2.98	Junction, at 11 o'clock, diameter 100mm Remarks: Roots coming out from junction	0
4.19	Roots, mass at joint, 10% cross-sectional area loss	3
4.19	Fracture, circumferential at joint, from 11 to 5 o'clock	3
5.42	Roots, fine at joint	2
5.83	Attached deposits, encrustation at joint, from 7 to 5 o'clock, 5% cross-sectional area loss	3
5.83	Fracture, circumferential at joint, from 11 to 1 o'clock	3
6.67	Attached deposits, encrustation at joint, from 7 to 5 o'clock, 10% cross-sectional area loss	3
7.85	Roots, fine at joint	2
9.24	Junction, at 10 o'clock, diameter 100mm Remarks: Full of Roots	0
10.30	Junction, at 10 o'clock, diameter 100mm Remarks: Full of roots	0
15.87	Junction, at 9 o'clock, diameter 100mm	0



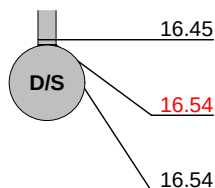
Inspection Report

Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 4	PLR : X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Grade:

1:144 Position

Observation

Grade



Line deviates right Remarks: Slight

0

Settled deposits, fine, 95% cross-sectional area loss Remarks: Roots

5

Finish node type, other special chamber reference number: D/S Remarks: survey complete

0

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	1	10	0.6	10	5



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 4	PLR Suffix : X
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Photo: 5_5_34_A.jpg, 00:00:09
0.99m, Roots, fine at joint



Photo: 5_5_35_A.jpg, 00:00:21
2.98m, Junction, at 11 o'clock, diameter 100mm Remarks:
Roots coming out from junction



Photo: 5_5_36_A.jpg, 00:00:32
4.19m, Roots, mass at joint, 10% cross-sectional area loss

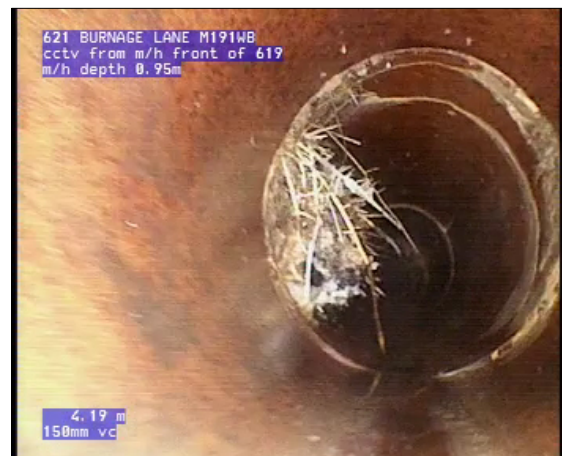


Photo: 5_5_37_A.jpg, 00:00:32
4.19m, Fracture, circumferential at joint, from 11 to 5 o'clock



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 4	PLR Suffix : X
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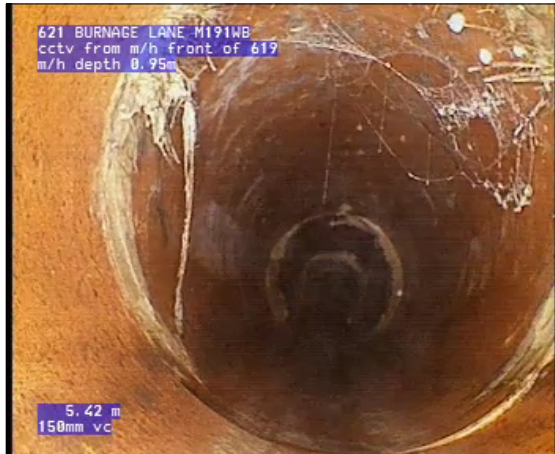


Photo: 5_5_38_A.jpg, 00:00:45
 5.42m, Roots, fine at joint

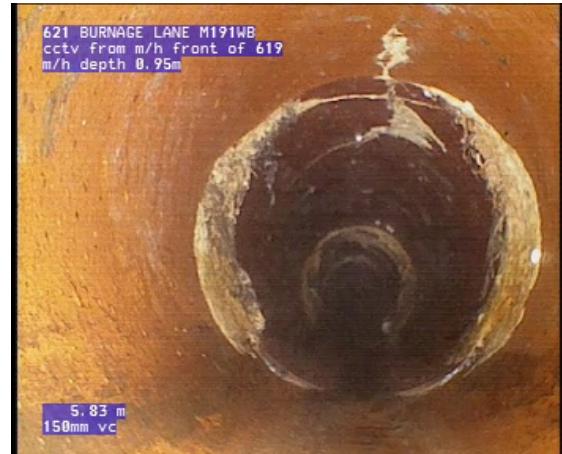


Photo: 5_5_39_A.jpg, 00:00:48
 5.83m, Attached deposits, encrustation at joint, from 7 to 5 o'clock, 5% cross-sectional area loss



Photo: 5_5_40_A.jpg, 00:00:49
 5.83m, Fracture, circumferential at joint, from 11 to 1 o'clock



Photo: 5_5_41_A.jpg, 00:00:53
 6.67m, Attached deposits, encrustation at joint, from 7 to 5 o'clock, 10% cross-sectional area loss



Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
Manchester	621 Burnage Lane		4	X

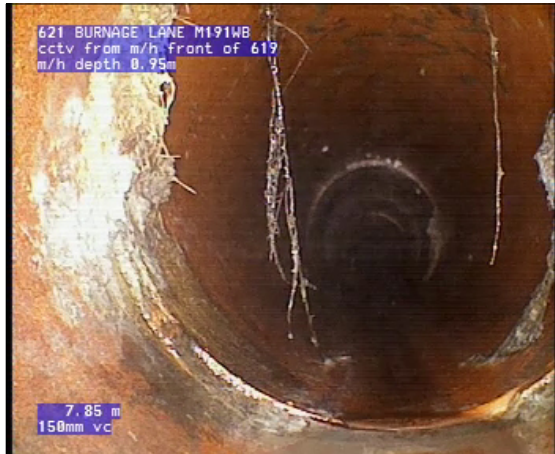


Photo: 5_5_42_A.jpg, 00:01:02
 7.85m, Roots, fine at joint



Photo: 5_5_43_A.jpg, 00:01:12
 9.24m, Junction, at 10 o'clock, diameter 100mm Remarks: Full of Roots



Photo: 5_5_44_A.jpg, 00:01:24
 10.3m, Junction, at 10 o'clock, diameter 100mm Remarks: Full of roots

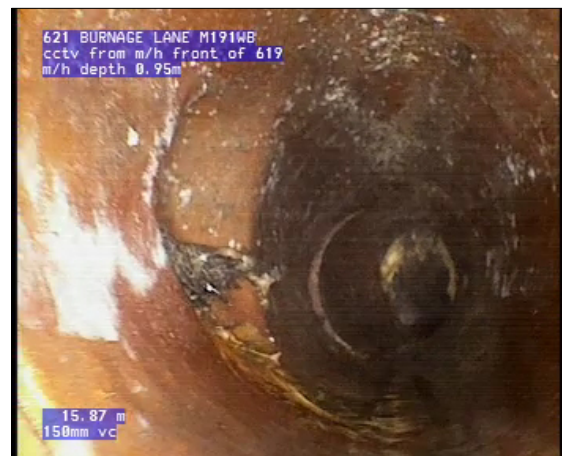


Photo: 5_5_45_A.jpg, 00:02:18
 15.87m, Junction, at 9 o'clock, diameter 100mm



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 4	PLR Suffix : X
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Photo: 5_5_49_A.jpg, 00:02:47

16.54m, Finish node type, other special chamber reference number: D/S Remarks: survey complete

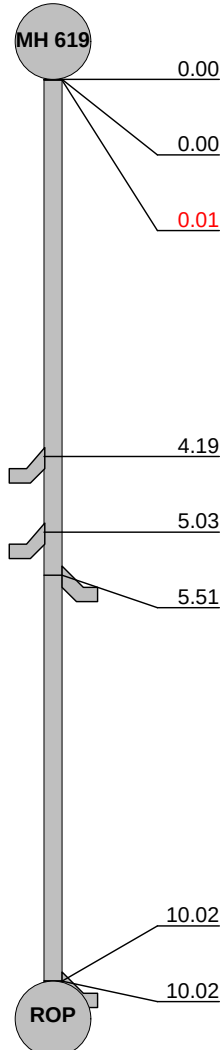
Inspection report

Date :	Job number :	Weather : no rain or snow	Operator : Rob	Section number : 5	PLR SUFFIX: X
Weather no rain or snow	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Operator : Rob

Place : Road : Location Inspection	Manchester 621 Burnage Lane Gardens MH 619 (U/S) ROP	Location details: Catchment: NW Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	ROP MH 619
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Direction Use: Year laid : Purpose : Total length :	Combined Z Routine inspection of condition 10.02 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 150 mm Polyvinyl chloride
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Comment :

1:84	Position	Observation	Grade						
	0.00	Start node type, manhole, reference number : MH 619	0						
	0.00	Water level, 05% of the vertical dimension	0						
	0.01	Roots, mass at joint, 50% cross-sectional area loss	5						
	4.19	Junction, at 3 o'clock, diameter 150mm	0						
	5.03	Junction, at 2 o'clock, diameter 100mm	0						
	5.51	Junction, at 10 o'clock, diameter 100mm	0						
	10.02	Junction, at 9 o'clock, diameter 100mm	0						
	10.02	Finish node type, other special chamber reference number: ROP Remarks: Head of System Rear Of Property	0						
									
									
									
									
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1



Inspection pictures

Place : Manchester	Road : 621 Burnage Lane	Date :	Section number : 5	PLR Suffix : X
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Photo: 6_6_52_A.jpg, 00:00:05
0.01m, Roots, mass at joint, 50% cross-sectional area loss



Photo: 6_6_53_A.jpg, 00:00:14
4.19m, Junction, at 3 o'clock, diameter 150mm



Photo: 6_6_54_A.jpg, 00:00:15
5.03m, Junction, at 2 o'clock, diameter 100mm



Photo: 6_6_55_A.jpg, 00:00:17
5.51m, Junction, at 10 o'clock, diameter 100mm

Date:	Job # :	Weather : no rain or snow	Operator : Rob	Section # : 5	Section name :
Present :	Vehicle : KX13 ZGM	Camera : Push Rod Camera	Preset :	Cleaned :	Rate :
Street 1 : 621 Burnage Lane		City : Manchester		Section type :	
Street 2 :		Map # 1 :		Map # 2 :	
VCR # :		Media # :		US MH : ROP	
DS MH : MH 619		Section length : 10.02 m		Joint length :	
Remark :					

