



Design and Technical Brief

Window and Door Replacement Programme 2020-2021

The London Borough of Hillingdon

Programme and Asset Management Team
Resident Services

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Contents

1. Introduction.....	3
2. Objective.....	3
3. Planning	3
4. Desirable Standard of Provision	4
5. Compliance with Standards	5
6. Fenestration Design.....	12
7. Installation.....	13
8. Areas of Tenant Choice	14
9. Technical References / Further Reading	14
10. Cross References to Other Design and Technical Briefs	15
11. Quality Checks.....	15

1. Introduction

This project is the planned works programme for the replacement of single glazed windows and patio doors with new pvc-u double glazed windows and patio doors to residential stock as advised across the London Borough of Hillingdon; using the REHAU TOTAL 70c window and door system (or equivalent).

The works should comply with the requirements of Approved Documents L1B and K. On completion, the building should not have a lesser level of compliance with the other applicable parts of Schedule 1 of the Building Regulations.

For all other applicable parts of the Building Regulations the windows or doors should either comply fully with the requirements of the Approved Documents or, if the item being replaced does not already fully comply, the replacement item should NOT make the non-compliance worse.

2. Objective

- To replace residents single glazed energy inefficient windows with safe, secure, easy to use and energy efficient windows and patio doors.
- To reduce maintenance and responsive repair spend on windows and door-sets.
- To increase tenants' satisfaction with their homes.

3. Planning

- Accurate drawings showing window size, internal subdivision, and method of opening (side hung vertical sliding etc) and location will be required.
- Decide whether the existing window fenestration pattern will need to be changed to comply with the relevant building regulations and planning guidance, advising the Contract Administrator as soon as possible.
- Plan to hold a resident consultation event to show and demonstrate window samples of the right size mounted in frames at the correct level to enable residents to form an accurate idea of their ease of use and appearance.
- Consult with the local planning authority at an early stage to determine whether a planning application will be required.
- Consult the Asbestos Team and cross reference with provided asbestos information to ascertain if asbestos removal is required to enable to window replacement.

Design and Technical Brief

- Decide whether to locate the replacement window in the same position within the window opening. This will generally be the preferred option to minimise making good around the window both internal and external, but setting the window back in the reveal for example, can have definite benefits in relation to weather performance.
- In conservation areas the priority may be to preserve the external appearance by setting the window forward.

4. Desirable Standard of Provision

- **Window and Door Material**
 - It is expected white PVC-U windows will be suitable for the majority of situations. If the building is listed or in a conservation area, the local conservation officer will be able to advise whether PVC-U windows are acceptable.
- **Window and Door Supplier**
 - The window supplier should be able to supply all necessary window and double door sections and components including insulating glass units, insulated opaque panels, cills and ironmongery.

The general options required by this brief are:

- Internally beaded glazing
- Key locking handles with pushbutton release to windows on the ground floor or entrance level storey (refer to 'Risk of Fall' section below)
- Non-key locking handles with pushbutton release to windows on the upper storeys (refer to 'Risk of Fall' section below)
- Concealed drainage
- Permanent ventilation in window head or glazing
- Restricted hinge or surface mounted restrictor
- Tilt and turn windows should not be used
- Low door thresholds (not available with sliding doors)
- Outward opening doorsets

5. Compliance with Standards

All windows and door replacement proposals will need to comply with the following standards.

- Building Regulations
 - The following regulations will need to be satisfied in full for both new-build, existing properties, extensions and replacement windows:
 - Part L (L1a, L1b, L2a & L2b) – Energy Efficiency
 - Part N – Glazing Safety

There is also a requirement that the replacement windows and doors should not make the existing situation any worse in relation to:

- Part B – Fire Safety
- Part F – Ventilation
- Part J – Combustion Appliances
- Part K – Protection for falling, collision and impact

However it is Hillingdon Housing Service policy to try and achieve compliance if at all possible.

- **Operational Standards**
 - All new windows must comply with the requirements of BS 8213.
 - Residents, especially those who are elderly, must be able to clean the inside and outside glass and to operate the opening lights with ease and without putting themselves at risk.
 - The window fenestration subdivision must be designed to enable the external glass to upper floor windows not on a balcony to be safely cleaned from inside the dwelling.
 - Guidance on window cleaning is contained in BS 8213 – Part 1 which sets out the accepted dimensional parameters for various types of opening and fixed lights. This is particularly relevant where kitchen units obstruct access to the window for example.
 - In this situation it may be necessary to specify lowered handles.

Design and Technical Brief

- **Security**

- Ground floor windows and those accessible from balconies are most at risk from opportunist burglars. For these high-risk environments/neighbourhoods casement windows can be obtained with enhanced security features which comply with
 - BS 7950
 - PAS 24 (security performance for doors) enabling straightforward compliance to Secure by Design
 - BS 6375 (wind resistance and weather performance) and passes the security standard
- When required, sliding patio doors and double outward opening doorsets complying with the standard PAS 23-1 should be specified. The enhanced standard PAS 24-1 is not available on these door types.
- Laminated glass should be specified for vulnerable locations in dwellings in high risk environments/neighbourhoods and to accessible egress windows.

- **Safety**

- Safety while cleaning windows is covered in BS 8213-Part 1. Both glass surfaces should be safely cleanable from inside the dwelling.
- Opening restrictors should be specified for all windows on all floors to prevent children falling through. The restrictor may be incorporated within the hinge or surface mounted.
- Safety from injury from breaking glass can be achieved by specifying toughened glass in critical areas - generally below 800mm in windows and 1500mm in doors. Annealed (ordinary) glass can be used in small panes subject to a minimum thickness of 6mm. For details see Approved Document N to the Building Regulations.
- The CDM Regulations require a designer's risk assessment to be carried out. Designer's risk assessment should include the following:
 - Risk of fall vs means of escape
 - Maintenance and cleaning of window
 - Manual handling and access during installation

Design and Technical Brief

- **Risk of Fall**

- If a specific issue exists where there is a child at risk of fall, a risk assessment is to be carried out and if justified fit key lockable handles to means of escape windows at first floor and above. Any decision to fit key lockable handles shall be made with consultation with residents and approved by Departmental Manager. Windows will typically have fanlights and/or trickle vents so ventilation can still be provided. Fanlights above first floor will rarely require key lockable handles.
- Such action to fit key lockable handles above first floor shall only be carried out in exceptional circumstances and following a risk assessment.
- Any risk assessment on this issue will take into account means of escape in the event of a fire (refer to Approved doc B).

- **Weather Performance**

- For any building over three storeys high or in an exposed position the required level of resistance to wind pressure can be determined by reference to BS 6375: Part 1 or BS 6399: Part 2:1997.(BS EN 12207:2016 and 12208:2000).
- Test results are available from the window supplier. It should be noted that results are only applicable up to specified maximum window sizes.
- For location in the Hillingdon area for buildings up to four storeys high, the lower of the two Exposure Categories (A) should be sufficient. Category (B) will be necessary for tower blocks.

- **Durability**

- Friction hinges normally supplied to be made from ferritic stainless steel. This should be adequate for locations in the Hillingdon area.
- Austenitic stainless steel hinges are available as an optional extra and should be specified in coastal or polluted environments or to give extra durability.
- Frame reinforcement to be galvanised mild steel.

Design and Technical Brief

- Aluminium reinforcement is available at extra cost for increased corrosion resistance in coastal or polluted environments.

• Means of Escape

- The full requirements of Part B of the Building Regulations apply only to new build dwellings.
- Prior to any works commencing to any site a full design risk assessment shall be carried out. The risk assessment will consider as appropriate to the occupant of the property, all doors and windows, method of locking, security standard achieved, the secure escape methodology employed, thermal requirements in respect of building regulations and highlight all areas where safety glazing is utilised. In addition any areas where the means of escape must be protected with fire resistant materials must also be listed.
- For replacement windows in existing houses the requirement is not to make the situation in relation to means of escape from upper storeys up to 4.5m above ground level any worse than the existing situation, but it is Hillingdon Housing Service policy to try to achieve full compliance.
- Windows intended for egress from upper storeys should be fitted with a non-key operated or a push button latch which is child-proof. Specify a green push button to the handle and affix a 'running man' sticker to the frame just below the handle.
- Where the window is vulnerable, in order to maintain the security of these egress windows, laminated glass should be specified to the egress window and to adjacent panes if deliberate breakage of these would compromise the security of the egress window.

• Energy Efficiency

For excellent thermal properties and to achieve greater energy savings, the REHAU TOTAL70c (or equal and equivalent) window system that achieves an A+ rating, Window Energy Rating (WER) for thermal efficiency.

- 28mm insulating glass units Argon filled with low emissivity glass with Swiss Spacer u+ which exceed compliance with Part L of the Building Regulations, to be supplied as standard.

Design and Technical Brief

- Approved document (AD) L1B sets out requirements for the replacement of 'controlled fittings' (i.e. windows, roof lights, roof windows and doors). Requirements of AD L on 'controlled fittings' refers to the whole unit, consequently, replacing the glazing does not need to meet Part L standards for 'controlled fittings', however it is aim of the Hillingdon Housing Service to do so. (In accordance to Part L1B 'Controlled fittings, as shown in Approved document (AD) L1B).
- AD Part L requires new Windows installed to existing dwellings are to be WER Band c or better, or achieve a min U-value of 1.6W/m2.K
- (Approved Doc L1B, 2010, 4.21, Table 1). Note: These are a minimum, Hillingdon Housing Service are seeking to achieve a higher standard than those stated above.
- It is the policy of the London Borough of Hillingdon to install WER Band A.
- The supplier is to be registered with FENSA which means that it can self certify that the windows and doors it supplies satisfy Part L of the Building Regulations.
- FENSA certificates applying to individual properties should be requested at an early stage. The certificates should be handed to all leaseholders.

• Ventilation

In all cases where trickle ventilators (or an equivalent means of ventilation) are to be fitted, the new ventilation opening should not be smaller than was originally provided, and it should be controllable. Where there was no ventilation opening, or where the size of the original opening is not known, the following minimum sizes should be adopted.

Dwellings:

- Habitable rooms - 5000mm² equivalent area
- Kitchen, utility room and bathroom (with or without WC) - 2500 mm² equivalent area.
- In replacement window projects the requirement is to not make the situation any worse than existing.

Design and Technical Brief

- Ventilators to be 'through the frame' style Simon Framevent or similar compatible with REHAU (or equivalent) windows approved PVC-u with external hood (to include fly screen) and to be watertight to over 400pa. All vents to be tested to BS13141-1:2004 and must be marked internally with results of 1pa.
- Cord operated ventilators should be specified for elderly or disabled residents.
- If there is a requirement for acoustic noise reduction (e.g. from low flying aircraft) a permanent ventilation function could be provided through the wall using an acoustically baffled mechanical ventilator this is to be confirmed with the Contract Administrator.
- Permanent or adjustable ventilation to comply with current Building Regulations (Parts F and J) and current Gas Board Regulations is to be provided to all windows.
- If the room contains an open flue boiler, a gas fire or gas convector heater it is essential that the correct amount of permanent ventilation is provided either by means of a window ventilator, permanent ventilator fitted with a stop, or directly through the wall. Check the required area with the manufacturer of the gas appliance. Be aware that in some circumstances the ventilation may be to an appliance situated in another room. Always inform the Gas Compliance Manager and Contract Administrator of the situation and proposals.
- Ventilator must be independently acoustically tested to BS EN ISO 717-1:2013 and BS EN 20140-10:1992.
- Vents must be fixed strictly in accordance with the manufacturer's recommendations and glazing height must be reduced as necessary to accommodate the vent.

• Accessibility

Resident Liaison Officer

- To be the first port of call for residents included within the programme of works.
- Create resident profiles from the home surveys carried out before work commencement. To use the profiles to develop a resident database for use by LBH staff and external stakeholders for assistance in delivering the programme of works.

Design and Technical Brief

- To liaise closely with residents in their homes, to discuss their specific circumstances and create household profiles to assist the delivery of the programme of works with the minimum of disruption.
- To provide support to residents and their representatives during works programme. Ensure that all resident flags and notes are obtained and followed prior to conducting any visits.
- To liaise with residents prior to contractors commencing pre works/surveys, to ensure that the residents are fully aware of the scope of works, estimated timescales, both LBH and the residents' responsibilities and details of the appointed contractor.
- To be the first port of call for residents who experience difficulties with the implementation of the programme of works.
- To conduct daily liaison with residents before, during and after the programme, through telephone calls, personal visits and written correspondence.
- Maintenance and correlation of all records, files and incoming documents that relate to the Customer Service function for the programme of works.
- To work closely with the Contract Administrator and Contract Manager in producing a 'communications strategy' identifying key groups/individuals and agreeing a clear process for resident engagement which reaches out to the entire community, including hard to reach groups.
- To assist the Contract Administrator and Contract Manager and other stakeholders in the production of programme update newsletters for the programme of works.
- To attend and assist with the organisation and administration of weekly site, project team and out of hours meetings; producing a detailed report for each resident issue.
- To investigate and as much as possible resolve, first stage complaints or claims by residents in connection with the programme of works. If unable to resolve initially then ensure that the Contract Manager, is fully briefed on cases that will require input to resolve; ensuring all LBH timescales are fully met.

Design and Technical Brief

- To assist in identifying completed properties for inclusion in the engagement of undertaking resident satisfaction surveys.
- To ensure that all residents have full service provision at the end of each working day
- Front and rear doors with side hung leaves are available with a low threshold section which is Part M compliant. However, sliding patio doors are not available with this low threshold.
- Low thresholds should be specified in all situations where they are available for all dwellings but it should be noted that low thresholds have a lesser resistance to weather than standard sections. However in urban areas this should not be a problem.
- Minimum clear width of door openings for wheelchair access should be 800mm.
- Ideally the cill height to the principal window in the kitchen, dining and living rooms, and in one bedroom, should be a maximum of 750mm above finished floor level.
- It may be necessary to fit automatic or remote control to some windows to allow control and operation by the occupier.

6. Fenestration Design

- It will be necessary to make a choice between the four window opening types below:
 - o side hung casements – outward opening.
 - o top hung – outward opening (reversible)
 - o horizontal pivot
 - o vertical sliding sash.
- All these opening types must be optionally available for PVC-U windows. However, the enhanced BS 7950 level of security is not available on top hung, horizontal pivot or vertical sliding sash.
- It is preferable not to mix opening styles on any one project. However, a mixture of side hung casement with top hung fanlights is acceptable.
- The overall fenestration design should aim for an open, restful feel. This can be compromised by the use of small panes, fanlights, sublights and transoms at eye level.

Design and Technical Brief

- The design should avoid a full width transom to the principal kitchen window, and to the principal living room and dining room windows and to one bedroom, between cill level and 1.5m above finished floor level
- If a situation arises in a window replacement programme where the fenestration design of an existing window is to be changed, the resident is to be consulted and issued with a drawing of the new design for approval.

7. Installation

- To avoid conflicts of interest it is preferable that the window suppliers are appointed to fix the windows as well as supply them.
- Windows and doors should be properly protected to prevent damage during transit and after installation.
- All windows are to be stored under cover, on edge upon a padded, damp-free surface and suitably supported to avoid distortion or damage.
- Any protective film should be left in place until immediately before handover.
- Under no circumstances shall windows be laid flat or stacked one on top of another.
- The transportation of windows around the site shall ideally be by hand. If a flat bed trailer is used, the windows shall be stood on edge, on a padded surface and made secure.
- Glass units should be supplied and delivered together with the frames.
- All windows must be fixed square, vertical and must not deviate from a straight line by more than 1 mm/metre. This is an important factor in achieving a satisfactory weatherproof installation.
- Individual frame member should not be bent or stressed by the fixings. Packing at fixing positions will avoid this.
- Care should be taken not to distort the edge profiles and plastic packing shims must be used between the window and wall construction to space out the frame square and firmly before fixings are tightened.
- Fixing should be a minimum of 150mm and a maximum of 250mm from the corner of the frame to allow the framing members to flex slightly.

Design and Technical Brief

- Frame fixings must be zinc coated or otherwise rust proofed. Screw heads should be fitted with a plastic cap.
- Intermediate fixings should be at 600mm maximum centres to both jambs and head and cill members.
- If the presence of a steel or pre-stressed concrete lintel makes head fixing difficult or impracticable then fixing by the use of foamed-in-situ polyurethane foam is acceptable.
- It is important that PVC-U windows are not used to carry structural loads. In replacing bay windows the load from the upper storey should be borne by metal load-bearing members located in the corners of the bay.
- Every effort should be made to minimise the amount of making good necessary.
- Where the new frame is thinner than the existing frame, it should be positioned in line with the inside face of the old frame to minimise internal making-good. This may not be appropriate in conservation areas.
- Ensure gaps around windows are properly filled (& draught proofed) prior to fitting trims. The gap between the new window and the structure should be pointed with silicone sealant. Where the gap is between 6mm and 15mm, a backing strip should be used. Gaps exceeding 15mm should be avoided where possible but otherwise should be fitted by a section of plastic trim.

8. Areas of Tenant Choice

Where this is applicable, a consensus of choice should be made by tenants. The Technical Manager should instigate the design process and consult with the residents on the preferred design.

9. Technical References / Further Reading

BS 6262:1982 Glazing for buildings (partially superseded but still cited in the Building Regulations).

BS 6262:2005 Glazing for Buildings.

BS 6375:2009 Performance of windows: Part 1. Classification for weather tightness

Design and Technical Brief

BS 6375: 2009 Performance of windows: Part 2. Specification for operation and strength characteristics

BS 7412: 2007 Plastics windows made from PVC-U extruded hollow profiles – Specification

BS 7950:1997 Specification for enhanced security performance of casement windows for domestic applications

BS 8213: 2004 Windows, doors and rooflights: Part 1. Code of practice for safety in use and during cleaning of windows and doors (including guidance on cleaning materials and methods)

BS 8213: 2004 Windows, doors and rooflights: Part 4. Code of practice for the installation of replacement windows and door sets in dwellings

PAS 23-1: General performance requirements for door assemblies. Part 1: Single leaf, external door assemblies to dwellings

BPF Ref. 348/2 1996 – The Installation of PVC-U windows and door sets.

BS 8300:2001 “Design of Buildings and their approaches” to meet the needs of disabled people

British Plastics Federation

Fensa Guide for Compliance - Edition 3: 2014

10. Cross References to Other Design and Technical Briefs

- Disabled Adaptations (not yet available)
- Dwelling Security
- External Appearance (not yet available)

11. Quality Checks

- The Contractor's quality control procedures with respect to the manufacture and installation of all new windows shall be no less than that demanded by BS EN ISO 9001:2008.

Design and Technical Brief

- The contractor is advised to visit site to check the proposed application of materials, fittings and accessories are suitable. The contractor will be directly responsible for drawings and schedules and taking all dimensions and details required for tendering, fabrication and installation.
- Check that windows are installed plumb, square and vertical.
- Check all frames for mechanical damage such as scratching both after delivery and after installation.
- Check the operation and locking action of all opening lights.
- During installation of the glazing ensure that all location blocks are correctly positioned (see BS 6262).
- Fixing screw driven in square, not over tightened and heads fitted with plastic caps.
- Check that glazing gaskets are in place and not exhibiting gaps where they join
- Check that internal drainage paths are working. Pour a glassful of water into the bottom rebate and ensure that it all drains to the outside.
- Check the quality of the making good around the windows.
- Check that the protective film is completely removed and surfaces are clean.
- Check that cill end caps are in position and securely fixed.
- Check that the etched kite mark is visible on all safety glass panes.
- Check that toughened and laminated glass is in position where specified.
- Check that key and non-key locking handles are in the positions specified
- Check that face drainage covers are in position and securely fixed.
- Check that all operating gear is correctly lubricated.
- Ensure that the advice sheet Appendix: B 'About Your New Windows and Frame' is provided to the resident.

- In addition to a weekly report; the Contractor/clerk of works shall be required to submit a company site inspection form for each property; showing that the installation has been checked and confirmed that each individual window is in good condition, has been well fitted, is operating correctly and that any making good of defects to reveals etc has been completed satisfactorily.
- Its submission to the Contract Administrator shall be a prerequisite to the issuing of a Practical Completion Certificate for the works.