

# OUR TOWN HALL PROJECT

## Technical Submission – Alterations and Builders Works Within Walls

Doc number: OTH-MWC-TH-LG-TSB-X-0002

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Date: 06/10/2020

### Issue History:

| Revision Nr | Details                           | Date       | Created By | Check by |
|-------------|-----------------------------------|------------|------------|----------|
| P01         | Document created                  | 22/09/2020 | M Howard   |          |
| P02         | Amended as per comments received. | 06/10/2020 | Simon Ball |          |
|             |                                   |            |            |          |
|             |                                   |            |            |          |



## Our Town Hall

### Works Technical Submission

**Works Package Name:** Internal Substructure

**Works Package Number:** 40032.01

**Task/Activity:** Alterations and Builders Work (within walls) in conjunction with Dwgs LG-0363, 0364, 0365, 0366. Load bearing not exceeding 2.5m and all non-load bearing openings.

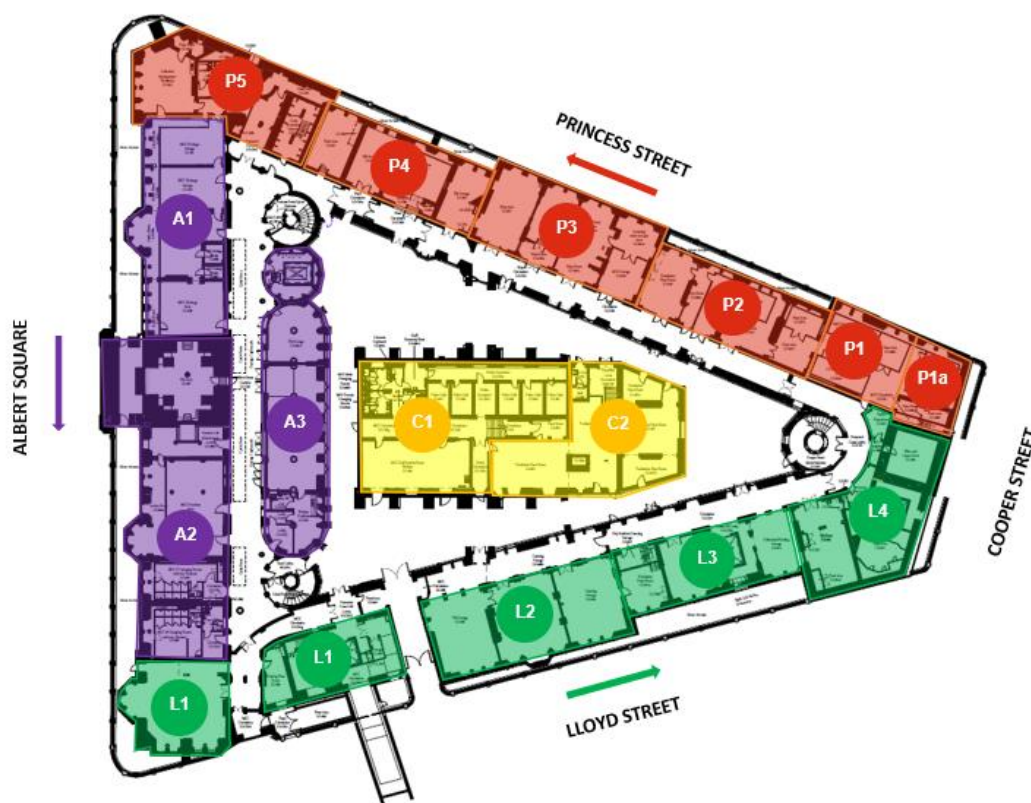
**Location:** Site Wide – Lower Ground Floor

**Date:** 06/10/20

**Start Date of Activity:** 19/10/20

#### Scope/Overview:

##### Zone Plan Overview for Lower Ground Floor:



- Alterations and Builders Work (within walls) in conjunction with drawing numbers: LG-0363, 0364, 0365, 0366.
- Load bearing not exceeding 2.5m and all non-load bearing openings.

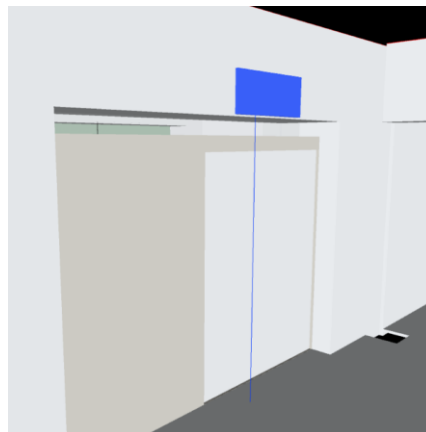
**Sequence (incl. hold/inspection points):**

**Builders Works:**

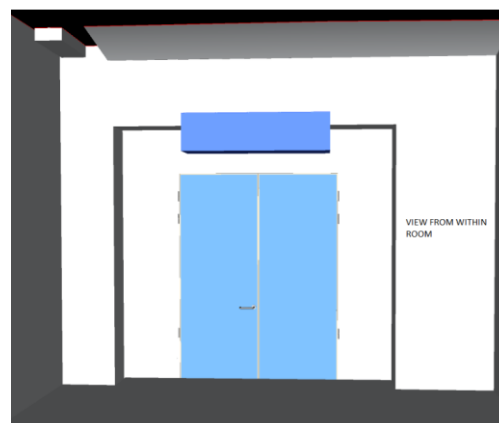
Within the Lower Ground Floor there are numerous service penetrations to be formed within the walls, all of varying sizes, as detailed on Purcell Drawing Nos: LG-0363, 0364, 0365, 0366 and Purcell BWIC schedule SCH-A-5810.

**Example service penetration images captured from model:**

Example Model image not exceeding 750mm:



LG-018-BW02 450mm wide



Example Model images between 750mm to 2500mm:



LG-016-BW03 1572mm wide

**Methodology for service penetrations incorporating steel plates not exceeding 750mm wide (see previous model examples):**

1. Setting out of these penetrations will be carried out by NG Bailey and agreed with Lendlease.
2. **HOLD POINT** – Once setting out has been completed and agreed, record photographs will be taken prior to commencement of any works.
3. The depth is required to ascertain the number of steel plates to use in the head of the opening. Where the depth of the opening is unknown, and both sides of the wall are accessible a Hilti PX10 Transpointer as shown opposite will be used to ascertain the depth of the wall.
4. Once the positioning has been agreed the construction of the service penetration will be as follows.
5. Where both sides of the wall are accessible a Hilti PX10 Transpointer as shown opposite will be used to ascertain the depth of the wall.
6. Where both sides of the wall are not accessible a 32mm diameter core will be drilled through the wall (central to the proposed service penetration) using Weka 16 Rotary diamond drill 110v.
7. The drill will be connected up to a temporary water supply which will act as a coolant and also suppress any dust particles whilst the core drilling is in operation.



<https://www.youtube.com/watch?v=LhDm976E7hs>

(A demonstration of the core drill water collection system can be arranged. The demonstration will involve a physical example and as such an actual core drill hole will need to be made to a surface).

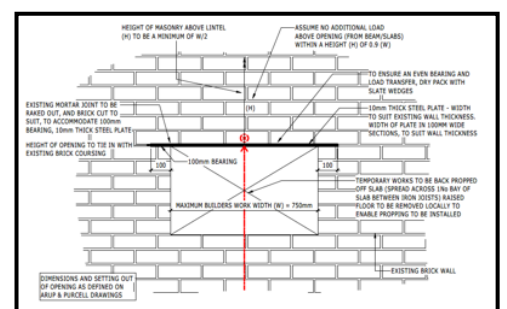
8. A water collection system (WCS67) will also be used attached to a 110v wet vac. This will collect slurry created during the coring and damping process. The wet vac separates the slurry from the water whereby the water is reused, and the slurry is collected in a bag. This allows easy disposal of slurry in the containment bag.
9. The wall will then be carefully core drilled to ascertain the depth of the wall.
10. **HOLD POINT:** Where a 'check dimension' is noted on the setting out drawings, this will be checked in relation to the 32mm core and any discrepancies reported to Lendlease prior to continuing of any works.



11. Saw cut mortar line for installation of 10mm flat steel plates using Arbortech Allsaw AS175. This tool uses dry cutting with vacuum attachment to remove dust at source.

<https://www.arbortechtools.com/en/allsaw-as175/>

12. The vertical edges of the service penetration will then be cut using a hydraulic handheld circular saw with water dust suppression.
13. Slurry and water produced by water dust suppression from the circular saw will be constantly controlled and cleaned up using 110v wet vac during the cutting process.
14. Surfaces will be protected from spray using visqueen sheeting or corex sheet. Where possible this will be taped to the building, or where tape cannot be used a stud frame will be made with visqueen sheet to act as a screen that can be leant up against the walls.
15. The top layer of brickwork will then be removed. This will be done making use of the Arbortech AS175 to cut vertically in the



mortar joints to weaken the bond between the bricks. A small electric percussive breaker will then be used to carefully impact the mortar joint, breaking the bond and freeing up the brick.

16. This process will continue course by course, with first bricks weakened to make a start, then removed by breaking the mortar joints.
17. The steel plate will be pushed into place and then dry packed with slate wedges.
18. Once the steel plate is in position and secured the rest of the brickwork will be removed from the service penetration.
19. Any service penetration through an external wall will be protected with a timber frame wedged into the opening with Visqueen stapled to the frame
20. Any original brickwork that is full or half brick will be palletted and saved in an agreed location for future works. Debris and modern brickwork will be disposed of.

## **Methodology for service penetrations incorporating pre-cast concrete lintels between 750mm to 2500mm**

### **wide (See previous model examples):**

1. Setting out of these penetrations will be carried out by NG Bailey and agreed with Lendlease.
2. **HOLD POINT** – Once setting out has been completed and agreed, record photographs will be taken prior to commencement of any works.
3. The depth is required to ascertain the number of concrete lintels to use in the head of the opening. Where the depth of the opening is unknown, and both sides of the wall are accessible a Hilti PX10 Transpointer as shown opposite will be used to ascertain the depth of the wall.
4. Once the positioning has been agreed the construction of the service penetration will be as follows.
5. Where both sides of the wall are accessible a Hilti PX10 Transpointer as shown opposite will be used to ascertain the depth of the wall.
6. Where both sides of the wall are not accessible a 32mm diameter core will be drilled through the wall (central to the proposed service penetration) using Weka 16 Rotary diamond drill 110v.
7. **HOLD POINT:** Due to varying wall thickness a number of temporary works designs have been produced, submitted and pre-approved by Lendlease. These designs cater for wall thickness up to 350mm, from 350 to 550mm and from 550 to 750mm. Once the wall thickness has been ascertained a suitable temporary works design will be chosen.
8. **HOLD POINT:** Once a suitable temporary works design has been chosen, a permit to load will be sought and issued by Lendlease before any further works can be carried out.
9. The wall will then be core drilled above the head of the lintel to enable the insertion of the temporary works needles.
10. **HOLD POINT:** Where a 'check dimension' is noted on the setting out drawings, this will be checked in relation to the 32mm core and/or needle core and any discrepancies reported to Lendlease prior to continuing of any works.
11. The vertical edges of the service penetration will then be cut using a hydraulic handheld circular saw with water dust suppression.
12. Slurry and water produced by water dust suppression from the circular saw will be constantly controlled and cleaned up using 110v wet vac during the cutting process.
13. Surfaces will be protected from spray using visqueen sheeting or corex sheet. Where possible this will be taped to the building, or where tape cannot be used a stud frame will be made with visqueen sheet to act as a screen that can be leant up against the walls.
14. Slurry and water produced by water dust suppression from the circular saw will be constantly controlled and cleaned up using 110v wet vac during the cutting process.
15. The temporary works needles will then be inserted along with the props.
16. The brickwork within the service opening will then be removed. This will be done making use of an electric percussive breaker.
17. Brickwork will then be removed to form the opening for the seating of the lintel.
18. This will be done making use of the Arbortech AS175 to cut vertically in the mortar joints to weaken the bond between the bricks. A small electric percussive breaker will then be used to carefully impact the mortar joint, breaking the bond and freeing up the brick.
19. This process will continue course by course, with first bricks weakened to make a start, then removed by breaking the mortar joints.
20. The lintel will be lifted into place utilising a genie lift.
21. Once the lintel is in place it will be slate wedged and dry packed.



22. Once the pre-cast lintels are in position the props and needles will be removed and the opening made good.
23. Any original brickwork that is full or half brick with be palleted and saved in an agreed location for future works. Debris and modern brickwork will be disposed of.

## Alterations

Within the Lower Ground Floor there are numerous alterations to be formed, all of varying sizes, as detailed on Purcell Drawing Nos: LG--0363, 0364, 0365, 0366 and Purcell Alterations Demolitions schedule SCH-A-0395. These are split into four types, notably Type 1 to 4. Below are typical examples of each type.

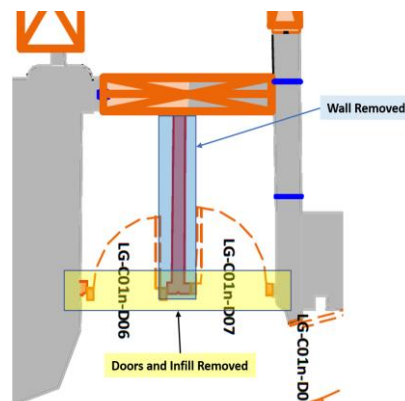
### Type 1 Alteration – Non-Load Bearing - Full Wall Demolition/Full Height/Full Extent- (Example: LG-C01n- Alt 05)

1. This example features a non-load bearing infill beneath a load bearing arch. The entire infill will be removed leaving the existing archway intact.
2. In this example there is also a non-load bearing masonry partition wall. This will be fully removed also.
3. **HOLD POINT:** Prior to removal of the doors, the door schedule Purcell SCH-A-5810 will be checked to understand whether the doors are to be removed for re-use or disposal.
4. The timber doors will be removed traditionally making use of a hand driver to unscrew the hinges.
5. If the timber doors are to be re-used they will be catalogued, removed and stored in the Consolidation Room on the Ground Floor.
6. Where architraves are to be kept, isolate the architrave from wall material by running a retractable blade between the wall and timber.
7. Gradually widen the gap between the wall surface and the timber. This will be done by using a claw hammer and a wood chisel. The chisel will be carefully tapped behind the timber. When doing so a small timber packer will be used as a lever and to protect the wall surface from marking of the chisel.
8. When the gap is widened a small pry bar will be used to pull the architrave away from the wall. A timber packer will be used again.
9. If the timber doors are to be disposed of, they will be removed from the building manually by hand and disposed of in site skips.
10. Hand tools, such as crowbar, claw hammer, wood chisels etc., will be used to remove the architrave.
11. A reciprocating saw with dust collection unit will be used to remove dust at source and cut the frame for removal and disposal in site skips.
12. The masonry partition wall will then be removed.
13. A suitable work platform such as a podium step or alloy tower will be used. This will be done by PASMA trained operatives where required. The choice of platform will vary depending on the individual scenario or height requirements.
14. Brickwork will then be removed.
15. This will be done making use of the Arbortech AS175 to cut vertically in the mortar joints to weaken the bond between bricks. A small electric percussive breaker will then be used to carefully impact the mortar joint, breaking the bond and freeing up the brick.
16. This process will continue course by course, with first bricks weakened to make a start, then removed by breaking the mortar joints.

Existing Image



Plan Drawing

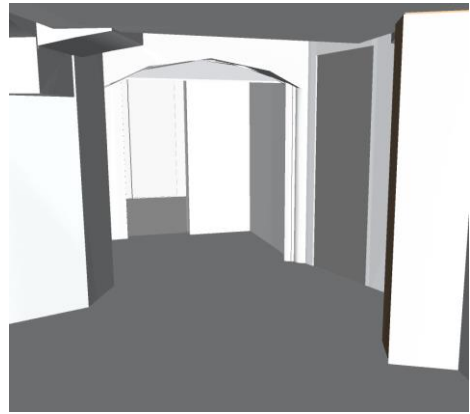


17. Any original brickwork that is full or half brick with be palleted and saved in an agreed location for future works. Debris and modern brickwork will be disposed of.



Reciprocating Saw

### **Model Drawing**



## Type 2 Alteration – Punched opening through wall (Doorways) – (Example: LG-006b – Alt 01)

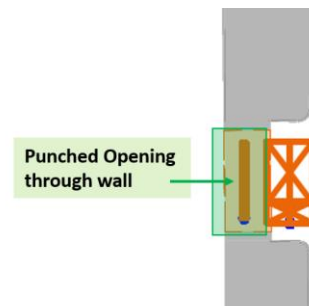
1. Setting out of these openings will be carried out by a Murraywood Construction Engineer.
2. **HOLD POINT:** Once setting out has been completed and agreed, record photographs will be taken prior to commencement of any works.
3. LG-006b Alt 01 Type 2 comprises of a nominal 2440mm height by 1215mm width rectangular opening.
4. At this moment in time the exact depth of the opening is unknown. The depth is required to ascertain the number of concrete lintels to use in the head of the opening.
5. Once the positioning has been agreed the construction of the service penetration will be as follows.
6. Where both sides of the wall are accessible a Hilti PX10 Transpointer as shown opposite will be used to ascertain the depth of the wall.
7. **HOLD POINT:** Due to varying wall thickness a number of temporary works designs have been produced, submitted and pre-approved by Lendlease. These designs cater for wall thickness up to 350mm, from 350 to 550mm and from 550 to 750mm. Once the wall thickness has been ascertained a suitable temporary works design will be chosen.
8. **HOLD POINT:** Once a suitable temporary works design has been chosen, a permit to load will be sought and issued by Lendlease before any further works can be carried out.
18. The wall will then be core drilled above the head of the lintel to enable the insertion of the temporary works needles.
19. The vertical edges of the service penetration will then be cut using a hydraulic handheld circular saw with water dust suppression.
20. Slurry and water produced by water dust suppression from the circular saw will be constantly controlled and cleaned up using 110v wet vac during the cutting process.
21. Surfaces will be protected from spray using visqueen sheeting or corex sheet. Where possible this will be taped to the building, or where tape cannot be used a stud frame will be made with visqueen sheet to act as a screen that can be leant up against the walls.
9. Slurry and water produced by water dust suppression from the circular saw will be constantly controlled and cleaned up using 110v wet vac during the cutting process.



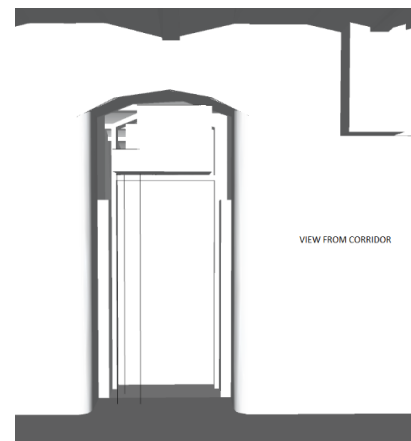
Existing Image:



Plan Drawing



Model Drawings



10. Where the vertical cut is close to parts of the building which are to remain, the cut will be done circa 6 inches away from the existing fabric, then the brickwork will be gently toothed out using the Arborteck Allsaw and hand tools.
11. The temporary works needles will then be inserted along with the props.
12. The brickwork within the opening will then be removed. This will be done making use of an electric percussive breaker.
13. The pre-cast concrete lintels will then be positioned into place using a genie lift and then dry packed with slate wedges.
14. Once the pre-cast lintels are in position the props and needles will be removed and the opening made good.
15. Any original brickwork that is full or half brick will be palletted and saved in an agreed location for future works. Debris and modern brickwork will be disposed of.
16. Where the opening is between 2.500 to 2.700 m wide, the use of padstones is introduced prior to installing the pre-cast concrete lintels and will be as per the following sequence:
  - a. Brickwork will then be removed to form the opening for a pre-cast pad stone to enable seating of lintel.
  - b. The pre-cast pad stone will then be bedded into place using mortar and allowed to cure.

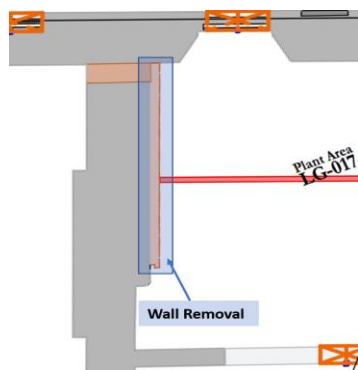
### Type 3 Alteration – Partial Demolition (Wall) – (Example: LG-017-Alt 02)

1. Due to the height of the wall an alloy tower will be used to access work at height. This will be done by PASMA trained operatives.
2. Remove the timber face using hand tools to expose the timber stud frame.
3. Then using a reciprocating saw, the stud frame will be carefully removed by cutting into small manageable pieces.
4. This will continue until only the floor and ceiling plates remain.
5. The fixings for the floor and ceiling plates will then be exposed.
6. The fixings and plates can then be removed manually.
7. All waste materials will then be removed manually to on site skips.

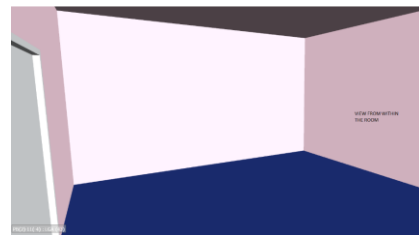
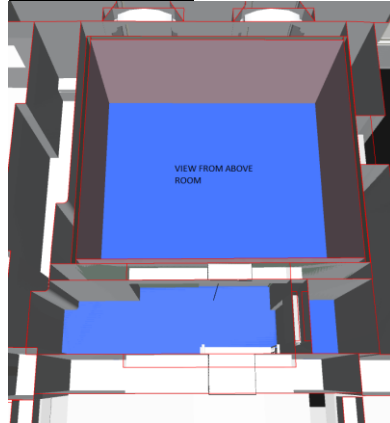
#### Existing Image



#### Plan Drawing



#### Model Drawings



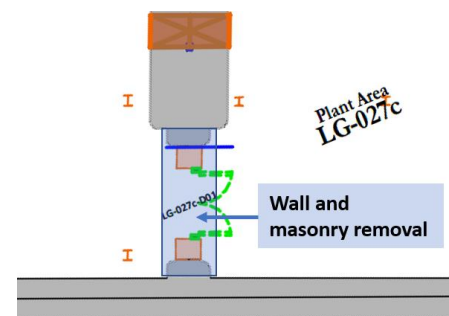
#### Type 4 Alteration – Infill Removal – (Example: LG-027-Alt 02)

1. This example features a non-load bearing infill beneath a load bearing arch. The entire infill will be removed leaving the existing archway intact.
2. **Hold Point:** Prior to removal of the doors, the door schedule Purcell SCH-A-5810 will be checked to understand whether the doors are to be removed for re-use or disposal.
3. The timber doors will be removed traditionally making use of a cordless drill to unscrew the hinges.
4. If the timber doors are to be re-used, they will be catalogued, removed, and stored in the Consolidation Room on the Ground Floor.
5. If the timber doors are to be disposed, they will be removed from the building manually by hand and disposed of in site skips.
6. Hand tools, such as crowbar, claw hammer, wood chisels etc., will be used to remove the architrave.
7. A reciprocating saw will be used and the frame cut for removal and disposal in site skips.
8. The masonry infill will then be removed.
9. A suitable work platform such as a podium step or alloy tower will be used. This will be done by PASMA trained operatives where required. The choice of platform will vary depending on the individual scenario or height requirements.
10. Brickwork will be loosened by the use of an 110v electric breaker and then carefully removed from top down to lintel level, by hand.
11. Then a genie lift will then be utilised to remove the concrete lintel above the doorway.
12. The brickwork will then continue to be removed as described above.
13. Any original brickwork that is full or half brick will be palletted and saved in an agreed location for future works. Debris and modern brickwork will be disposed of.

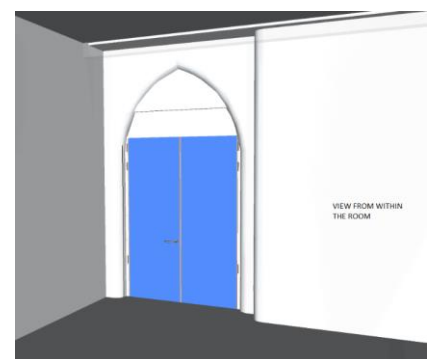
#### Existing Image



#### Plan Drawing



#### Model Drawing



|                                             |
|---------------------------------------------|
| <b>Benchmark/Samples:</b><br><br><b>N/A</b> |
|---------------------------------------------|

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|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Heritage Considerations:</b>                       | <b>Controls:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Materials: (New, existing and waste streams)</b>   | <p>All waste generated will be stored locally until a designated waste route and disposal area has been agreed with Lendlease.</p> <p>Waste streams include brick, concrete, spoil. This material will not be stored up against existing walls.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Protection: (Exceptions to project strategy)</b>   | <p>In line with the works detailed above the fabric of the building will require protection from splash events from water, slurry and concrete. Protection will be achieved by utilising 500mm gauge visqueen taped and draped to the existing fabric.</p> <p>The fabric of the building will be protected using a combination of materials including visqueen and corriform. Where it is not possible to fix to the building using tape, alternative methods will be implemented such as making up stud screens faced in visqueen. Stud screens can then be leaned up against the building fabric, rather than fixing to.</p> <p>Protection to the existing fabric from plant movement will be carried out using Class 0 low level hoarding protection. This will be placed to mimic a corridor from the work zone to an external door leading to the courtyard or the conveyor belt in LG-09 as agreed prior with Lendlease.</p> <p>Any service penetration through an external wall will be protected with a timber frame wedged into the opening with visqueen stapled to the frame.</p> |
| <b>Building Impact: (Vibration, dust, noise etc.)</b> | <p><b>Vibration:</b></p> <ul style="list-style-type: none"> <li>Vibration monitoring provided by Lendlease, monitored by SRL as per agreed with the client. Levels (over 10mm/s for amber and over 15mm/s for red as indicated by Lendlease).</li> <li><b>HOLD POINT:</b> If the vibration level exceeds the upper threshold alternative methodology needs to be considered.</li> <li>No tools or processes are anticipated to cause excess vibration to the fabric of the building.</li> </ul> <p><b>Dust:</b></p> <ul style="list-style-type: none"> <li>Dust will be suppressed utilising water. Where the water main is to be connected directly to the cutting equipment, the discharge will be collected by a wet vac. Where the water supplied via a water collection unit the water will be recycled within the unit for reuse after the slurry has been separated.</li> </ul> <p><b>Noise:</b></p>                                                                                                                                                                                  |

|                                  |             |                    |                 |               |
|----------------------------------|-------------|--------------------|-----------------|---------------|
| Doc No: OTH-MWC-TH-LE-TSB-X-0002 | Rev No: P02 | Issued: 09/10/2020 | Owner: M Howard | Page 14 of 16 |
|----------------------------------|-------------|--------------------|-----------------|---------------|

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|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                               | <ul style="list-style-type: none"> <li>• This will be monitored and recorded on a daily basis.</li> <li>• Noise exclusion zones will be setup to prevent other people from entering the work area.</li> <li>• Hearing protection will be provided to all within the work area if required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Tools/Equipment: (Type, use and calibration)</b>                                           | All tools and equipment have been described in detail in the sequence section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Storage: (During works for reinstatement, long term off site)</b>                          | <p>Heritage Assets will be stored in the Consolidation Room on the ground floor as dictated by Lendlease.</p> <p>Original brickwork will be stored in an allocated room on the lower ground floor as directed by Lendlease.</p> <p>Spoil will be removed from the building via the courtyard or conveyor belt within Room LG-009 as agreed prior with Lendlease.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Discovery: (Type to be expected and visual signs)</b>                                      | <p>All personnel will be made aware of any heritage assets and any requirements for pre-approved protection. Care must be taken at all stages of the removal process and supervision must monitor the integrity of protection as the works progress. Photographs of each element/area will be taken before works commence and once works have been completed. These photographs will be issued to Lendlease. Were required Lendlease will issue permits to work.</p> <p>In the event of any unknown heritage items/assets are discovered whilst carrying out our works, an immediate hold point will be implemented and Lendlease informed. Works will not be able to recommence until a written instruction is received from Lendlease.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Workforce Awareness: (Toolbox talks and briefing by design consultants prior to works)</b> | <p>In line with Lendlease's protocols, the Murraywood site teams will undergo project inductions to outline site rules, welfare arrangements and emergency procedures of the site. The Murraywood workforce will be briefed on the OTH project objectives, the Town Hall's history, heritage/protection requirements and the work team's responsibilities.</p> <p>In addition, there will also be a ½ day Incident and Injury Free inductions and supervisors must also attend a Frontline Leadership 1-day training course. These inductions/courses are dependent on Lendlease protocol for COVID 19.</p> <p>Prior to a new work area being released to Murraywood, a room walk around will be completed with the Murraywood site team and Lendlease to discuss the rooms specific heritage items/assets and any safety concerns to ensure the full site team is aware of what the rooms protection will consist of.</p> <p>At the start of each shift the site team will be briefed on the day's targets and strategy of the day's events (Smart Start). This will include a discussion on heritage protection required through a 'Start Right Briefing' method given by the site manager/supervisor.</p> <p>Various other TBTs will also take place weekly, which will include topics on Health and Safety, Environmental and Occupation health.</p> <p>The day to day running of the site will be closely monitored and recorded by the Murraywood Manager/Supervisor throughout the whole work package. This will include the Site Manager/Supervisor completing a daily diary of the day's events and the Quality Manager/Site Engineers' recording the daily progresses and keeping detailed records and photographic evidence.</p> <p>Throughout the works, the Murraywood site team will attend daily Smart Start Meetings and progress meetings when required, as well as completing internal/external audits throughout the whole project.</p> |

| Project Team Approval to Commence Works |      |           |      |
|-----------------------------------------|------|-----------|------|
| Organisation                            | Name | Signature | Date |
| MCC                                     |      |           |      |
| Purcell                                 |      |           |      |
| ARUP                                    |      |           |      |
| Ramboll                                 |      |           |      |
| Planit                                  |      |           |      |
| Lendlease                               |      |           |      |
| Works Contractor                        |      |           |      |