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Title: Recommendations for Phase 2 Conservation and Restoration Works to the Manchester Murals by Ford Madox Brown

Doc number: OTH-HIR-TH-XX-RPT-X-0008

Status: For Approval

Rev: P01

Document Type: REPORT

Date: 24/02/2020

Issue History:

Revision Nr	Details	Date	Created By	Check by
P01	Document created	24/02/2020	Hirst Conservation	

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Manchester Town Hall
Our Town Hall Project

Recommendations for Phase 2 Conservation and Restoration Works to the Manchester Murals by Ford Madox Brown

January 2020

Hirst Conservation
Manchester Town Hall

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Company Registration No. 09797372 (Inc England)

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1. Introduction

The following document outlines the methodology proposed by Hirst Conservation for the conservation and restoration of twelve murals painted by Ford Madox Brown, located in the Great Hall of Manchester Town Hall. Hirst Conservation was commissioned by Lendlease to undertake Phase 1 Emergency Consolidation Works to the murals, by Ford Madox Brown in November 2019.

The project will hereby be referred to as Phase 2 Conservation and Restoration Works.

The conservation proposals for Phase 2 are based primarily on two Condition Surveys of the murals which were undertaken by Hirst Conservation in February and November 2019. The November survey was made immediately prior to Phase 1 Emergency Consolidation Works, during which the murals were stabilised and protected in preparation for major refurbishment works being undertaken at the Town Hall. The expected date of completion for these works is 2024.

The recommendations have been made following a programme of assessment and testing which was carried out by Hirst Conservation in November 2019, with the objective of conserving the murals to presentation standard. At least four years will pass before the recommended treatments are implemented. It is possible that some alterations in the condition of the murals may occur during this time; a further condition survey is therefore recommended following removal of the protective facing, after which a reassessment of these recommendation will be required.

Scope of Works:

The objective of the Phase 2 Conservation and Restoration Works is to conserve the murals to presentation standard subsequent to the refurbishment works to the Town Hall. This should include the following:

- Removal of temporary facing paper and clearing of facing adhesive.
- Condition survey to identify any additional defects to the murals which may have occurred during the refurbishment works.[1]
- Review of the Conservation Recommendations and costs for Phase 2, and update as required.
- Consolidation of flaking paint (if required).
- Stabilisation of detached canvas section, painting number 11 (Bridgewater Canal).
- Removal of overall layer of surface dirt.
- Review of cleaning strategy following removal of overall layer of surface dirt.

[1] It is recommended to undertake high resolution rectified photography survey to produce measured images of each individual mural following the removal of the temporary protection. These should form the bases for any future recording.

- Removal of further deposits and residues from paint surface (if required).
- Filling of the most prominent losses in the paint layers.
- Review of the level of retouching required following removal of surface dirt.
- Retouching of filling material.
- Retouching to areas of damage and physical deterioration to a level defined by review.
- Review and interpretation of environmental monitoring data (if applicable).
- Continuous documentation of all areas of work to the murals to be presented in a detailed report following the completion of Phase 2 Conservation and Restoration Works, including recommendations for future maintenance and care.

Phase 2 Conservation and Restoration Works recommendations are designed to bring the murals to presentation standard following an extended period of direct protection during the extensive refurbishment of the Town Hall.

The recommendations are based on two Condition surveys made by Hirst Conservation, and on a programme of on-site testing during November 2019, prior to the facing of the paintings.

- *1.024 Record of Condition and Recommendations for Manchester Town Hall Murals by Ford Madox Brown'*, Hirst Conservation, (unpublished report, February 2019).
- *Phase 1: Emergency Consolidation & Protection works Pre-works Condition Survey & Record of Emergency Consolidation and Protection Procedures, Manchester Town Hall Murals by Ford Madox Brown,* Hirst Conservation, (unpublished report, January 2020).

2. Recommendations: Phase 2 Conservation and Restoration Works

2.1. Access

Mobile tower scaffolds will be required to access the murals.

2.2. Protection of the working area

It is essential that the working area is kept clean and tidy at all times to mitigate the risk of trips, slips and falls. All materials should be kept in labelled containers, in appropriate storage containers. Where required, the surrounding building fabric should be protected with flame retardant polythene sheeting, or similar approved material.

2.3. Removal of facing.



A protective facing was applied to the surface of the murals during Phase 1 to protect them from dust, and to provide support to the paint layers should any flaking occur during the extensive refurbishment works. The facing materials used were acid free Japanese tissue adhered with Klucel G [2] (8% solution in de-ionised water).

The facing should be removed by dampening the tissue with deionised water and gently peeling back. Great care should be taken during this process; the tissue should slide off without force and should not be tugged or pulled. Any fragments of paint that may have become loose will remain attached to the facing tissue, and can be carefully positioned back on the paint surface and reattached using the process described in Section 2.6.

Residues of the Klucel G adhesive should be thoroughly removed from the paint surface using de-ionised water applied with cotton swabs. The cleared area should then be dried with cotton wool.

The sequence of facing for Mural 1-7 is located in Appendix 1. On murals 8-12, the squares of facing tissue were applied vertically from top to bottom, starting in the top left corner and ending in the lower right corner. Smaller pieces of tissue were then applied horizontally along the length of the lower dado rail and to small rips in the facing. The facing should be removed in reverse order to avoid unnecessary stress being placed on the paint surface.

2.4. Condition Survey

An updated Condition Survey is required following the removal of the facing to assess any deterioration that may have occurred in the paintings since November 2019, and to allow an appraisal of the recommendations given in this document.

This updated Condition Survey will be based on three previous surveys:

[2] Klucel G is a water-based hydroxypropyl cellulose adhesive.

- *Phase 1: Emergency Consolidation & Protection works Pre-works Condition Survey & Record of Emergency Consolidation and Protection Procedures, Manchester Town Hall Murals by Ford Madox Brown,* Hirst Conservation, (unpublished report, January 2020).
- *1.024 Record of Condition and Recommendations for Manchester Town Hall Murals* by Ford Madox Brown', Hirst Conservation, (unpublished report, February 2019).
- *Conservation Report for the Manchester Town Hall Murals by Ford Madox Brown*, David Everingham Conservation Ltd., (unpublished report, 2015).

These three surveys are to be used as a datum line by which to assess any further deterioration that may have occurred to the paintings since November 2019, and to provide a record of their condition prior Phase 2 works.
It is anticipated that further defects will consist principally of the detachment of minute flakes of paint, the majority of which will have been readhered during the removal of the facing. Small areas of further incipient flaking may be observed, and can be recorded accordingly on amended diagrams.

Continuous documentation of the murals should be maintained during works and should consist of the following:

Photographic recording: Photographic recording provides a readily accessible format for future comparison of condition. Digital photography will be used, but to ensure that the content format does not become obsolete, it is essential that printed copies of the most significant images are included in the final report.

Each mural should be photographed in diffuse and raking visible light. Ultraviolet light should be utilised where applicable to record specific fluorescence of overpaints, retouching or surface coatings. A general overview photograph should be provided as a minimum[3], supplemented by detailed photographs of areas requiring attention during treatment. The same areas will be photographed during and after treatment to provide a clear picture of the extent and impact of conservation repair.

Diagrammatic recording: All types of treatment and their extent should be clearly marked on photographs, and the treatment record diagrams attached to the final treatment report at the end of Phase 2. This will provide important information for the future carers and/or conservators on the locations of all materials introduced into the fabric of the murals, their chemical character and the method of application.

Written recording: A written record of methods and materials used during the conservation and restoration works will be kept at all times and presented in a final report at the end of Phase 2.

[3] It is recommended to undertake high resolution rectified photography survey to produce measured images of each individual mural following the removal of the temporary protection. These would form the bases for any future recording.

2.5. **Further analysis**

During trials, ammonium hydroxide solution was found to remove a yellow coating. It is recommended that advanced analysis be undertaken to identify what the coating is and determine if it should be removed. For example, if it is tobacco, should this be removed?

2.6. **Review of the Conservation Recommendations made during Phase 1**

The updated Condition Survey (Section 2.4) will identify any further defects or areas of deterioration that may have occurred in the murals during the refurbishment works. It is possible that the Conservation Recommendations and costings will need to be adjusted accordingly.

2.7. **Consolidation of the plaster substrate**

During the survey of January 2019 only localised areas of hollow plaster substrate were identified to paintings no. 2 and no. 5, which minor sections exhibition slight vibration during the percussion survey. Following further assessment of these areas it was concluded that consolidation by grouting will be not required at that stage and the area was only additionally supported by further layers of temporary facing to increase stability.

It is not envisaged that the building works undertaken to the different elements of the Great Hall will have an impact on the structural integrity of the plaster substrate to the murals. However, should any changes be noticed during the condition assessment, consolidation of the plaster including grouting and possible fracture repairs might be required

A contingency has been allowed for this in the should be allowed in the Costings Document but may be subject to alteration following the review. The extent of any stabilisation work and methodology can be decided with the Project Design Team, and presented in a written specification.

2.8. **Consolidation of flaking paint (if required)**

The majority of loose flakes should have been reattached during the removal of the facing. However, further areas of incipient flaking may have been identified in the Condition Survey, and should be consolidated using the method used in Phase 1 Emergency Consolidation Works.

Lascaux 4176 Medium for Consolidation[4] (between 6.25% (i.e 1 part Lascaux 4176 and 3 part deionised water) and 5% (i.e. 1 part Lascaux 4176 and 4 part deionised water) proved effective for the consolidation of the paint during Phase1.

The consolidant should be applied to the loose paint using a small brush, ensuring that the adhesive is fully absorbed behind the lifted flake. If slight plasticisation of the paint is

[4] Lascaux 4176 is an aqueous dispersion of an acrylic co-polymer is non-hazardous to use, dries to a clear and flexible film, is light resistant, has excellent penetrating properties for underbound paint, and does not yellow with age.

required to lay it flat, then the paint surface should be protected with silicone release paper, and a thermostatically controlled heated spatula used to gently lay flat the lifted paint through the use of heat and pressure. Following consolidation, residues of adhesive can be cleared from the surrounding paint surface using xylene applied with cotton swabs.

2.9. Re-adhesion of delaminated canvas section, painting number 11 (Opening of the Bridgewater Canal)

A large area of canvas support has become detached from the plaster substrate on the right side of painting 11 due to the water ingress and movement of moisture through the adjacent stone. In November 2019, Hirst Conservation recommended that the external downpipe most likely responsible for the water ingress should be inspected and corrected as part of the refurbishment works to the Town Hall, and a period of drying out allowed. The canvas can then be reattached to the plaster substrate using the following method:

The temporary Hexlite strip should be carefully removed.

A non-heat seal adhesive such as Plextol B500 should be used for the re-adhesion of the canvas, on the basis that the elevated temperatures required for activation of a heat-deal adhesive could potentially melt and damage the paint layer.

Removal of salts from the reverse of the canvas prior to treatment is not deemed possible as this would necessitate the sharp bending of the canvas out of the deep recess in which it is located. This severe bending would have the potential to crack and damage the paint layer even with a supportive facing applied.

A localised facing of Japanese tissue and Klucel G (8% in de-ionised water) should be applied to the area requiring treatment to provide increased rigidity for the paint layers, thereby reducing the potential for damage or loss of paint.

The angled needle of a hypodermic syringe should be used to inject an aqueous cold set adhesive such as Plextol B500 behind the detached canvas, through natural points of entrance such as the loose edge of the canvas adjacent to the stone surround, existing small holes and tears, and areas of previous paint loss, filling, and retouching where original material has been lost. The area should be protected with silicone release paper and held flat whilst the adhesive dries. Will this be carried out through the applied tissue paper facing?

The protective facing can be removed following treatment by dampening the tissue with deionised water, and carefully peeling back. Residues of the adhesive should be cleared from the paint surface with de-ionised water and dry cotton wool.

2.10. **Removal of overall layer of surface dirt.**

Surface dirt was last removed from the paintings in 2009 during a programme of conservation carried out by The Wall Paintings Workshop[5]. The cleaning was undertaken using de-ionised water and PVA based Splurtex™ sponges. In 1998, Brian Cardy Conservation removed surface dirt from the paintings using a 'weak mixture of tri-ammonium citrate with the slight addition of ammonia solution'[6]. An underlying layer of wax was (selectively?) removed using scalpels following initial softening with toluene.

Hirst Conservation's February 2019 Condition Survey records that the paintings are coated with a moderate layer of surface dirt deposited over a period of ten years. The dirt dulls and distorts the intended colours of the paintings, making the light passages appear darker, and the dark passages appear lighter.

The objective of the cleaning is to remove this dirt layer whilst leaving in place any residues of historic wax coatings that serve to retain a degree of saturation in the paint layer. The presence of wax is suggested by the unevenly glossy surface of the paintings as noted in Hirst Conservation's 2019 condition surveys. It is likely that a degree of selective cleaning was employed by Brian Cardy Conservation in the 1998 programme of wax removal, retaining a layer of wax on the more sensitive dark passages of paint.

Testing was undertaken to determine the most effective and appropriate method for the removal of surface dirt from the paintings on both plaster and canvas supports, and in passages of light and dark paint. Tests were made in the top right corner of painting number 12 (canvas) and the mid left side of painting number 1 (plaster) (see Appendix A for photograph of test location and results). The objective was to remove the even layer of surface dirt only, retaining any underlying waxy coating. The method was not designed to remove other surface deposits noted on the paintings, such as black smears, spots of varnish residue in brush strokes, or splashes of decorator's paint which would require a different method for their removal.

Aqueous methods have been used previously to remove surface dirt from the paintings on both canvas and plaster supports, with no recorded detrimental effects. Sponges were not tested due to the risk of surface abrasion to the painting, especially painting numbers 6 and 7 which have a rough surface texture due to the inclusion of river sand in the plaster support, and already show evidence of abrasion due to past cleaning methods.

The methods and results of the surface dirt removal tests are shown in the table below. The solutions tested were applied to the paint surface using cotton swabs.

[5] 'Condition assessment and treatment record of the conservation of the Manchester Murals by Ford Madox Brown', The Wall paintings Workshop, (unpublished report, 2009).
[6] 'Final report on the condition and full conservation treatment of the Ford Madox Brown wall paintings in the Great Hall, Manchester Town Hall, carried out between 1995 and 1998', Brian Cardy Conservation, (unpublished report, 1998)

Method	Result	Comments
De-ionised water	Safe application on paint surface but no discernible removal of surface dirt.	Does not remove surface dirt from the paint surface.
Saliva cleared with de-ionised water and dry cotton wool	Cleans safely in light and dark passages of paint, and on both plaster and canvas substrates. Some intransigent dirt remains on the paint surface.	Leaves an amount of dirt on the paint surface after cleaning. Not recommended.
Triammonium citrate solution (2% w/v in de-ionised water). Paint surface cleared with de-ionised water, and then dried with cotton wool.	Removes surface dirt safely from the dark and light passages of paint on both the canvas and plaster substrates. Does not remove any yellowed coatings, and does not blanch the paint surface.	Removes the layer of surface dirt evenly and thoroughly, leaving all underlying coatings intact. No blanching. Good result.
Ammonium hydroxide solution (pH 7-10)	Removes surface dirt safely from the dark and light passages of paint on both the canvas and plaster substrates. However, also removes a yellow substance. Likely to be residues of wax, tobacco or varnish. The treated surface appears lighter but slightly blanched.	The objective of the cleaning is to remove the overall layer of surface dirt only. The ammonia solution appeared to be removing further coatings, which is not desirable, leading possibly to a de-saturation and overall blanching of the paint surface. Not recommended.

There was no discernible difference in the reaction to surface dirt removal of the paintings on plaster or canvas, or in the light or dark passages of paint, meaning that one cleaning strategy can be used to clean all twelve of the murals. Slightly more time may be incurred by the cleaning of paintings 6 and 7 due to the rough surface texture, which may hinder the cotton swab application of the cleaning solution. No visible residues of pigments or paint were removed during the cleaning tests.

Saliva and de-ionised water did not produce satisfactory results for the cleaning of the paintings. Ammonium hydroxide solution was safe on the painted surface, removed all of the visible layer of surface dirt, but appeared to remove underlying coatings (wax, varnish, tobacco?) as indicated by a yellow substance on the cotton swab, and the more pronounced lightening and possible blanching of the paint surface. The purpose of this present cleaning programme is to remove the surface dirt only. Removal of any further coatings is not recommended, as it may result in a severe reduction or disturbance in the saturation of the painted surface.

Triammonium citrate solution (2% w/v in de-ionised water) produced a safe and effective removal of surface dirt. The solution should be applied with cotton swabs and thoroughly cleared with de-ionised water. The area should then be dried with cotton wool. The plaster is protected from any effect of the TAC by the spirit fresco medium (wax, varnish etc). Cleaned in 1998 with TAC with no ill effect.

2.11. **Review of the cleaning strategy following surface dirt removal.**

All water soluble food deposits were removed from the murals during Phase 1 Emergency Consolidation Works.

The three Condition Surveys made since the last programme of cleaning in 2009 have all recorded further deposits on the surface of the murals, which have been identified variously as splashes of decorator's paint, black smears, fly droppings, residues of previous consolidants, and spots of aged varnish trapped in the texture of the brushstrokes. Removal of the overlying layer of surface dirt will make some of these deposits appear more prominent and incongruous with the satisfactory presentation of the murals.

Further testing to remove all or some of these accretions may be required, along with consultation with the Project Design Team.

Consideration should also be given to the preservation or removal of the dark strips around the edges of the paintings: Removal may prompt the need for further retouching at the edges, and is likely to involve the use of solvents or scalpels.

Removal of the 'brown spots' observed on paintings number 1-3 is not recommended. It is possible that these spots formed as a result of the technique used by Ford Madox Brown. Further materials and archival research is needed to assess this theory, but until any conclusions are reached, the brown spots should be regarded as integral to the history of the murals.

2.12. **Removal of further surface deposits (if required)**

A contingency should be allowed for the removal of small deposits and residues from the paint surface that may become more prominent once the overlying surface dirt has been removed. The extent to which the deposits are to be removed, and the methods for achieving this can be decided with the Project Design Team, and presented in a written specification.

2.13. **Filling of prominent losses in the paint layers**

There are numerous tiny losses over the surfaces of the paintings, and many larger losses that extend to the ground or support layer. These latter losses require filling in order to create an even paint surface for the retouching.

It is recommended that the losses are filled with Mowiol 4-98 (polyvinyl alcohol) mixed with gilders whiting. The filling material should be applied to the loss, and adjusted to simulate the plane and texture of the surrounding paint surface. Any residue of filling mixture can be removed from the paint surface using saliva or de-ionised water.

2.14. **Review of the level of retouching required**

Once the surface dirt and surface deposits (if required) have been removed, an assessment can be made of the level of retouching that is necessary to bring the murals to presentation standard.

The 'brown spots' should not be retouched. Consideration may be given to the retouching of any disfiguring historic infills, deposits and marks on the paint surface that cannot be safely removed.

2.15. **Retouching**

It is anticipated that the retouching will include the application of an acrylic paint base colour to the white fills, and glazes of synthetic resin media with dry pigments to areas of damage and physical deterioration, such as scratches, small losses, large filled losses, and areas of impact damage etc.

2.16. **Review and interpretation of environmental monitoring data (if applicable)**

It is strongly recommended that the surface conditions of the mural paintings be monitored throughout the works to the building, to flag up any danger points such as dew point or rapid fluctuations in temperature and RH. The data should be reviewed before work to the murals.

If at least one environmental monitor is required within the protective casting (i.e. moisture movement affected mural 11), this needs to be coordinated with temporary protection installation program or be mounted in place before the screen is fixed;

2.17. **Record of treatment and recommendations for future care and maintenance**

All areas of work are to be recorded before, during and after treatment to provide a complete record of the works undertaken during Phase 2. A written record of condition and treatment should be kept at all times and submitted to the Project Team at the end of Phase 2.

Further recommendations for future care and maintenance of the murals should also be given.

It is recommended that a high resolution rectified photography survey is undertaken to produce measured images of each individual mural on completion of Phase II. These would form the bases for any future recording.

Appendix 1: Order of Tissue Facing Application

Mural 1



Mural 2



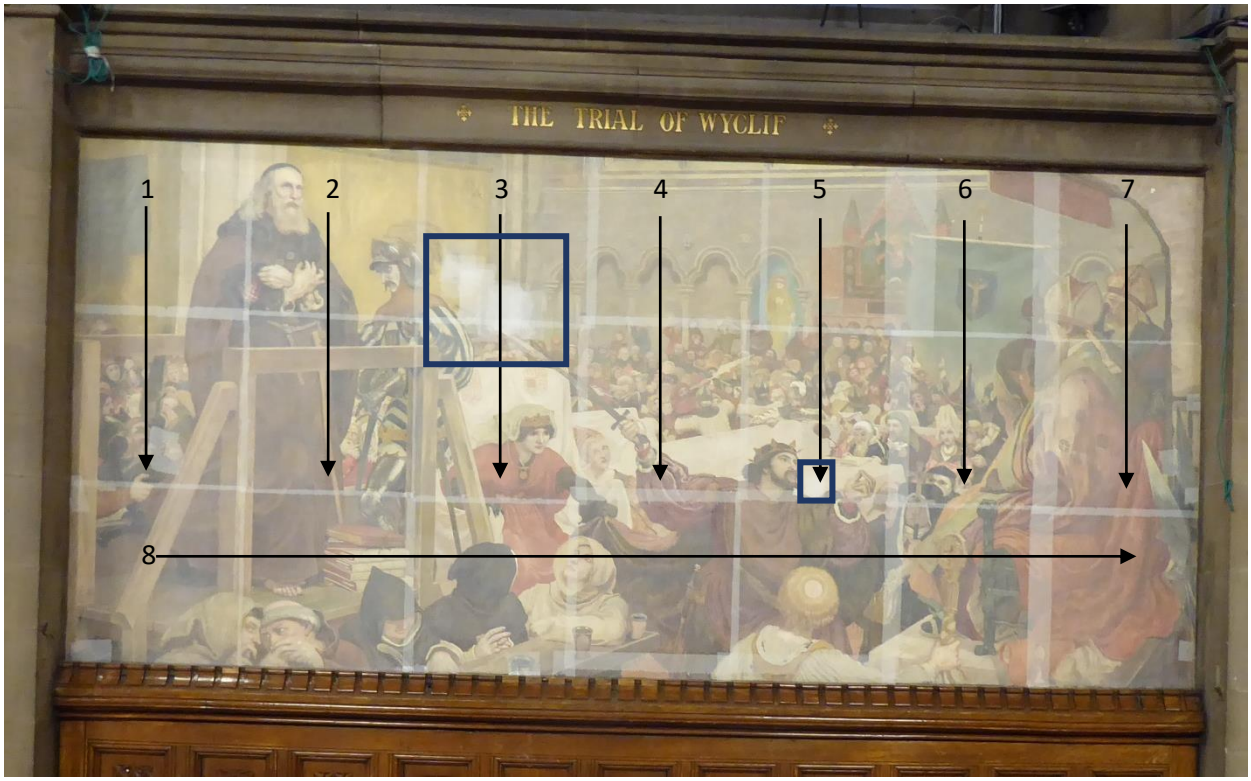
Mural 3



Mural 4



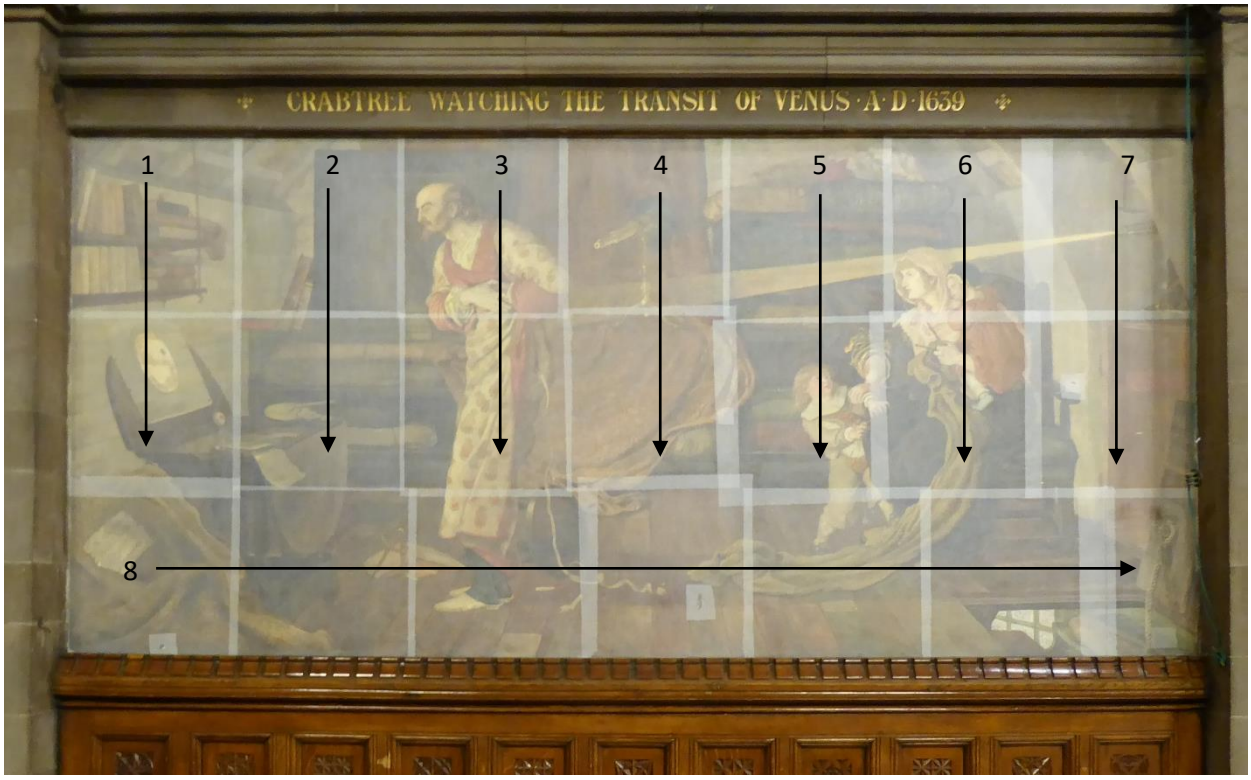
Mural 5



Mural 6



Mural 7



The tissue was applied as indicated by the arrows. Area highlighted with blue squares have additional tissue protection beneath. All small patches have been applied last to cover tears within the larger tissue sheets.

Appendix incomplete - tissue facing application record
diagrams for the remaining murals 8 to 12 are not included

Appendix 2: Surface Dirt Removal Trials

Surface dirt removal test area on painting number 12, top right corner.



(a) Dirt removed with tri-ammonium solution (2% w/v in de-ionised water).

(b) Dirt removed with ammonium hydroxide solution (pH 7)

(c) Water insoluble surface accretions

(d) Discoloured resin varnish or waxy coating trapped in surface texture of paint.