

IN THE COURT OF SESSION

SUMMONS

in the cause

GREATER GLASGOW HEALTH BOARD, an area health board constituted under the National Health Service (Scotland) Act 1978, having its principal office at J B Russell House, Gartnavel Royal Hospital Campus, 1055 Great Western Road, Glasgow G12 0XH

Pursuer

against

(FIRST) MULTIPLEX CONSTRUCTION EUROPE LIMITED, a company incorporated under the Companies Acts (Company Number 03808946), having its registered office at 99 Bishopsgate, Second Floor, London EC2M 3XD;

(SECOND) BPY HOLDINGS LP (a firm) (formerly known as BROOKFIELD EUROPE LP (a firm)), a limited partnership formed under the Limited Partnerships Act 1907 (Company Number LP013183), having its registered office at Level 25, 1 Canada Square, Canary Wharf, London E14 5AA, and **BPY HOLDINGS GP LIMITED**, the general partner thereof as such general partner and as an individual, a company registered in Ontario, Canada (Registered Number 1775491), having its registered office at Brookfield Place, 181 Bay Street, Suite 300, Toronto, Ontario M5J 2T3;

(THIRD) CURRIE & BROWN UK LIMITED, a company incorporated under the Companies Acts (Company Number 01300409), having its registered office at 40 Holborn Viaduct, London EC1N 2PB; and

(FOURTH) CAPITA PROPERTY AND INFRASTRUCTURE LIMITED, a company incorporated under the Companies Acts (Company Number 02018542), having its registered office at 30 Berners Street, London W1T 3LR

Defenders

Elizabeth II, etc

CONCLUSIONS

1. For payment by the first, third and fourth defenders, jointly and severally, or severally, to the pursuer of the sum of SEVENTY TWO MILLION EIGHT HUNDRED THOUSAND POUNDS STERLING (£72,800,000) with interest thereon at the rate of 8 per cent per annum from the date of citation until payment.
2. For payment by the second defenders, jointly and severally, or severally, to the pursuer of the sum of SEVENTY TWO MILLION EIGHT HUNDRED THOUSAND POUNDS STERLING (£72,800,000) with interest thereon at the rate of 8 per cent per annum from the date of citation until payment.
3. For the expenses of the action.

CONDESCENDENCE

1. The pursuer is Greater Glasgow Health Board, an area health board constituted under the National Health Service (Scotland) Act 1978, having its principal office at J B Russell House, Gartnavel Royal Hospital Campus, 1055 Great Western Road, Glasgow G12 0XH. The pursuer's address was formerly at Dalian House, 350 St Vincent Street, Glasgow G3 8YZ. The first defender is Multiplex Construction Europe Limited, a company incorporated under the Companies Acts (Company Number 03808946), having its registered office at 99 Bishopsgate, Second Floor, London EC2M 3XD. The first defender was formerly known as Brookfield Construction (UK) Limited until 21 February 2011. Thereafter it was known as Brookfield Multiplex Construction Europe Limited until 31 August 2016. The first defender has had a principal place of business at 23 Hanover Square, London W1S 1JB. The second defender is BPY Holdings LP, a limited partnership formed under the Limited Partnerships Act 1907 (Company Number LP013183), having its registered office at Level 25, 1 Canada Square, Canary Wharf, London E14 5AA (the "**Limited Partnership**"), and BPY Holdings GP Limited, the general partner thereof as such general partner and as an individual, a company registered in Ontario, Canada (Registered Number 1775491), having its registered office at Brookfield Place, 181 Bay Street, Suite 300, Toronto, Ontario M5J 2T3 (the "**General Partner**"). The Limited Partnership was formerly known as Brookfield Europe LP until 2 May 2013. The Limited Partnership has had a place of business at 23 Hanover Square, London W1S 1JB. The General Partner was formerly known as Brookfield Europe GP Limited. The third defender is Currie & Brown UK Limited, a company incorporated under the Companies Acts (Company Number 01300409), having its registered office at 40 Holborn Viaduct, London EC1N 2PB. The third defender formerly had its registered office at Dashwood House, 69 Old Broad Street, London EC2M 1QS. The third defender has a place of business at Fourth Floor, 140 St Vincent Street, Glasgow G2 5NE. The fourth defender is Capita Property and Infrastructure Limited, a company incorporated under the Companies Acts (Company Number 02018542), having its registered office at 30 Berners Street, London W1T 3LR. The fourth defender was formerly known as Capita Symonds Limited from 4 May 2004 until 1 October 2013. The fourth defender formerly had addresses at 8th Floor, The Beacon, 176 St Vincent Street, Glasgow G2 5SG and at Skypark SP1, 8 Elliot Place, Glasgow G2 8EP. The fourth defender now has a place of business at 4th Floor, 7 West Nile Street, Glasgow G1 2PR. In terms of the contracts and the guarantee condescended upon below (with the exception of the contract between the pursuer and the third defender) the parties have prorogated the jurisdiction of the Scottish courts. The third defender has a place of domicile in Glasgow, Scotland. In any event, the

harmful events which are the subject matter of these proceedings occurred in Glasgow, Scotland. This court has jurisdiction. There are no proceedings pending before any other court involving the present cause of action and between the parties hereto. There is no agreement prorogating jurisdiction over the subject matter of the present cause of action to another court.

Building Contract

2. The pursuer and the first defender entered into an Agreement on 18 December 2009 (the “**Building Contract**”). In terms of the recital to, and Clause 1 of, the Building Contract the first defender was to “*Provide the Works*” for “*the New South Glasgow Hospital*” (the “**Hospital**”). The Hospital is now generally referred to as the Queen Elizabeth University Hospital. The Hospital is of a significant size and contains a number of important facilities. In particular the Hospital includes both an adult hospital (the “**Adult Hospital**”) and a children’s hospital. The children’s hospital is specifically known as the Royal Hospital for Children, (“**RHC**”). Design and construction of the Hospital involved works totalling many hundreds of millions of pounds in value. The works were of significant scope and complexity. The Building Contract was a design and build contract in terms of which the first defender bore both design and build responsibilities (including commissioning responsibilities). The works under the Building Contract were to be carried out in various stages. Without prejudice to that generality, amongst those stages were Stages 2 and 3. Stage 2 related to design of the Hospital. Stage 3 related to design and construction of the Hospital. On 29 January 2015, subject to a schedule of incomplete works Stage 3 of the Hospital was certified as having been completed, under and in terms of the Building Contract, on 26 January 2015. The Building Contract is produced, referred to for its whole terms and held to be incorporated herein for the sake of brevity.

3. In terms of Clause 1 of the Building Contract, the works thereunder were to be performed in accordance with, among other things, “*the NEC Engineering and Construction Contract, Option C: Target contract with activity schedules June 2005 (as the same are amended in [sic] by the Contract Data)*” (each individual clause thereof is hereafter an “**NEC Clause**”). In terms of the Contract Data, Part One, the applicable Secondary Options of the NEC Engineering and Construction Contract (June 2005) were X2, X4, X5, X7, X13, X16, X18.5, Y(UK)2 and Z clauses.

4. In terms of NEC Clause 20, the first defender was obliged, among other things, as follows: *“The Contractor [the first defender] Provides the Works in accordance with the Works Information”*. In the Contract Data Part One (forming part of the Building Contract in terms of Clause 6 of the Building Contract) the composition of the Works Information was defined as follows:

“The Works Information comprises

- o *The Contract Documents: Part Five (Works Information);*
- o *The Employers [sic] Requirements; and*
- o *The Contractor’s Proposals including the M&E Clarification Log”*

5. In terms of NEC Clause 21 (as amended by the Contract Data Part One) the first defender was obliged, among other things, as follows:

“The Contractor [the first defender] designs the parts of the works which the Works Information states he is to design. The Contractor designs the parts of the works which the Works Information states he is to design using the degree of skill and care that would reasonably be expected of a competent professional design and build contractor experienced in carrying out projects of a similar nature, scope and complexity to those comprised in the works”.

Delictual obligation of the first defender

6. *Separatim*, the first defender owed the pursuer a duty at common law to exercise reasonable skill and care in performing its services as design and build contractor in relation to the Hospital.

Parent company guarantee

7. The second defenders and the pursuer entered into a parent company guarantee on 18 and 22 December 2009 (the **“Guarantee”**). In terms of Clause 2 of the Guarantee the parties agreed, among other things, that: (1) The first named second defender *“irrevocably and unconditionally”* guaranteed to the pursuer *“the due and punctual performance”* by the first defender of *“all the obligations, liabilities, warranties, duties and undertakings”* of the first defender to the pursuer *“arising pursuant to the Building Contract”*; and (2) The first named second defender would *“perform or cause to be performed”* *“all the obligations, liabilities, warranties, duties and undertakings”* of the first

defender to the pursuer “*arising pursuant to the Building Contract*”. Clause 2 of the Guarantee also makes provision in respect of, among other things, payment by the first named second defender to the pursuer in respect of claims made by the pursuer. The Guarantee is produced, referred to for its whole terms and held to be incorporated herein for the sake of brevity.

Lead consultant appointment

8. The pursuer and the third defender entered into a Memorandum of Agreement on 6 April 2011 (the “**Lead Consultant Appointment**”). In terms of the recitals to, and Clause 1 of, the Lead Consultant Appointment the third defender was the pursuer’s lead consultant in relation to the Hospital project and was obliged to lead the technical advisory team by performing the duties contained in the Memorandum of Agreement. The third defender acted as the pursuer’s lead consultant, and led the technical advisory team, in relation to the Hospital project. The third defender had been performing the role of lead consultant, and had led the technical advisory team, for a considerable period of time prior to the formal entering into of the Lead Consultant Appointment. The Lead Consultant Appointment is produced, referred to for its whole terms and held to be incorporated herein for the sake of brevity.
9. In terms of Clause 1.1 of the Lead Consultant Appointment, the pursuer engaged the third defender to perform duties subject to the terms of the Lead Consultant Appointment. In terms of Clause 1.2 of the Lead Consultant Appointment, Parts A-G of the Appendix thereto constituted part of the Lead Consultant Appointment. Without prejudice to that generality: (1) Appendix Part A contained “*Conditions of Appointment*”; (2) Appendix Part B contained “*Scheme Particulars*”; and (3) Appendix Part C contained “*Consultant’s Duties*”.
10. Appendix Part A of the Lead Consultant Appointment imposed a number of obligations on the third defender. Without prejudice to that generality those obligations included the following:
 - “1.1 ***Duration of commission***
The appointment of the Consultant [the third defender] will commence from the date that the Consultant commenced carrying out the Duties and the commission, ... as set out in Part C of the Appendix. ...

1.6 **Duty of care**

The Consultant is to exercise reasonable skill, care and diligence in the discharge of the Duties. Submission of drawings, calculations, specification and other documentation produced by the Consultant for comment by the Board shall not relieve the Consultant of this responsibility. If in the performance of the Duties the Consultant has discretion exercisable as between the Board and any other body the Consultant shall exercise its discretion fairly.”.

Delictual obligation of the third defender

11. *Separatim*, the third defender owed the pursuer a duty at common law to exercise reasonable skill, care and diligence in performing its services as lead consultant in relation to the Hospital project and leading the technical advisory team.

Project supervisor appointment

12. In terms of: (i) Two letters from the pursuer to the fourth defender dated 21 May 2010 and 28 March 2011 respectively, which were agreed to by the fourth defender by its conduct or otherwise; and (ii) An Agreement between the pursuer and the fourth defender on 28 May 2013 (together the “**Project Supervisor Appointment**”), the pursuer and the fourth defender agreed the terms of the fourth defender’s appointment as project supervisor for the Hospital project. The pursuer acted as project supervisor in relation to the Hospital project. In terms of the Project Supervisor Appointment, the scope of the fourth defender’s work as project supervisor involved various duties and services, including (without prejudice to that generality) those as detailed in the pursuer’s “High Level Information Pack – Supervisor Role” dated February 2010 (the “**HLIP**”). The Project Supervisor Appointment (including the HLIP) is produced, referred to for its whole terms and held to be incorporated herein for the sake of brevity.
13. In terms of the Project Supervisor Appointment, the fourth defender’s services as project supervisor were to be performed in accordance with, among other things, the NEC3 Professional Services Contract, Option A (“**NEC3 PSC**”). In terms of NEC3 PSC Clause 20, the fourth defender was obliged, among other things, as follows:

“The Consultant’s [the fourth defender’s] obligation is to use the skill and care normally used by professionals providing services similar to the services”.

Delictual obligation of the fourth defender

14. *Separatim*, the fourth defender owed the pursuer a duty at common law to exercise reasonable skill and care in performing its services as project supervisor.

Issues and breaches

15. There are a number of issues arising from defects in the Hospital. Such issues and defects include, but are not limited to, those condescended upon below. The first defender has breached the terms of the Building Contract in respect of the issues and defects. The third defender has breached the terms of the Lead Consultant Appointment in respect of the issues and defects. The fourth defender has breached the terms of the Project Supervisor Appointment in respect of the issues and defects. In particular, without prejudice to the foregoing generality, the first, third and fourth defenders have respectively breached the terms condescended upon in Arts. 2 to 5, 8 to 10 and 12 and 13 of Condescendence above. The first, third and fourth defenders have also breached their common law duties. The first, third and fourth defender's breaches have each caused the pursuer to suffer, or at least materially contributed to the pursuer suffering, the loss and damage condescended upon below. Without prejudice to the generality of the foregoing, the first, third and fourth defenders were in breach of contract, and in breach of their common law duties, by reason of the circumstances condescended upon below in relation to Issues 1 to 11 there condescended upon.

Issue 1: Water system

16. After handover of the Hospital by the first defender to the pursuer, systemic contamination of the domestic water system was identified. The pursuer has had to install an extensive chlorine dioxide dosing system to control the domestic water bacteria. Defects which have been identified in relation to the water system (the "**Water System Defects**") in the Hospital include (without being limited to) the following: (1) The use of mild steel pipework; (2) The use of copper pipework; (3) The use of flexi-pipes; (4) The use of pipework from manufacturers not included in the O&M Manuals and not relevantly approved; (5) Leaving pipework open during installation work (making it vulnerable to contamination); (6) Pipework and fittings corrosion; (7) Corrosion of domestic water meters; (8) Use of a disinfectant (Sanosil Super 25) which includes silver and hydrogen peroxide, without evidence of relevant advice to do so; (9) Small debris in a cold water storage tank, indicating a failure to clean and flush the cold water storage tanks; (10)

Pressure testing being carried out after a leachate flushing regime, rather than before; (11) Lack of commissioning information in O&M manuals; (12) Lack of a water risk assessment in the O&M manuals; (13) Storage volumes of the water system larger than required; (14) Inadequate provision for filling and top up of the water system; and (15) Incoming water main not being to Scottish Water requirements.

17. Without prejudice to the generality of the terms of Art. 15 of Condescendence, the Water System Defects have been caused, or at least materially contributed to, by: (i) the first defender's design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:

- (1) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.2, required the Contractor (the first defender) to "*comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in Section 5.1.2*". Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Mandatory Documentation in Table 2 included, amongst other things, various Scottish Health Technical Memoranda (each individually an "**SHTM**"), various Health Technical Memoranda (each individually an "**HTM**") and various Health Building Notes (each individually an "**HBN**").
- (2) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.3, required the Contractor to "*have regard to and take into consideration the requirements of the documents listed [in] Table 3 – NHS Guidance Documentation in section 5.1.3*". Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Guidance Documentation in Table 3 included, amongst other things, various Scottish Health Technical Notes (each individually an "**SHTN**") and various Scottish Health Planning Notes (each individually an "**SHPN**").
- (3) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.4.1, in Section 5.1.4 (Additional Guidance), required the Contractor to comply with various "*standards and documents*", including (without prejudice to that generality): (i) "*b) The Technical Standards complying with the Building Standards (Scotland) Regulations 1990 as amended*"; (ii) "*d) Current British Standards, European Standards, and Codes of*

Practice, as appropriate” (each British Standard is individually a “BS”); (iii) “*m) Requirements of the utilities companies*”; and (iv) “*o) Local Bye-Law and Regulations*”.

- (4) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.10, required the Contractor to “*provide Works that comply at all times with the requirements of Table 2, Table 3 and the Additional Guidance identified at Section 5.1.4*”.
- (5) Employer’s Requirements, Section 6.0 (Construction Phase Requirements), Section 6.8 (Commissioning and Handover), Section 6.8.5 (Works inspection, testing and acceptance activities), Paragraph 6.8.5.26, required the Contractor to provide in draft various documents, including (without prejudice to the generality), O&M Manuals and Health & Safety Files “*containing, as a minimum, all testing and commissioning information so far as it is reasonably practicable*”.
- (6) Employer’s Requirements, Section 7.0 (Architectural Requirements), Paragraph 7.9.6, in Section 7.9 (Finishes), required that:

“Additional specific finishes requirements that must be met by the Contractor’s Proposals are identified below; ...

h) IPS solutions shall be required in all toilet areas and areas where wet/sink provision is required (e.g. utility rooms). The use of flexible hose connections is prohibited”.

- (7) Employer’s Requirements, Section 8.0 (Building Services Requirements), Paragraph 8.2.8.3, in Section 8.2.8 (Water Systems and Filtration), required that:

“The Contractor shall design and install the domestic cold and hot water supply installations to fully comply with the requirements of:

- a) (S)HTM04-01 [sic]*
- b) SHTM 2027*
- c) SHTM 02*
- d) SHTM 2040 “The control of legionella in healthcare premises - a code of practice”; and*
- d) Health Guidance Note “Safe Hot Water and Surface Temperatures”.*

- (8) Employer's Requirements, Section 8.0 (Building Services Requirements), Paragraph 8.2.8.4, in Section 8.2.8 (Water Systems and Filtration), required that:

"Pipework shall be stainless steel with compatible accessories".

- (9) Employer's Requirements, Section 8.0 (Building Services Requirements), Paragraph 8.2.8.16, in Section 8.2.8 (Water Systems and Filtration), required the Contractor to

"carry out a full risk assessment of the complete water systems of the legionella risks and ensure that the system design and equipment selection and installation is carried out to minimise risks".

- (10) Employer's Requirements, Section 8.0 (Building Services Requirements), Paragraph 8.2.28.5, in Section 8.2.28 (Testing and Commissioning of Mechanical Services), required the Contractor to provide "*comprehensive*" copy sets of O&M Manuals and other documents "*for all installed and commissioned equipment*".

- (11) SHTM 04-01, Part A, (listed in Table 2 "*NHS Mandatory Documentation*" in the Employer's Requirements, Section 5.1.2), Paragraph 1.10, required that:

"the design and installation of the hot and cold water services, new or extended, in any NHS premises should also comply with [among other things]:

- *the Water Byelaws 2000 (Scotland), recommendations of the water suppliers in the Water Regulations Advisory Scheme's (WRAS) 'Water Regulations Guide', and any other requirements of the local water supply authority".*

- (12) SHTM 04-01 Part A, Paragraph 7.3 required (among other things) that:

"[Water] Storage should be designed to minimise residence time in the cistern and maximise turnover of water to avoid stagnation and deterioration of water quality".

- (13) SHTM 04-01, Part A, Paragraph 9.23 required that:

“Where storage calorifiers are used [as is the case at the Hospital], the hot water storage capacity should be sufficient to meet the consumption for up to two hours; this must include the period of maximum draw-off. The installed hot water capacity should be sized for current needs and should not be designed with built-in capacity for future extensions”.

- (14) SHTM 04-01, Part A, Paragraph 16.2 required, among other things, that:

“The system should be regularly checked during installation to ensure that open pipes, valve ends, cylinder connections etc are sealed to prevent the ingress of dust/debris that could cause problems during commissioning and subsequent operation. ...”.

Issue 2: Standard isolation rooms ventilation

18. Defects which have been identified in relation to standard isolation rooms ventilation (the **“Standard Isolation Rooms Ventilation Defects”**) in the Hospital include (without being limited to) the following: (1) Isolation suite extract vents terminate behind louvres on façade and formed turrets above plant room; (2) Safe change filter housings installed internally to the building; (3) Non-standard extract ventilation between bedrooms and en suites; (4) No low level air transfer grilles within the en suite doors; (5) Excessive access hatches in ductwork; (6) No gas tight shut off damper or spectacle plate on extract systems prior to extract fans; (7) No audio and visual alarms outside entrances to gowning lobbies; (8) No common alarm panel at nurse station; (9) Supply and extract plant and duct access hatches not identified as a biohazard; (10) Supply and extract plant and duct access hatches not identified with the rooms they serve; and (11) Lobby dial pressure gauges inappropriate for monitoring the requisite pressure differential.
19. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Standard Isolation Rooms Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
- (1) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.3, required the Contractor to *“have regard to and*

take into consideration the requirements of the documents listed in Table 3 – NHS Guidance Documentation in Section 5.1.3’. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Guidance Documentation in Table 3 included, amongst other things, various HBNs.

(2) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.10, required the Contractor to *“provide Works that comply at all times with the requirements of Table 2, Table 3 and the Additional Guidance identified at Section 5.1.4”.*

(3) Employer’s Requirements, Section 8.2.14 (Ventilation of Isolation Rooms), required (among other things) that:

“8.2.14.4 The Contractor shall provide air conditioning to Isolation Rooms to support:

- a) Employer’s Requirements;*
- b) Clinical Output Specification; and*
- c) NHS Infection Control standards*

With strict positive / negative pressure differentials”.

(4) HBN 04-01, Supplement 1 (Isolation facilities for infectious patients in acute settings), (listed in Table 3 “NHS Guidance Documentation” in the Employer’s Requirements, Section 5.1.3) set out, among other things, the ventilation philosophy required for an isolation suite and required (without prejudice to the generality) that:

“Ventilation – general ...

4.6 ... A flow sensor should be fitted to each system that will alarm on fan failure at a designated nurse station and the estates department. ...

Extract ventilation

4.12 An extract terminal should be fitted at a high level in the en-suite room. An additional terminal may be fitted at low level adjacent to the bedhead in the bedroom.

- 4.13 *A transfer grille should be fitted at low level in the door between the bedroom and en-suite room.*
- 4.14 *The extract duct should be fitted with a spectacle plate or gas-tight damper so that the system can be sealed to allow the isolation suite to be disinfected. ...*
- 4.15 *... Access and cleaning hatches should only be fitted [in ductwork] where absolutely necessary. If fitted they should be of the sealed type and marked with a bio-hazard symbol. ...*
- 4.16 *... If extract filters are fitted they should be in a 'safe change housing' outside the building on the suction side of the fan. ...*
- 4.19 *The supply AHU and distribution ductwork must be clearly marked to identify the isolation suite that they serve. ...*
- 4.21 *A pressure stabiliser of the balanced blade type, set to operate at 10 pascals, should be fitted above the door between the lobby and the bedroom. ...*
- 4.22 *A direct reading gauge showing the pressure in the lobby with respect to the corridor should be mounted at eye level on the corridor wall adjacent to the lobby entry door. The gauge and lobby entry door must be clearly marked to identify the isolation suite to which they refer."*

- (5) Employer's Requirements, Appendix B: Clinical Output Specification: Generic Adult Wards (NSGACL Generic Wards NSG_iss1_rev), Paragraph 2.1 required one room per ward for isolation purposes and having an associated gowning lobby. The associated drawings for isolation suites (NSGACL-G1274_M (57)01-A3_iss1_rev (Isolation Suites, Plantroom Adjacent Ventilation Systems 2009) and NSGACL-G1724_M (57)02-A4_iss1_rev (Isolation Suite Ventilation System Plantroom Above 2009)) included a layout for a positively pressurised ventilation lobby (to prevent egress or ingress of contaminated air).

Issue 3: Adult Hospital Ward 4B ventilation

20. Defects which have been identified in relation to Adult Hospital Ward 4B ventilation (the “**Ward 4B Ventilation Defects**”) in the Hospital include (without being limited to) a failure to achieve the following: (1) The requisite positive air pressure differential in patient rooms, relative to adjacent space; (2) The requisite air change rate in patient rooms; (3) The requisite positive air pressure differential between the general ward and the remainder of the hospital; and (4) The requisite classification of HEPA filtration of air.
21. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Ward 4B Ventilation Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
- (1) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.2, required the Contractor “*to comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in section 5.1.2*”. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Mandatory Documentation in Table 2 included, amongst other things, various HTMs.
 - (2) HTM 03-01 (listed in Table 2 “*NHS Mandatory Documentation*” in the Employer’s Requirements, Section 5.1.2), Appendix 2, required (among other things): (a) a positive air pressure differential in patient rooms, relative to adjacent space, of 10 Pa or above; (b) an air change rate in patient rooms of 10 per hour; and (c) a supply filter H12 in a neutropeanic patient ward.
 - (3) Clinical Output Specification (Appendix B in the Employer’s Requirements), Adult Hospital, Haemato-Oncology, Section 1, required (among other things):

“A high proportion of the patients receive chemotherapy and are immuno-compromised, making them vulnerable to infection...”

Ventilation

Please note the haemato-oncology ward area has a very special function and a considerably higher than average requirement for additional engineering support / infrastructure. There should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to the rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropaenic patients as in the Beatson West of Scotland Cancer Centre”.

- (4) Project Manager’s Instruction 424, required (among other things): (a) a positive air pressure differential in patient rooms, relative to adjacent space, of 5 to 10 Pa; (b) an air change rate in patient rooms of 10 to 12 per hour; and (b) a positive air pressure differential between the general ward and the remainder of the hospital of 2 to 3 Pa.

Issue 4: RHC Ward 2A Ventilation

22. Defects which have been identified in relation to RHC Hospital Ward 2A ventilation (the **“Ward 2A Ventilation Defects”**) in the Hospital include (without being limited to) a failure to achieve the following: (1) The requisite positive air pressure differential in patient rooms, relative to adjacent space; (2) The requisite air change rate in patient rooms; (3) The requisite positive air pressure differential between the general ward and the remainder of the hospital; and (4) The requisite classification of HEPA filtration of air.
23. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Ward 2A Ventilation Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
 - (1) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.1.2, required the Contractor *“to comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in section 5.1.2”*. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Mandatory Documentation in Table 2 included, amongst other things, various HTMs.

- (2) HTM 03-01 (listed in Table 2 “*NHS Mandatory Documentation*” in the Employer’s Requirements, Section 5.1.2), Appendix 2, required (among other things): (a) a positive air pressure differential in patient rooms, relative to adjacent space, of 10 Pa or above; (b) an air change rate in patient rooms of 10 per hour and (c) a supply filter H12 in a neutropeanic patient ward.
- (3) Clinical Output Specification (Appendix B in the Employer’s Requirements), RHC, Haematology & Oncology, Sections 1 and 7 (in particular) specify that the ward would be “*high dependency*”, should be at “*low positive pressure*”, a “*risk of infection to patients*” and that the ward would serve, amongst others, bone marrow transplant patients.

Issue 5: Plant and building services capacity

- 24. Defects which have been identified in relation to plant and building services capacity in the Hospital (the “**Capacity Defects**”) include (without being limited to) plant and building services (including, without prejudice to that generality, the air handling units (known as “**AHUs**”)) having insufficient capacity, and in particular (without prejudice to that generality) having no spare capacity, reducing and inhibiting the pursuer’s ability to facilitate future expansion or adaptation to the Hospital and its plant and building services..
- 25. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Capacity Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:

Employer’s Requirements, Section 8.0 (Building Services Requirements), Paragraph 8.1.25.1, in Section 8.1.25 (Service Capacity Reserve), required that:

“In accordance with Good Industry Practice, all plant, plant spaces and building services systems shall be specifically designed and provided with defined reserve capacity allowances and future expansion capabilities for The Works ...”.

Issues 6: Toughened glazing

26. Defects which have been identified in relation to toughened glazing in the Hospital (the “**Toughened Glazing Defects**”) include (without being limited to) instances of fractured glazing. Those include eleven recorded instances up to June 2019. Of those, two have been verified to have been as a result of nickel sulphide inclusions (known as “**NSI**”). The Hospital did not include any means to mitigate the risk of fractured glass falling into trafficked areas. The pursuer has had to carry out extensive mitigation measures to mitigate that risk.
27. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Toughened Glass Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
- (1) Employer’s Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:
- “The Contractor shall be responsible for the following:*
- 2.2.1 Providing Works that are fit for purpose; ...”.*
- (2) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.3 (Life Expectancies & Lifecycle Requirements), Paragraph 5.3.2, required external windows to achieve a design life of at least 25 years.
- (3) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.9 (Materials), Paragraph 5.9.4, required that:
- “The Contractor shall ensure that the whole quantity of each product and material required to complete the Works is of a consistent type, quality and overall appearance and is fit for its intended purpose. The Contractor shall ensure all products and materials are handled, stored, prepared and used or fixed strictly in accordance with the manufacturers’ written instructions or recommendations and not to be damaged when incorporated into the Works”.*

- (4) Employer's Requirements, Section 7.0 (Architectural Requirements), Paragraph 7.6.5, in Section 7.6 (Windows) requiring that:
- “s) ... *The robustness of all glazing must be appropriate to the functionality, relative to safety and resistance to damage ...*
- u) *the Contractor will be expected to use toughened glass in all locations (windows, doors, balconies, balustrades etc) except areas which are vulnerable to vandals or intruders at ground floor locations. ...*”.
- (5) The first defender's glazing specification (NA-SP-L40), specified the process for heat soaking thermally toughened glass to British Standard EN 14179.
- (6) CIRIA Report C632 – Guidance on Glazing at Height, published in 2005, section 10.3 advises the use of risk assessments for glazing, requiring that the risk be as low as reasonably practicable.

Issue 7: Doors

28. Defects which have been identified in relation to doors, there being in excess of 7,000 doors, in the Hospital (the “**Door Defects**”) include (without being limited to) the following: (1) Use of MDF, rather than solid wood or metal, in door frames; (2) Hinges detaching from door frames; (3) Length of screws used to fix hinges to doorsets too short; (4) Extensive impact damage; (5) Failure of door closers; (6) Delamination of door veneers; and (7) Issues with seals.
29. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Door Defects have been caused, or at least materially contributed to, by: (i) the first defender's design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
- (1) Employer's Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:

“The Contractor shall be responsible for the following:

2.2.1 *Providing Works that are fit for purpose; ...*”.

- (2) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.9 (Materials), Paragraph 5.9.4, required that:

“The Contractor shall ensure that the whole quantity of each product and material required to complete the Works is of a consistent type, quality and overall appearance and is fit for its intended purpose. The Contractor shall ensure all products and materials are handled, stored, prepared and used or fixed strictly in accordance with the manufacturers’ written instructions or recommendations and not to be damaged when incorporated into the Works”.

- (3) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.2, required the Contractor *“to comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in section 5.1.2”*. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Mandatory Documentation in Table 2 included, amongst other things, various SHTMs.

- (4) SHTM 58 (Internal doorsets) required that:

“2.13 The grade of doorset should relate to functional requirements ...”.

- (5) SHTM 59 (Ironmongery) required that:

“2.30 Hinges must be capable of supporting the door at temperatures of 800°C and higher. ... screws should not be less than 38mm”.

- (6) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.3 (Life Expectancies & Lifecycle Requirements), Paragraph 5.3.2, required internal doors to achieve a design life of at least 15 years.

- (7) Employer’s Requirements, Section 7.0 (Architectural Requirements), Section 7.5 (Doors), Paragraph 7.5.5, required that:

“The following criteria require to be incorporated into the Contractor’s proposals:

- f) *all door frames must be of solid or metal construction, and must be securely fixed in to the adjoining construction”.*

Issue 8: Heating system

- 30. The Hospital includes a heating system which contains MTHW (i.e. Medium Temperature Hot Water) heating installations with associated Combined Heat and Power (“**CHP**”) plant (the “**Heating System**”). Defects which have been identified in relation to the Heating System (the “**Heating System Defects**”) include (without being limited to) the following: (1) The CHP system is operating inefficiently with significant rejection of heat and with projected energy savings not having been realised; (2) The absorption chiller (an integral part of the CHP) is not operational; and (3) A water temperature to facilitate proper operation of the CHP is not being achieved. The first defender has been undertaking continuing works on its own account, without success, in an attempt to address these defects.

- 31. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Heating System Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:
 - (1) Employer’s Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:

“The Contractor shall be responsible for the following:

2.2.1 Providing Works that are fit for purpose; ...”.

 - (2) Employer’s Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.2, required the Contractor “*to comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in section 5.1.2*”. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance.

Such NHS Mandatory Documentation in Table 2 included, amongst other things, various SHTMs.

- (3) SHTM EnCOde – making energy work in healthcare (listed in Table 2 “*NHS Mandatory Documentation*” in the Employer’s Requirements, Section 5.1.2).
- (4) Employer’s Requirements, Appendix M, M&E.4, Section 3.9, (which included requirements for BREEAM Excellent rating).
- (5) Employer’s Requirements, Appendix M, M&E.4, Section 2.3, (which included design energy targets).
- (6) Employer’s Requirements, Appendix M, M&E.4, Section 2.4, (which included operational energy target).

Issue 9: Atrium roof

32. The Hospital includes a roof above the atrium in the Adult Hospital. That roof is constructed of a series of inflated cushions using an ETFE (i.e. ethylene tetrafluoroethylene) system (the “**ETFE Roof**”). Defects which have been identified in relation to the ETFE Roof (the “**ETFE Roof Defects**”) include (without being limited to) the following: As part of the overall fire strategy, the ETFE Roof was fitted by the first defender with a hot wire system. The purpose in doing so was that in the event of fire the hot wire system would operate to burn off parts of the ETFE to allow ventilation of the atrium. When tested in October 2017, 18 sections of the ETFE roof unintentionally burned off. The hot wire system is accordingly not operational due to it unintentionally burning off ETFE roof sections during testing. A revised fire strategy has had to be implemented by the pursuer as a result. Moreover there is no evidence of CE markings in the ETFE roof and hot wire system.
33. Without prejudice to the generality of the terms of Art. 15 of Condescence, the ETFE Roof Defects have been caused, or at least materially contributed to, by: (i) the first defender’s design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:

- (1) Employer's Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:

"The Contractor shall be responsible for the following:

2.2.1 Providing Works that are fit for purpose; ...".

- (2) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.9 (Materials), Paragraph 5.9.4, required that:

"The Contractor shall ensure that the whole quantity of each product and material required to complete the Works is of a consistent type, quality and overall appearance and is fit for its intended purpose. The Contractor shall ensure all products and materials are handled, stored, prepared and used or fixed strictly in accordance with the manufacturers' written instructions or recommendations and not to be damaged when incorporated into the Works".

- (3) Employer's Requirements, Section 6.0 (Construction Phase Requirements), Section 6.8 (Commissioning and Handover), Section 6.8.5 (Works inspection, testing and acceptance activities).

- (4) Employer's Requirements, Section 8.0 (Building Services Requirements), Section 8.2 (Mechanical Systems), Section 8.2.19 (Fire Fighting Systems), Paragraph 8.2.19, required that:

"8.2.19.1 The Contractor shall provide all fire fighting systems in line with a robust fire strategy for the project as outlined in Volume 2/1 Section 5.11. ...

8.2.19.2 All elements of the fire fighting systems, such as but not limited to ...

8.2.19.3 The above shall be fully incorporated into the building design at an early date to ensure that all service routes and plant requirements are integrated in the building envelope while maintaining safe, secure access for maintenance and regular system testing of all systems without disturbance to the Clinical operations".

- (5) Employer's Requirements, Section 9.0 (Civil & Structural Engineering Requirements), Section 9.1 (General Requirements), Paragraph 9.1.1, required that:

"The Contractor shall ensure the design and construction of the civil and structural engineering elements of the buildings and external works meets the following criteria:

b) Be fully co-ordinated with the design of the building fabric, finishes, services, facades, internal walls, medical equipment and existing Site features, including buildings/structures".

- (6) NBS Specification H80-ETFE AFP System Rev 01 October 2010, specified that the hot wire system can be non-destructively tested and that all interfaces should be fully co-ordinated.
- (7) EN 12101-10:2005 Smoke and Heat Control Systems, requiring CE markings compliance

Issue 10: Internal fabric moisture ingress

34. Defects which have been identified in relation to internal fabric moisture ingress (the "**Internal Fabric Moisture Ingress Defects**") in the Hospital include (without being limited to) the following in relation to en suite facilities: (1) Inappropriately high water absorption moisture readings in internal partition panels; (2) Sections of IPS laminate panels de-bonding; (3) Inappropriate detailing between walls and vinyl floor coverings; (4) Insufficient floor drainage falls; (5) Welds to vinyl floors deteriorating; (6) Vinyl floor coverings deteriorating; (7) Inappropriate welds and seals repairs; and (7) Use of partitioning material (such as, but not limited to, plasterboard) which is insufficiently resistant to water absorption and the growth of mould.
35. Without prejudice to the generality of the terms of Art. 15 of Condescence, the Internal Fabric Moisture Defects have been caused, or at least materially contributed to, by: (i) the first defender's design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:

- (1) Employer's Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:

"The Contractor shall be responsible for the following:

2.2.1 Providing Works that are fit for purpose; ...".

- (2) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Paragraph 5.1.2, required the Contractor *"to comply with the requirements of the documents listed in Table 2 – NHS Mandatory Documentation in section 5.1.2"*. Specific statements of compliance were stated as being necessary, with the bidder required to clarify its approach to compliance. Such NHS Mandatory Documentation in Table 2 included, amongst other things, various SHTMs.

- (3) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.9 (Materials), Paragraph 5.9.4, required that:

"The Contractor shall ensure that the whole quantity of each product and material required to complete the Works is of a consistent type, quality and overall appearance and is fit for its intended purpose. The Contractor shall ensure all products and materials are handled, stored, prepared and used or fixed strictly in accordance with the manufacturers' written instructions or recommendations and not to be damaged when incorporated into the Works".

- (4) Employer's Requirements, Section 7.0 (Architectural Requirements), Section 7.9 (Finishes), Paragraph 7.9.5, required that:

"The following criteria require to be incorporated in the Contractor's proposals for all areas:

- d) *internal partitions shall also be as required by the nature and use of the accommodation and shall incorporate radiation protection requirements, sound reduction, fire resistance, humidity, biological attack and duty as identified by relevant HBN, SHTMs and appropriate British and European Harmonised Standard Specifications, Codes of Practice and ADB Room Data Sheets and as identified elsewhere in this document'*.

(5) Employer's Requirements, Section 7.0 (Architectural Requirements), Section 7.9 (Finishes), Paragraph 7.9.10, required various criteria in relation to floors, flooring and floor finishes, coverings, materials, surfaces, profiles, joints, coves, gulleys, gratings, adhesives and the like to be incorporated in the Contractor's proposals (and thereby complied with).

(6) SHTM 56 (Partitions), Paragraph 3.16, required that:

"Partitions should not comprise materials which promote or sustain the growth of fungi, micro-organisms or insects".

Issue 11: Pneumatic transport system ("PTS")

36. The PTS is a network for transporting specimens within the Hospital. Defects which have been identified in relation to the PTS (the "**PTS Defects**") in the Hospital include (without being limited to) the following: (1) The PTS has been unable to cope with the requisite volume of specimens; and (2) The PTS has suffered an excessive number of failures in operation, including at least 65 failures in the period from November 2018 to February 2019 alone.

37. Without prejudice to the generality of the terms of Art. 15 of Condescence, the PTS Defects have been caused, or at least materially contributed to, by: (i) the first defender's design, construction and commissioning works being inadequate and deficient; and (ii) without prejudice to that, the failure of the design, construction and commissioning to comply with at least the following:

(1) Employer's Requirements, Section 2.0 (Responsibilities of the Parties), Section 2.2 (Responsibilities of the Contractor), required that:

"The Contractor shall be responsible for the following:

2.2.1 Providing Works that are fit for purpose; ...".

(2) Employer's Requirements, Section 5.0 (General Design & Construction Requirements), Section 5.9 (Materials), Paragraph 5.9.4, required that:

“The Contractor shall ensure that the whole quantity of each product and material required to complete the Works is of a consistent type, quality and overall appearance and is fit for its intended purpose. The Contractor shall ensure all products and materials are handled, stored, prepared and used or fixed strictly in accordance with the manufacturers’ written instructions or recommendations and not to be damaged when incorporated into the Works”.

- (3) Employer’s Requirements, Section 8.0 (Building Services Requirements), Section 8.2 (Mechanical Systems), Section 8.2.26 (Pneumatic Air Tube Delivery System), Paragraph 8.2.26.1, required that:

“The Contractor shall provide a pneumatic air tube delivery system as required to the new Facilities to support the Clinical Requirements, as detailed in Appendix M&E7 of the Employers Requirements. The Contractor shall ensure that the pneumatic air transport system shall be designed and installed in accordance with SHTM 2009”.

- (4) Employer’s Requirements, Appendix M, M&E.7, paragraph 2.3 required that:

“All components shall be durable, robust and designed for heavy system around the clock use to ensure a smooth, rapid and reliable transmission of every hospital material dispatched”.

Loss and damage

38. As a result of the breaches of contract, *et separatim* fault and negligence, of the first, third and fourth defenders, the pursuer has suffered loss and damage. Such loss and damage is reasonably estimated to include, but is not limited to, the following:

Issue No.	Issue Name	Loss & Damage (£)
1	Water system	26,500,000
2	Standard isolation rooms ventilation	5,400,000
3	Adult Hospital Ward 4B ventilation	2,100,000
4	RHC Ward 2A ventilation	4,800,000
5	Plant and building services capacity	2,000,000
6	Toughened glazing	5,700,000
7	Doors	10,900,000

8	Heating system	7,000,000
9	Atrium roof	1,300,000
10	Internal fabric moisture ingress	6,700,000
11	Pneumatic transport system ("PTS")	400,000
Total		72,800,000

39. The total of the foregoing amounts of loss and damage is: £72,800,000. That is the sum first concluded for.
40. As condescended upon above, the first defender has failed to perform the obligations incumbent on it under the Building Contract and, *separatim*, its common law duty, causing the pursuer loss and damage. The second defenders have co-extensively failed to perform or cause to be performed the same obligations, causing the pursuer the same amount of loss and damage as that condescended upon above. Such failures by the second defenders are breaches of the Guarantee. Without prejudice to that generality, they are breaches of the clauses of the Guarantee condescended upon above. Such breaches have caused the pursuer the loss and damage condescended upon above. The total loss and damage, as condescended upon above is: £72,800,000. That is the sum second concluded for. *Separatim*, properly construed, Clause 2 of the Guarantee obliges the second defenders to make payment of that sum as a debt due to the pursuer under and in terms of the Guarantee.
41. This action is necessary in the circumstances

PLEAS IN LAW

1. The pursuer having suffered loss and damage through the first, third and fourth defender's breach of contract *et separatim* fault and negligence, as condescended upon, the pursuer is entitled to damages therefor.
2. The sum first concluded for being a reasonable estimate of the loss and damage sustained by the pursuer, decree for payment thereof should be pronounced as first concluded for.
3. The pursuer having suffered loss and damage through the second defenders' breach of contract *et separatim* promise, as condescended upon, the pursuer is entitled to damages therefor.
4. The sum second concluded for being a reasonable estimate of the loss and damage sustained by the pursuer, decree for payment thereof should be pronounced as second concluded for.
5. *Separatim*, the sum second concluded for being a debt due by the second defenders to the pursuer under and in terms of the Guarantee as condescended upon, decree for payment thereof should be pronounced as second concluded for.

IN RESPECT WHEREOF

IN THE COURT OF SESSION

SUMMONS

in the cause

GREATER GLASGOW HEALTH BOARD
Pursuer

against

(FIRST) MULTIPLEX CONSTRUCTION EUROPE
LIMITED; and OTHERS
Defenders

2020

MacRoberts
Ref: JAM/NZC/NHS/9/2