

Four Squares Estate

7th November 2012

Arup commission

- In October 2012 Arup were commissioned by Southwark to undertake a comprehensive review of the condition of the structure
- The following were key points to be addressed;
 - Review ground conditions and the potential impact from existing and future tunnels / basement developments
 - Review findings of Frankham reports regarding the masonry defects
 - Help develop remedial options where required to feed into Southwark's proposed housing investment programme

Arup commission

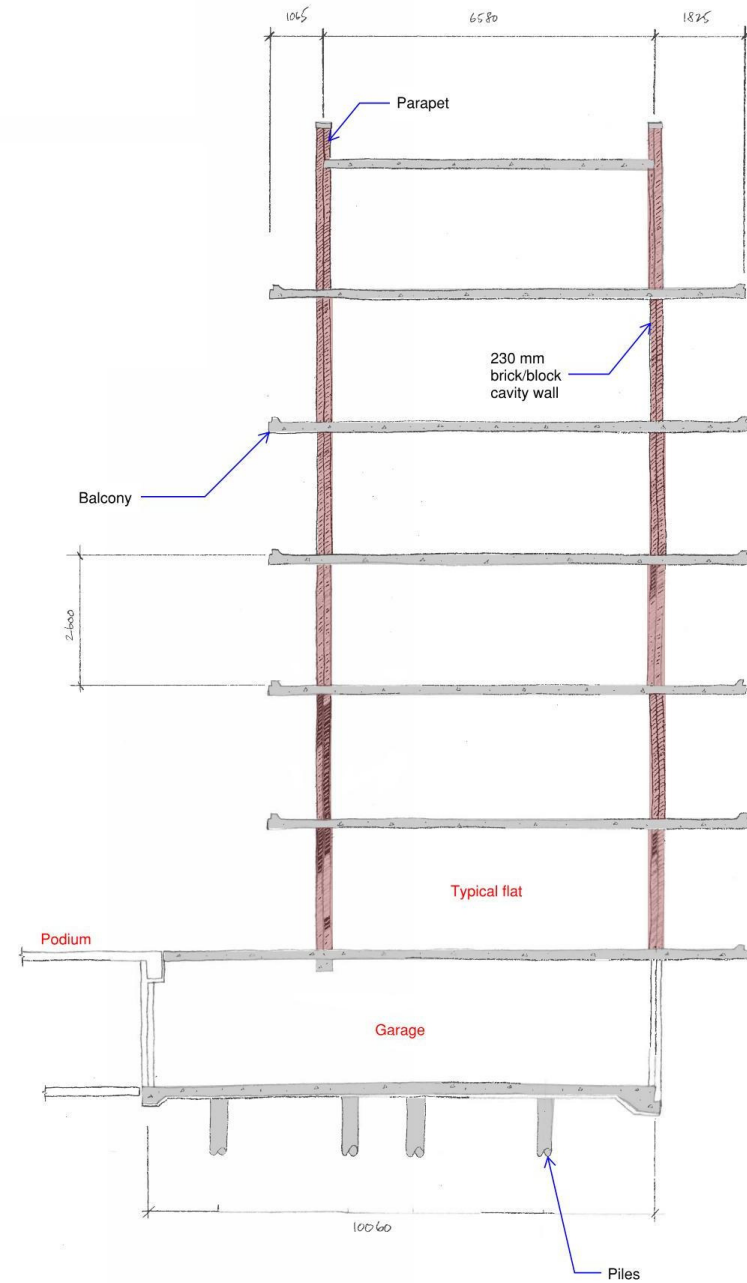
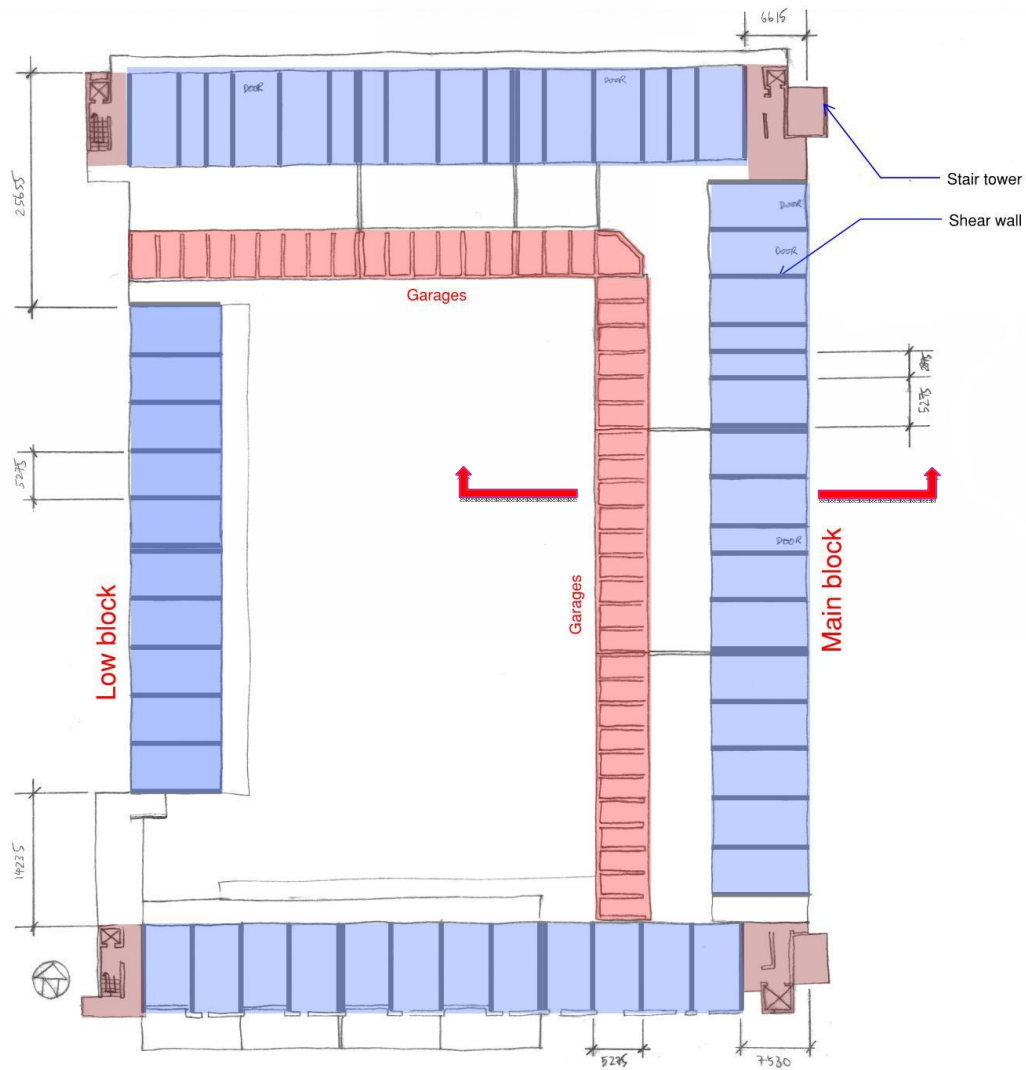
- What has this involved?
 - Comprehensive visual inspection of the Estate
 - Thorough review of archive drawings
 - Geotechnical desk study and review of Jubilee Line records
- Procedure
 - 1) Understand the way the building works
 - 2) Consider condition
 - 3) Consider defects (can these be explained)

The History of the Estate

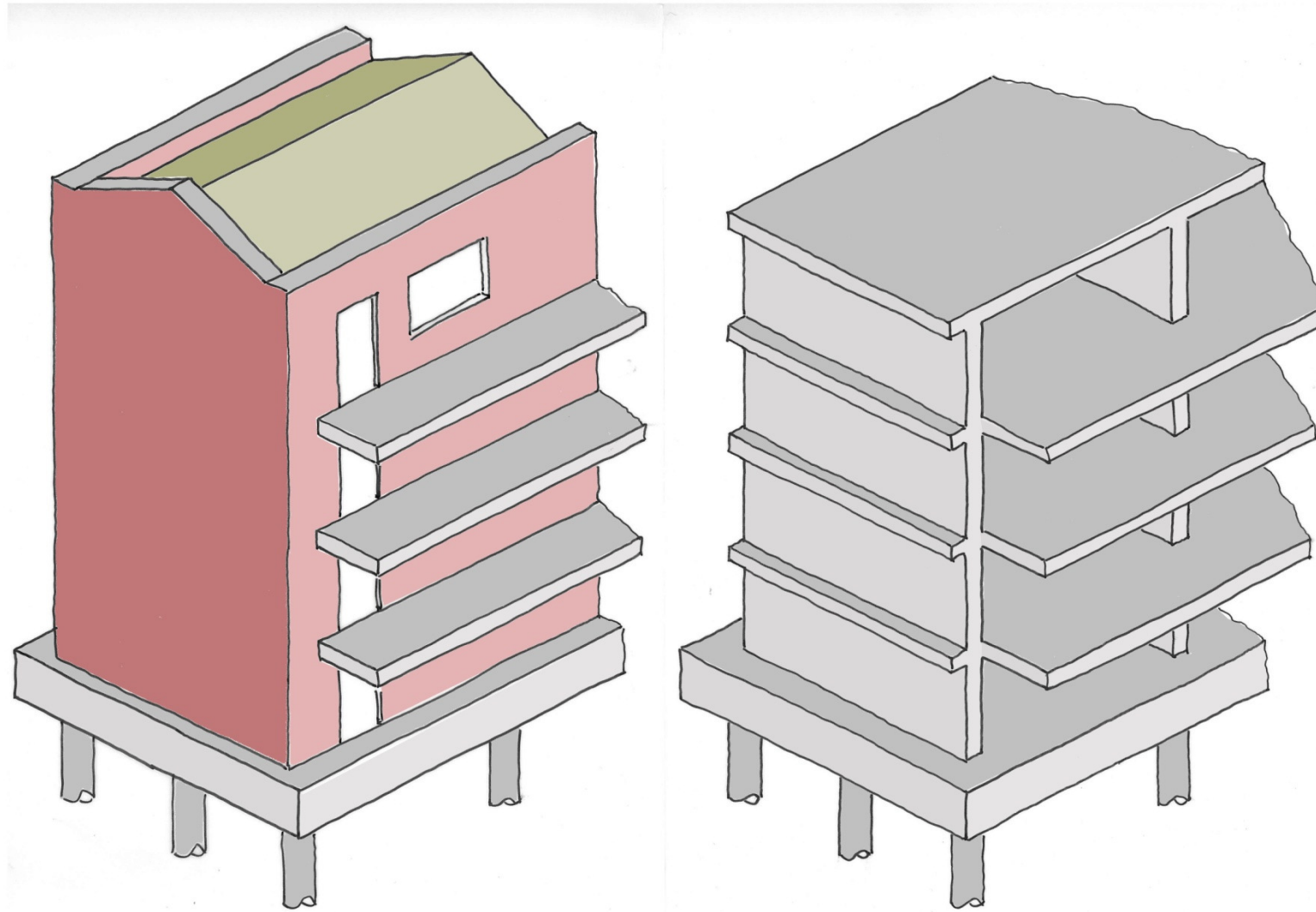
- Built between 1971-75
- Four near identical blocks



The Structural Form

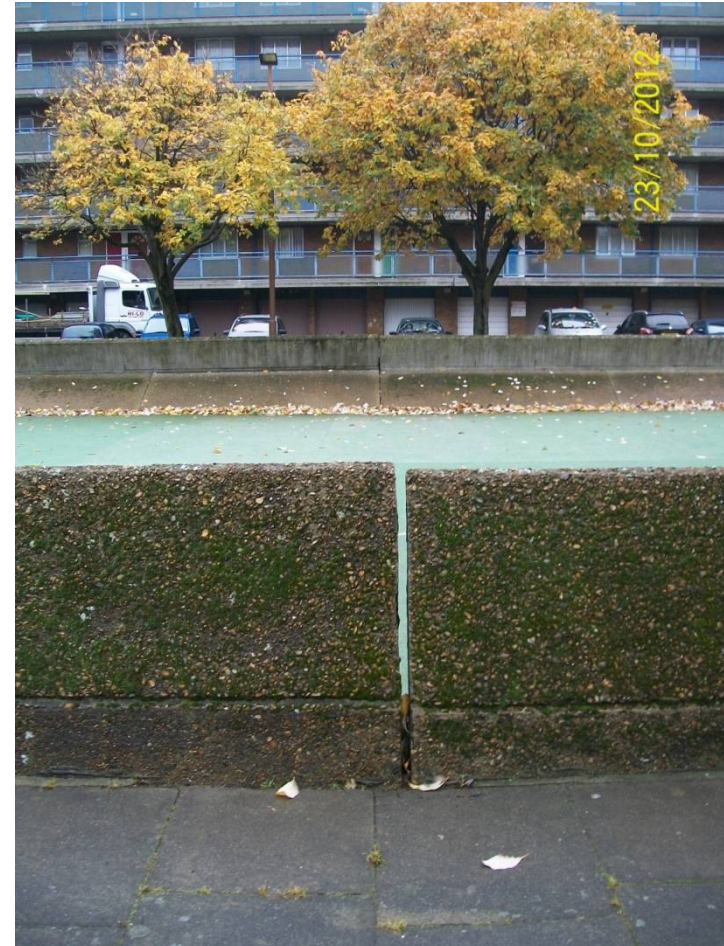


The Structural Form

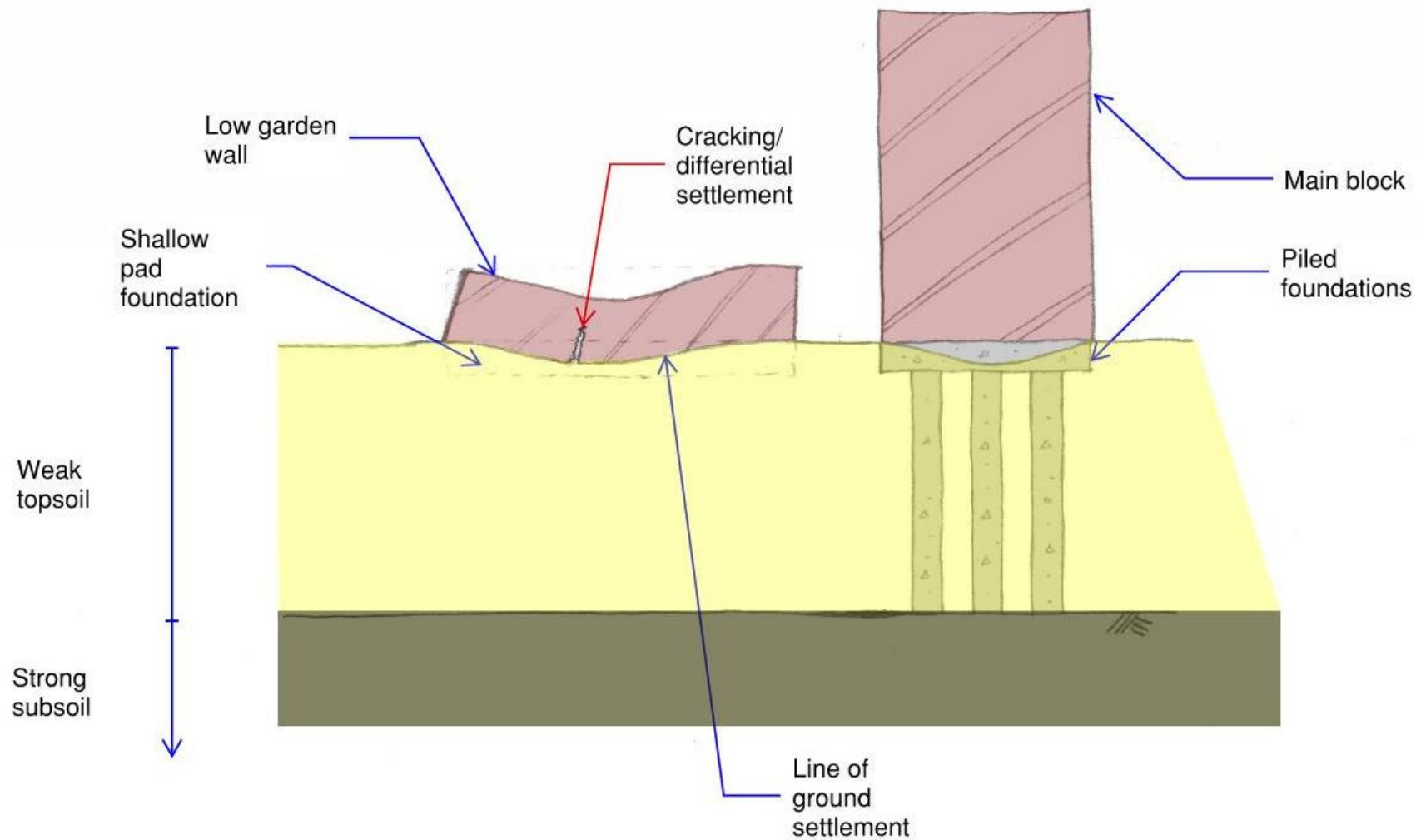


- The brickwork is not part of the primary structure

Why are we seeing cracks in the low level garage/garden walls?



Why are we seeing cracks in the low level garage/garden walls?



Geotechnical considerations



Structural Condition

Two key items of structure to consider

- Concrete structure
- Brickwork cladding

Concrete

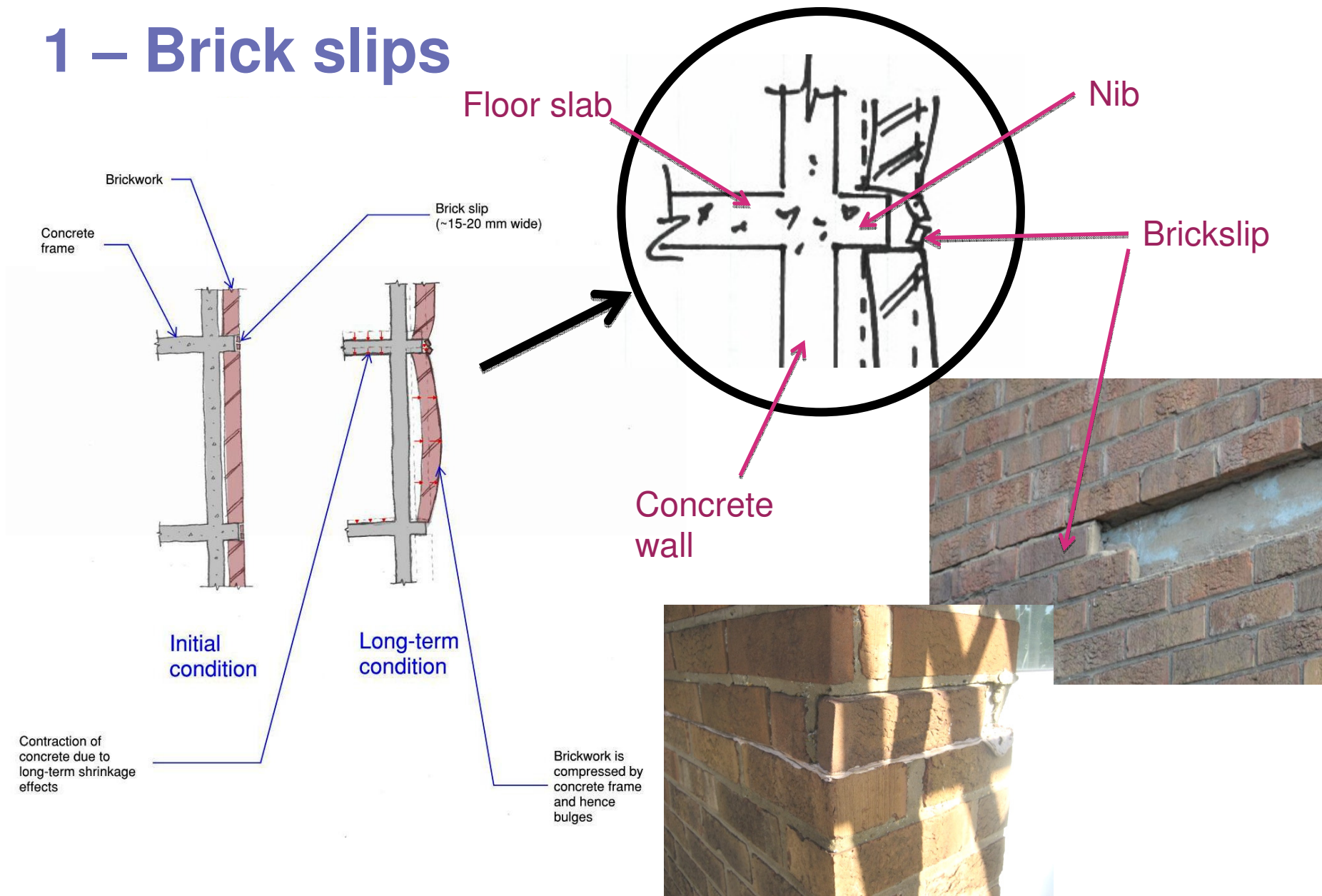
- The structures are in good condition for their age (subject to testing)
- Some localised deterioration on exposed elements (i.e. walkways)
- Replacement of waterproofing on walkways (already in investment programme of works)



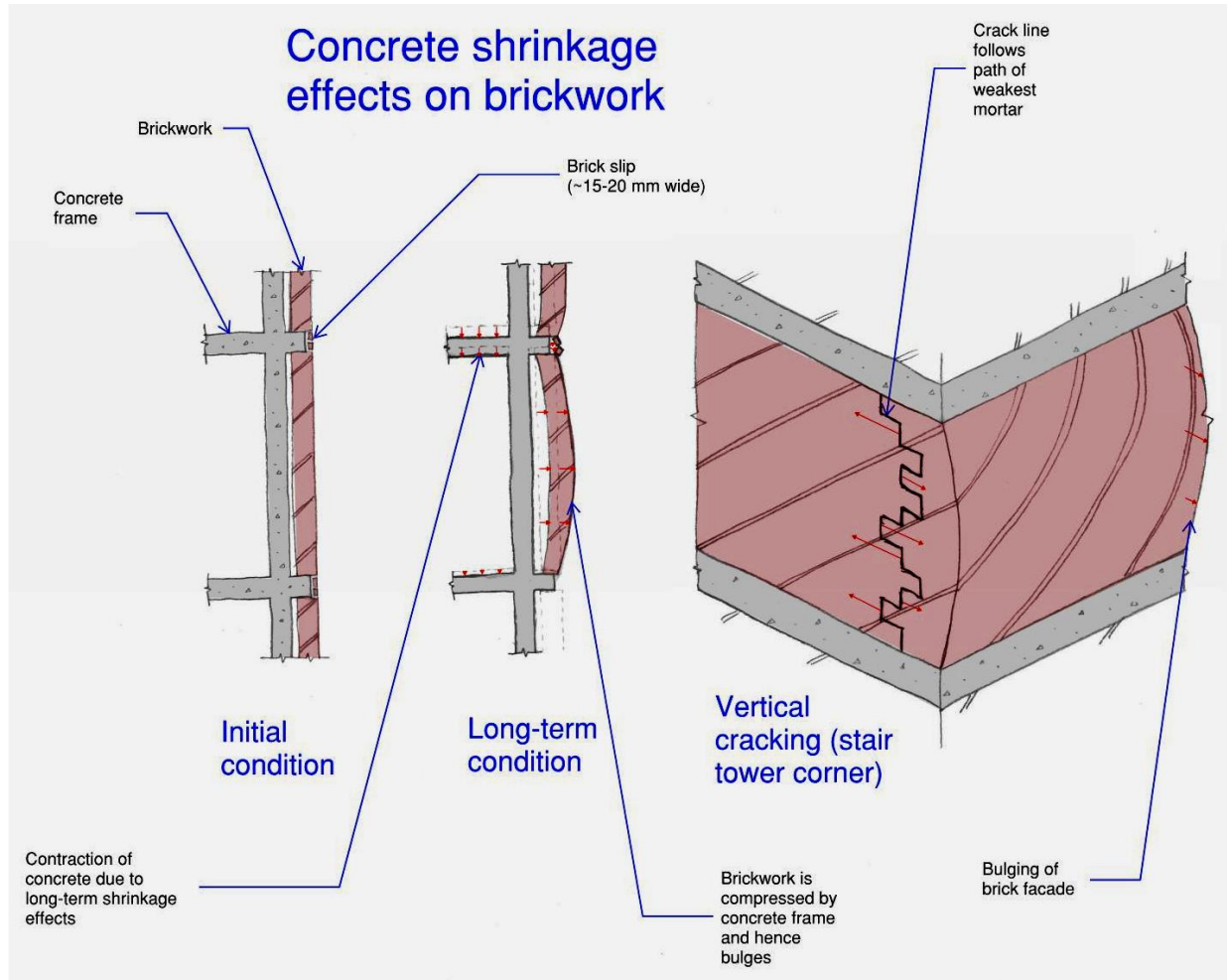
Masonry



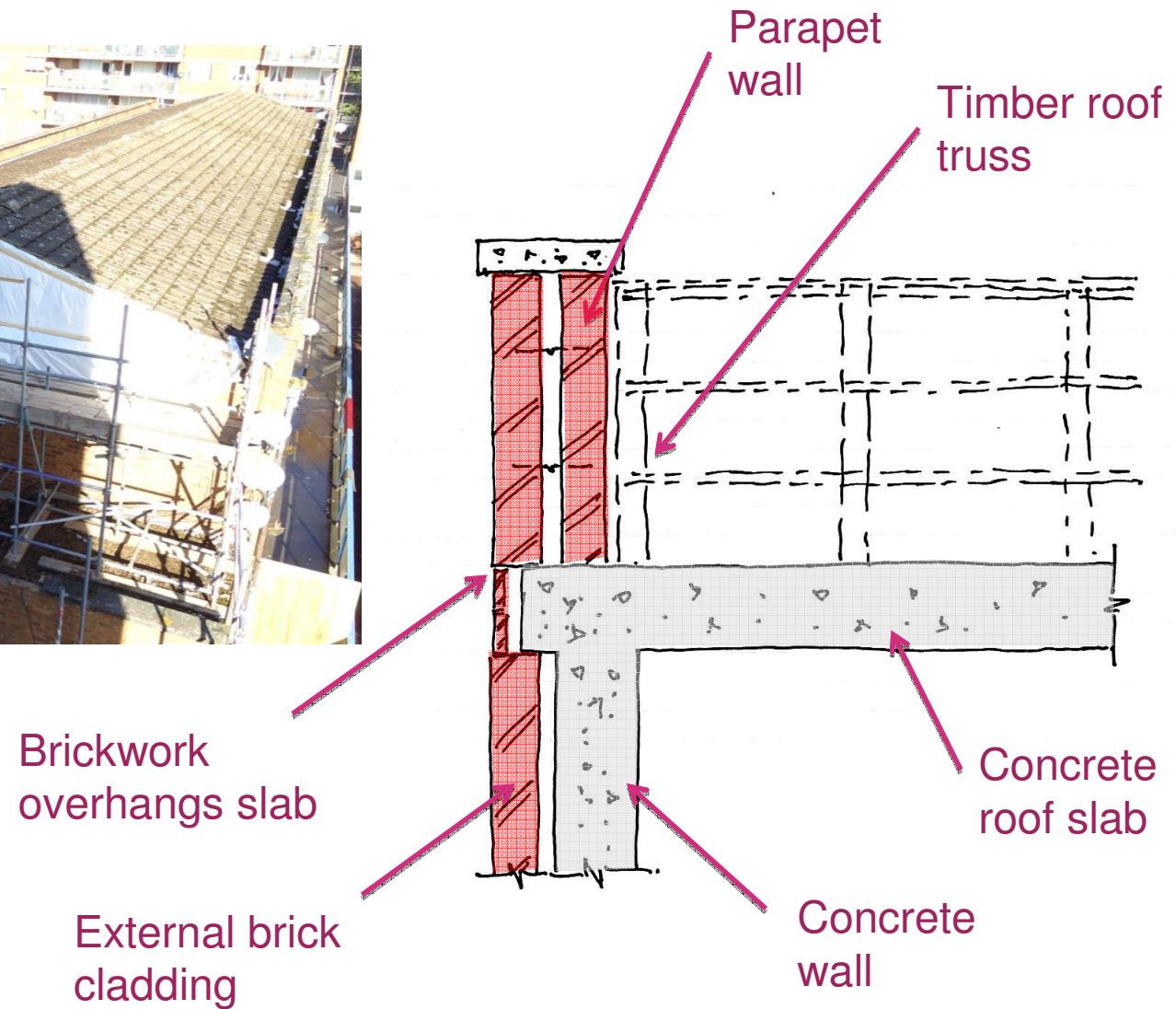
1 – Brick slips



2 – Brick panels



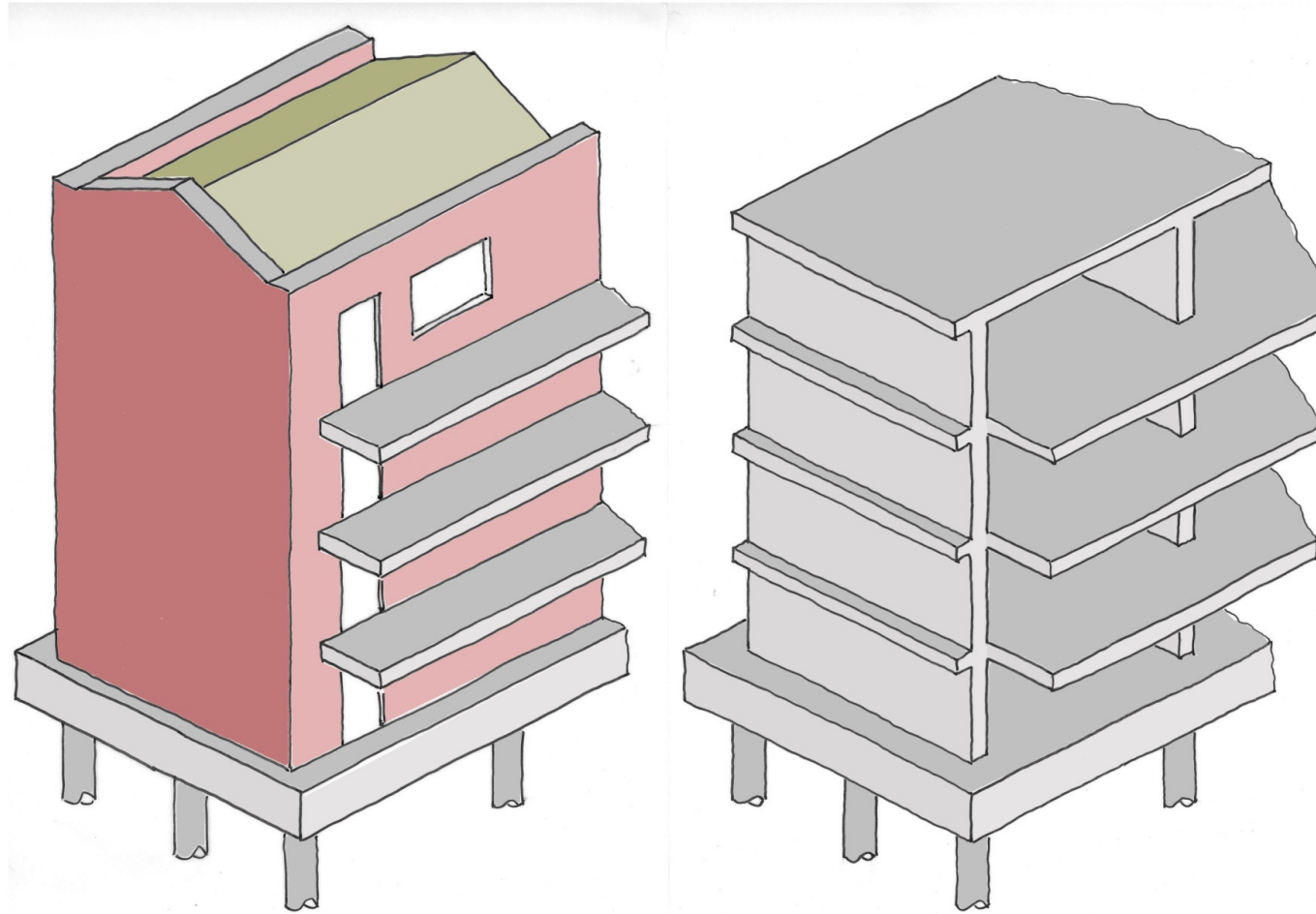
3 – Gable parapets



4 – Long ‘side’ parapets



The Structural Form



- The brickwork can be removed from the stair cores and gable ends without compromising stability or weather-tightness

Conclusions

- The Estate is structurally sound and the structure is in good condition for its age
- The movement cracks seen in the secondary structures can be explained by the knowledge of foundations and ground conditions (the main blocks are not affected as they are piled)
- Some localised repair required to concrete slabs
 - *Concrete repairs + replacement of asphalt is already included in scheduled works*
- More widespread repair to masonry cladding required
 - *Various solutions are available. These are currently being worked up and costed (approx 2 weeks) and will be reported when available (approx 4 weeks)*



Next Steps

Concrete – next steps

- Testing to walkways and garage areas (collection of drilled dust samples, small number of cores)
- Investigation and repair of above ground drainage (rainwater pipes)
- Some localised repair *
- Replacement of waterproofing on external slabs *

** Already included in scheduled works*



Masonry – next steps

- Options currently being assessed for cost, longevity and sustainability, these include.....

Parapets

- Rebuilding of gable parapets
- Rebuilding of long 'side' parapets or cutting in expansion joints

Stair towers

- Removal of brickslips and installation of remedial ties
- Removal of bricks and rebuild in bricks
- Removal of bricks and clad in new material



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