Section 58 of the Competition Act (Cap. 50B)

Grounds of Decision issued by the Competition and Consumer Commission of Singapore in relation to the acquisition by Pathology Asia Holdings Pte. Ltd. of Innovative Diagnostics Private Limited and Quest Laboratories Pte. Ltd.

18 October 2019

Case number: CCCS/400/007/18

Confidential information in the original version of this Decision has been redacted from the published version on the public register. Redacted confidential information in the text of the published version of this Decision is denoted by [✂].

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I. The Notification and Executive Summary

1. On 7 September 2018, Pathology Asia Holdings Pte. Ltd. ("**PAH**") filed a notification pursuant to section 58 of the Competition Act (Cap. 50B) (the "**Act**") for a decision by the Competition and Consumer Commission of Singapore ("**CCCS**") as to whether the completed acquisition of Innovative Diagnostics Private Limited ("**Innovative**") and Quest Laboratories Pte. Ltd. ("**Quest**") by PAH, through its subsidiaries, (collectively, the "**Parties**") and the intended integration of the businesses of Innovative and Quest (the "**Transaction**"),[1] has infringed the section 54 prohibition of the Act.

2. PAH submitted that it would continue to operate Innovative and Quest separately and independently from each other, and not implement the Transaction (i.e. merge the business operations of Innovative and Quest such that there will only be one entity under a single brand name that provides the services currently provided by Innovative and Quest), until CCCS issues a clearance decision in relation to the Transaction[2], [✂].[3]

3. The Phase 1 review of the Transaction was completed on 23 October 2018. At the end of the Phase 1 review, CCCS was unable to conclude that the Transaction does not raise competition concerns. On 9 November 2018, upon receipt of a complete Form M2, CCCS proceeded with an in-depth Phase 2 review of the Transaction.

4. In reviewing the Transaction, CCCS contacted twenty-five (25) existing and potential providers[4] of in-vitro diagnostics ("**IVD**") tests[5] in Singapore, forty-seven (47) customers[6] that purchase IVD tests, and eight (8) upstream suppliers[7] of IVD testing equipment, reagents and other products/services, and also received seven (7) additional feedback during the public consultation of the Transaction[8] (collectively referred to as "**third parties**"). In addition, CCCS contacted the Ministry of Health ("**MOH**") and the Economic Development Board ("**EDB**") as part of its review of the Transaction.

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[1] Paragraphs 1.1 and 11.10 of Form M1.
[2] Paragraphs 8.11, 11.10 and 11.11 of Form M1.
[3] [✂].
[4] Providers of IVD tests: [✂].
[5] IVD tests refer to the in-vitro tests which are performed on samples taken from the human body, such as blood, body fluid, body tissues, urine or stool samples for testing at the laboratory. Some examples of these tests include the liver and renal function tests, full blood count, lipids profile, culture and sensitivity testing, molecular testing, tissue biopsy etc (this list is not exhaustive). Paragraph 20.2 of Form M1.
[6] Customers: [✂].
[7] Upstream suppliers: [✂].
[8] Public feedback: [✂].

5. Of the forty-eight (48) responses received,[9] forty-six (46) of them provided substantive responses.[10] A number of customers[11] and providers of IVD tests[12] raised competition concerns about the Transaction, whilst some others expressed concerns alongside mixed opinions about the impact of the Transaction.[13] Some third parties indicated that they were neutral or had no concerns with the Transaction.[14]

6. In assessing the Transaction, CCCS took into consideration the third parties' feedback together with the further information and evidence obtained during the Phase 2 review. Based on the information obtained, CCCS assessed that the Transaction is likely to result in a substantial lessening of competition in the market for the supply of IVD tests (with directly-related ancillary services[15] only) by private laboratories in Singapore, to non-affiliated customers (i.e. customers without an in-house/vertically-integrated laboratory):

   (a) The Parties are the top two suppliers in the relevant market for almost all key non-affiliated customer types, and the closest competitors to each other;

   (b) Whilst there are existing competitors that may potentially exert some competitive constraint on the Parties post-Transaction, such competitive constraint may arise only for some customer types, or potentially only over time (e.g. as they gain sufficient volume/demand over time to justify entry or expansion); and

   (c) There lack alternative suppliers to switch to post-Transaction, in particular for customers with larger volumes of demand and/or which have other specific requirements which can only be met by the Parties currently, such as health screening companies and private hospitals which do not manage or operate their own in-house laboratories.

7. On 4 March 2019, PAH proposed a set of behavioural commitments to address competition concerns identified by CCCS in the Phase 2 review. The commitments were subsequently revised in response to CCCS's feedback.

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[9] Providers of IVD tests: [✂]. Customers: [✂]. Upstream suppliers: [✂]. Public feedback: [✂]. Other stakeholders: [✂].
[10] Providers of IVD tests: [✂]. Customers: [✂]. Upstream suppliers: [✂]. Public feedback: [✂]. Other stakeholders: [✂].
[11] [✂].
[12] [✂].
[13] [✂].
[14] [✂].
[15] As defined in paragraph 40 below.

8. On 21 June 2019, CCCS invited public feedback on the proposed commitments submitted by PAH. CCCS received responses from existing and potential providers of IVD tests in Singapore, customers that purchase IVD tests, an association, and private consultants to the healthcare industry, who provided feedback on some gaps in the proposed commitments' sufficiency in addressing the identified competition concerns arising from the Transaction. PAH subsequently amended the commitments in response to the feedback received from the consultation process. CCCS considers the amended commitments dated 17 October 2019 ("**Final Commitments**") to be sufficient to address the competition concerns which arise from the Transaction.

9. CCCS concludes that, subject to the implementation of and compliance with the Final Commitments, the Transaction has not infringed section 54 of the Act.

II. Parties to the Transaction

(a) The Acquirer

PAH

10. PAH is a holding company that has two shareholders: TPG Helipad, L.P. ("**TPG Helipad**"), which holds a [✂]% shareholding in PAH and Medlab Asset Management Pte. Ltd. ("**ManagementCo**"), which holds a [✂]% shareholding in PAH. [✂][16] ManagementCo is a company incorporated in Singapore. Three out of the four[17] shareholders of ManagementCo are also shareholders of Innovative's pre-Transaction parent company, Medlab Asia Pte Ltd ("**MLA**").[18]

11. PAH was incorporated in Singapore on 24 July 2018, and does not currently conduct any business activities worldwide or in Singapore.[19] PAH belongs to the TPG Capital Group, a global private investment firm founded in 1992. TPG Capital Group's investments span a variety of industries including healthcare, energy, industrials, consumer/retail, technology, media & communications, software, financial services, travel, entertainment and real estate. The total (group) assets under management ("**AUM**") of the TPG Capital Group is US$[✂] (approximately

[16] Paragraph 8.2 of Form M1.
[17] Schedule 2 of Appendix 14 of Form M1.
[18] Paragraph 8.4 of Form M1.
[19] Paragraphs 10.5 and 10.9 of Form M1.

S$[✂]) worldwide, as of 31 March 2018.[20] TPG Capital Group does not track its total AUM in Singapore. As of 31 March 2018, TPG Capital Group's AUM in Asia-Pacific is US$[✂] (approximately S$[✂]).[21]

(b) The Targets

Innovative

12. Innovative is a Singapore-registered[22] private laboratory which operates under the trading name Innovative Diagnostics[23] and offers a comprehensive range of medical laboratory pathology services in Singapore. Innovative currently serves over 1000 customers, including general practitioners ("**GPs**"), clinics, medical centres, hospitals, dialysis centres, not-for-profit organisations and third-party payors.[24]

13. Innovative provides IVD tests,[25] clinical laboratory services (e.g. educating and training medical practitioners on the latest IVD tests on the market) and ancillary services such as laboratory consultancy services for medical institutions (e.g. sharing its experience on how to manage and operate laboratories).[26]

14. Prior to the Transaction, Innovative was 100% owned by MLA, a consortium led by three medical professionals and a group of industry veterans.[27] Innovative's previous parent company, MLA, also owns a majority stake in a medical laboratory business in Hong Kong via Innovative Diagnostics (HK) Pte. Ltd.[28] As noted in paragraph 10 above, certain shareholders of MLA also currently directly or indirectly hold shares in Innovative and Quest post-Transaction.[29] Innovative also has a subsidiary, Meditest Switzerland Pte. Ltd. ("**Meditest**"), registered in Singapore,[30] which Innovative acquired in March 2018.[31] Meditest also supplies

[20] Paragraph 13.1 of Form M1.
[21] Paragraph 13.4 of Form M1.
[22] Paragraph 10.2 of Form M1.
[23] Paragraph 10.4(b) of Form M1.
[24] Paragraph 10.7 of Form M1.
[25] Paragraph 14.2 of Form M1.
[26] Paragraph 14.3 of Form M1.
[27] Innovative used to be owned and operated by Singapore Health Services ("**SingHealth**") from 1996 to 2011, and was divested to MLA in May 2011. Paragraph 8.3 of Form M1.
[28] Paragraph 10.7 of Form M1.
[29] Paragraph 8.4 of Form M1.
[30] Paragraph 10.2 of Form M1.
[31] Paragraphs 18.16(d) and 29.2 of Form M1.

IVD tests in Singapore, namely, under the Microbiology and Molecular Diagnostics disciplines.[32]

15. Innovative owns the following laboratories in Singapore:[33]
    (a) A main laboratory located at Frontech Centre, off Jalan Bukit Merah;
    (b) A laboratory at Camden Medical Centre along Orchard Boulevard; and
    (c) A laboratory at Royal Square in Novena.

16. Innovative also entered into contracts with Farrer Park Hospital ("**FPH**") and Concord International Hospital ("**Concord**") to operate the in-house laboratories owned by the respective hospitals.[34]

17. The total (group) Singapore turnover of Innovative in the financial year ending 31 March 2017 was S$[✂],[35] which corresponds to the total (group) worldwide turnover of Innovative for the same period.[36] Additionally, Meditest's total (group) Singapore turnover in the financial year ending in 2017 was S$[✂],[37] which corresponds to its total (group) worldwide turnover for the same period.[38]

Quest

18. Quest was established in Singapore in 1995[39], and provides laboratory services, specifically IVD tests (including collection of test samples and delivery of test reports)[40] in Singapore under the trading name Quest Laboratories.[41] Quest serves GPs, clinics, medical centres, hospitals, dialysis centres, not-for-profit organisations and third-party payors, and processed approximately [✂] patient episodes in 2017.[42]

19. Quest owns the following laboratories in Singapore:[43]

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[32] Paragraph 12.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[33] Paragraph 10.13 of Form M1, and Paragraphs 2.1(c), 4.1, 5.1 and 12.8 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[34] Paragraph 10.13 of Form M1, and Paragraphs 2.1(c), 4.1, 5.1 and 12.8 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[35] Paragraph 13.5 of Form M1.
[36] Paragraph 13.2 of Form M1.
[37] Paragraph 12.4 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[38] Paragraph 12.3 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[39] Paragraph 10.8 of Form M1.
[40] Paragraph 14.4 of Form M1.
[41] Paragraph 10.4(c) of Form M1.
[42] Paragraph 10.8 of Form M1.
[43] Paragraph 10.14 of Form M1, and Paragraph 4.2 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

(a) A main laboratory located at StarHub Green in Ubi; and
(b) A laboratory situated within Paragon Medical in Orchard Road.

20. Quest also operates the in-house hospital laboratory owned by Thomson Medical Centre ("**TMC**") [✂].[44]

21. Prior to the Transaction, Quest was originally a subsidiary of Healthscope Limited.[45] The total (group) Singapore turnover of Quest in the financial year ending 30 June 2017 was S$[✂],[46] which corresponds to the total (group) worldwide turnover of Quest for the same period.[47]

III. The Transaction

22. The Transaction concerns the acquisition of control of Innovative and Quest by PAH, through its subsidiaries, in two separate transactions:[48]

(a) PAH's acquisition, through its wholly-owned subsidiary, of 100% of the issued share capital of Quest from Healthscope Pathology Holdings No. 2 Pty. Ltd., a wholly-owned subsidiary of Healthscope Limited. This transaction was completed on 17 August 2018; and

(b) PAH's acquisition, through its wholly-owned subsidiary, of 100% of the issued share capital of Innovative from MLA. This transaction was completed on 24 August 2018.

23. PAH submitted that it would continue to operate Innovative and Quest separately and independently from each other, and not implement the Transaction (i.e. merge the business operations of Innovative and Quest such that there will only be one entity under a single brand name that provides the services currently provided by Innovative and Quest), until CCCS issues a clearance decision in relation to the Transaction[49], [✂].[50]

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[44] Paragraph 10.14 of Form M1, and Paragraph 4.2 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[45] Healthscope Limited is one of Australia's largest providers of integrated healthcare, operating over 4,800 inpatient beds and 45 hospitals across Australia. Paragraph 8.5 of Form M1.
[46] Paragraph 13.6 of Form M1.
[47] Paragraph 13.3 of Form M1.
[48] Paragraph 11.1 of Form M1.
[49] Paragraphs 8.11, 11.10 and 11.11 of Form M1.
[50] [✂].

24. According to PAH, the value of the Transaction is approximately S$[✂].[51]

25. PAH submitted that the strategic and economic rationale for the Transaction is as follows:[52]

    (a) The key economic rationale for the Transaction is to take advantage of economies of scale. PAH submitted that this is one of the key factors of success for a medical laboratory business. [✂]

    (b) Medical laboratories have a step cost function in relation to volume. [✂]

    (c) Other than [✂], the Parties' economic rationale for entering into the Transaction is also to enable the Parties to [✂]

    (d) Lastly, from a strategic perspective, [✂]

26. PAH submitted that the Transaction falls within sections 54(2)(a) and (b) of the Act.[53]

Merger under Section 54 of the Act

27. CCCS is of the view that the Transaction resulted in the acquisition of control over each of Quest and Innovative by PAH[54] and therefore constitutes a merger under section 54(2)(b) of the Act.

IV. Competition Issues

28. PAH submitted that it does not overlap with Innovative or Quest, as PAH does not currently provide any goods or services in Singapore, nor does it have any other interests or investments in the healthcare sector.[55] TPG Capital Asia also does not currently have [✂].[56]

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[51] Paragraph 11.6 of Form M1.
[52] Paragraphs 12.1 to 12.4 of Form M1.
[53] Paragraph 11.2 of Form M1.
[54] CCCS does not consider the subsequent merging of the business operations of Innovative and Quest to constitute a merger under section 54(2)(a) of the Act, in view of section 54(7)(b) of the Act which provides that a merger shall not be deemed to occur if all of the undertakings involved in the merger are, directly or indirectly, under the control of the same undertaking.
[55] Paragraph 15.1 of Form M1, and paragraph 1.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[56] Paragraph 36.1 of Form M1.

29. As regards Innovative and Quest, PAH submitted that Innovative overlaps with Quest in the provision of IVD tests (including the collection of test samples and delivery of test reports) in Singapore.[57] IVD tests are in-vitro tests performed on samples taken from the human body, such as blood, body fluid, body tissues, urine or stool samples for testing at the laboratory. Some examples of these tests include liver and renal function tests, full blood count, lipids profile, culture and sensitivity testing, molecular testing, tissue biopsy etc (this list is not exhaustive).[58] IVD tests can detect diseases or other conditions, and can be used to monitor a person's overall health to help cure, treat, or prevent diseases. IVD tests may also be used in precision medicine to identify patients who are likely to benefit from specific treatments or therapies. Such IVD tests can include next generation sequencing tests, which involve scanning a person's DNA to detect genomic variations.[59]

30. Specifically, Innovative and Quest overlap in the supply of the following disciplines of IVD tests:

Table 1: Disciplines of IVD tests supplied by Innovative and Quest[60]

Discipline	General/ Specialised	Description	Innovative	Quest
1. Allergy Testing	General	To test for the body reaction to the IgE antigen in the blood that will cause an allergic reaction.	✓	✓
2. Biochemistry	General	Test for biochemical reactions and processes occurring in the human body to determine the health of specific body organs like the heart, liver, or kidneys etc.	✓	✓
3. Cytology/ Cytopathology	General	Test for malignancy through microscopic examination of cells extracted from urine or pap smears from the women.	✓	✓
4. Frozen Sections	General	Rapid microscopic diagnosis of a thin slice of tissue cut from a frozen specimen in the operating theatre. Procedure is done by the Histopathologist from the laboratory.	✓	✓
5. Genomics	Specialised	The study and testing of the structure of the genome of the human DNA including mapping and sequencing.	✓	✓
6. Haematology	General	Test of the diseases of the blood and blood forming tissues.	✓	✓
7. Histology/ Histopathology	General	Tests conducted on specimens of organs and tissues taken from the human body to	✓	✓

[57] Paragraph 15.2 of Form M1, and Paragraph 18.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[58] Paragraph 20.2 of Form M1.
[59] Paragraph 14.2 of Form M1.
[60] Paragraph 14.5 of Form M1, and Paragraph 12.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

Discipline	General/ Specialised	Description	Innovative	Quest
		facilitate the diagnosis of diseases. Such specimens are removed from the human body by surgeons and then sent to laboratories where they will be further processed for testing.		
8. Immunology	General	Test for the function of the immune system in relation to different viruses for example Hepatitis A, B and C, HIV etc.	✓	✓
9. Industrial Toxicology	General	Testing for the presence of poisons or trace elements in the body using blood or urine samples.	✓	✓
10. Microbiology	General	Test for microorganisms including fungi, protozoa, bacteria and viruses in the body using body fluids, blood, urine and stool samples.	✓[61]	✓
11. Molecular Diagnostics	General	Test for biochemical and biophysical aspects of the structure and function of molecules of biological importance present in the human samples for example the presence of the Hepatitis B virus or the HIV virus in the blood indicating a positive or negative response to treatment.	✓[62]	✓
12. Serology	General	Test for the antigen-antibody reactions in the serum sample	✓	✓

31. IVD tests can also be classified as general tests or specialised tests:[63]

    (a) General tests are tests that are performed on most analysers (i.e., IVD testing equipment), and can be performed by personnel with basic technical knowledge. There is usually a high volume of demand for general tests; and

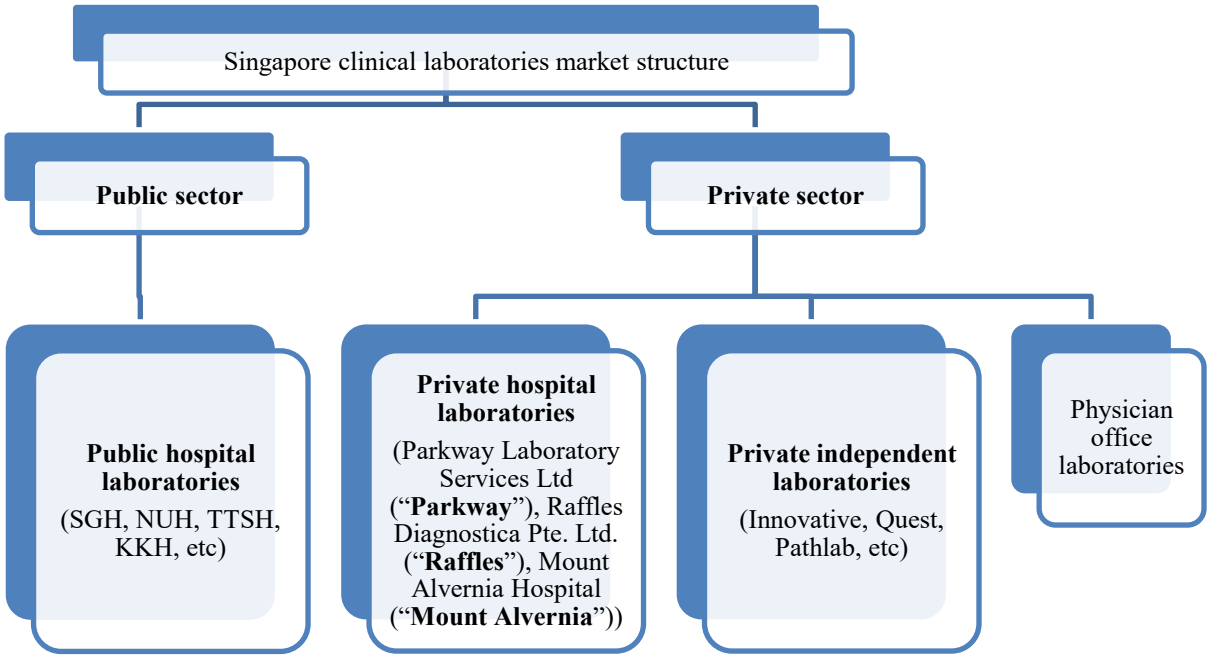
    (b) Specialised tests are tests that require special instruments to perform, as well as personnel with more advanced skills and knowledge about the testing procedures. There is usually a lower volume of demand for specialised tests.

32. In the provision of IVD tests in Singapore, PAH has identified four broad categories of suppliers of IVD tests (see Diagram 1 below), and the corresponding lists of

[61] This discipline of IVD tests is also supplied by Meditest, which Innovative acquired in March 2018. Paragraph 12.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[62] This discipline of IVD tests is also supplied by Meditest, which Innovative acquired in March 2018. Paragraph 12.1 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[63] Paragraph 14.9 of Form M1.

suppliers falling within these categories.[64] CCCS notes that Innovative and Quest fall under the category of Private Independent Laboratories.[65] Other than Pathology and Clinical Laboratory Private Limited ("**Pathlab**") (currently the third-largest private independent laboratory), smaller independent laboratories include Reste Laboratories Pte. Ltd. ("**Reste**"), New Medical Laboratory Pte. Ltd. ("**New Medical**"), SAM Laboratory Pte. Ltd. ("**SAM Laboratory**") and Setsco Services Pte. Ltd. ("**Setsco**").

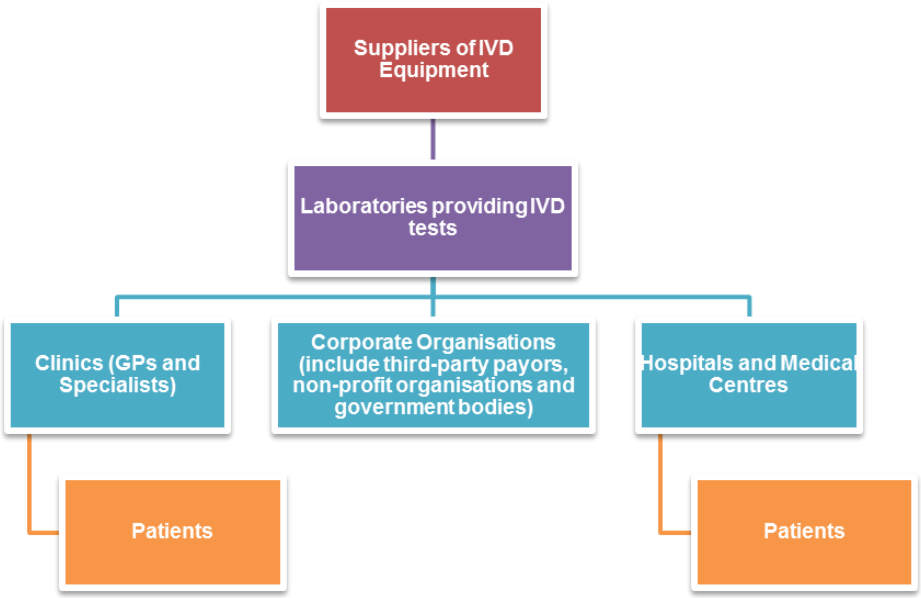
Diagram 1: Singapore clinical laboratories market structure[66]



33. According to PAH, Innovative and Quest both currently supply IVD tests to intermediate customers i.e. medical practitioners such as (a) clinics, including GPs and specialists outpatient clinics, (b) hospitals, ambulatory day care centres and medical centres; and end customers in the form of (c) corporate organisations, including employers, insurance companies, third-party administrators and not-for-profit organisations[67]. The supply chain for the provision of IVD tests is illustrated as follows:[68]

[64] Paragraph 24.4 of Form M1, and Slide 20 of Appendix 8 of Form M1 (F&S Report).
[65] Slide 26 of Appendix 8 of Form M1 (F&S Report).
[66] Paragraph 24.4 of Form M1, and Slide 20 of Appendix 8 of Form M1 (F&S Report). Physician office laboratories refer to diagnostic laboratories in a physician's office with an abbreviated menu of tests that can be performed while the patient is in the office (i.e. rapid diagnostic tests).
[67] Paragraphs 18.3, 18.7 and 19.6 of Form M1.
[68] Paragraph 18.2 of Form M1.

Diagram 2: Supply chain for the IVD tests provided by Innovative and Quest



34. Based on PAH's submissions, customers of laboratories generally can also be further sub-categorised into:

(1) Public hospitals;
(2) Private hospitals operating their own in-house laboratories;
(3) Private hospitals not operating their own in-house laboratories;[69]
(4) Private medical centres;
(5) Other clinical laboratories (i.e. providing IVD tests);
(6) GPs (including chain and independent clinics);
(7) Specialists;
(8) Health screening companies;
(9) Insurance companies and/or third-party payors;
(10) Government bodies and equivalent entities; and
(11) Other corporate customers [not included in (9) and (10)].

35. As the Transaction involves a horizontal merger of two competing providers of IVD tests (including certain associated ancillary services) in Singapore, CCCS has proceeded to assess whether the Transaction will lead to non-coordinated and/or coordinated effects that would substantially lessen competition or raise competition concerns in Singapore.

[69] CCCS notes that, at present, three private hospitals in Singapore which do not operate their own laboratories, i.e. FPH, TMC and Concord, outsource their respective in-house laboratories operations to either Innovative or Quest.

V. Counterfactual

36. Paragraph 4.14 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016* states that CCCS will, in assessing mergers and applying the substantial lessening of competition ("**SLC**") test, evaluate the prospects for competition in the future with and without the merger. The competitive situation without the merger is referred to as the "counterfactual". The SLC test will be applied prospectively, that is, future competition will be assessed with and without the merger.

PAH's submission

37. PAH submitted that in the absence of the Transaction, Innovative and/or Quest could potentially merge with other laboratories in Singapore. According to PAH, [✂]. PAH is accordingly of the view that, [✂], it is highly likely that Innovative and Quest will merge with other laboratories in the near future.[70] PAH further submitted that mergers of laboratories with one another to maximise the capacity of their testing equipment and facilitate investment in new technologies, is a trend that has been occurring in Europe, Australia and the USA, and is likely to be observed in Singapore, even without the Transaction.[71]

CCCS's conclusion on the relevant counterfactual

38. CCCS has considered PAH's submission and is of the view that the appropriate counterfactual should be the prevailing pre-Transaction conditions of competition (i.e. prior to PAH's acquisition of Innovative and Quest), as PAH has not sufficiently substantiated its claim that the appropriate counterfactual would involve Innovative and/or Quest potentially merging with other laboratories in Singapore.

VI. Relevant Market

(a) Product Market

PAH's submission

39. PAH submitted that the relevant product market is:

[70] Paragraph 23.1 of Form M1.
[71] Paragraph 23.4 of Form M1.

(a) the market for clinical laboratory services (i.e. without segmentation as to whether these services are provided by laboratories belonging to the public sector or the private sector);[72] or

(b) the market for community pathology services, which refers to pathology services provided to (i) out-patients referred by GPs and specialists and (ii) private in-patients at public and private hospitals. This means that public hospital laboratories providing pathology services to their private in-patients would belong to the same market;[73] or

(c) at the narrowest, the market for clinical laboratory services provided by private laboratories, consisting of laboratories owned and managed by private hospitals, and standalone independent laboratories (not part of a hospital group).[74]

40. **Clinical laboratory services vs. IVD tests.** PAH submitted that clinical laboratory services are wider than the performance of IVD tests only, and include other ancillary services such as pre and post analytical services like phlebotomy,[75] the collection of samples, delivery of test reports and delivery of consumables.[76] PAH noted that the US Federal Trade Commission ("**FTC**") has described "clinical laboratory testing services" as "*the full range of products and services provided by a clinical laboratory, including, but not limited to, the drawing, collection, and transportation of specimens over a coordinated courier route system; stat, routine, and esoteric clinical testing; the computerized tracking of specimens for testing, recordkeeping, and billing functions; and the electronic communication of test results and other necessary data to customers*" ("**directly-related ancillary services**").[77] PAH has also characterised the directly-related ancillary services to be the "basic bundle of clinical laboratory services provided to customers as part of IVD testing services", for which there is generally no difference in services required by different types of customers in relation to IVD tests.[78]

41. In addition to the above, PAH also submitted that clinical laboratory services include additional educational seminars and technical lectures that certain laboratories, including Innovative (but not Quest), provide to further educate

[72] Paragraph 20.1 of Form M1.
[73] Paragraphs 3.4 and 3.5 of PAH's submission on Commitments dated 4 March 2019.
[74] Paragraph 20.6 of Form M1.
[75] Phlebotomy services refers to the drawing of blood samples from a patient.
[76] Paragraph 20.3 of Form M1.
[77] This definition takes reference to the case of *In the Matter of Quest Diagnostics Incorporated and Unilab Corporation* (Docket No. C-4074). Paragraph 18.3 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[78] Paragraph 18.6 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

clinicians on the latest developments and technology in the medical science field.[79] PAH submitted that such services, as well as phlebotomy services and courier services, are not directly related to or essential for the supply of IVD tests, and can be purchased separately from the IVD tests from a different laboratory.[80] PAH also noted that each of the Parties' competitors provides all the additional services, other than IVD tests, with differing extensiveness and quality.[81]

42. **Types of IVD tests.** PAH submitted that there is no set pattern as regards how IVD tests are carried out or purchased.[82] The selection of the IVD test depends on a number of factors, including the nature of the healthcare activity, the presence or absence of obvious patient symptoms and patient characteristics and history.[83] Multiple IVD tests are often purchased and carried out at once, which in turn allows different markers to be detected at once, and this suggests that isolating one test from another for market definition purposes would not reflect how tests are commonly purchased.[84]

43. As regards how IVD tests can be categorised, other than based on their purpose (i.e., disciplines[85]), PAH submitted that IVD tests can also be classified based on ***general tests and specialised tests*** (see paragraph 31 above).[86] Whilst PAH provided a broad classification of whether each discipline of IVD tests supplied by Innovative and Quest is general or specialised (see paragraph 30 above), PAH also submitted that it would not be appropriate to classify a given discipline of IVD tests as general or specialised, because different tests within a discipline could be classified as either general or specialised.[87]

44. From a supply-side perspective, PAH submitted that there is no separate market for general IVD tests and specialised IVD tests because all pathology laboratories would already have the necessary equipment, manpower and other resources required to provide general IVD tests, and, depending on the specialised IVD tests in question, the additional costs of purchasing or renting additional instruments and

[79] Paragraphs 14.3 and 20.3 of Form M1.
[80] Paragraph 18.8 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018, and Paragraph 5.1 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[81] Paragraph 18.10 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[82] Paragraph 19.4 of Form M1.
[83] Paragraph 19.4 of Form M1.
[84] Paragraph 19.4 of Form M1.
[85] See paragraph 30 above.
[86] Paragraph 14.9 of Form M1.
[87] Paragraph 14.10 of Form M1.

hiring personnel with more advanced skills and knowledge and the time required for laboratories to offer specialised IVD tests may be relatively low.[88]

45. **Private vs. public laboratories.** PAH submitted that the relevant product market may, at its narrowest, be segmented based on the distinction between the public and private sectors, as supported by the Industry Report on the Pathology Laboratory Market in Singapore, prepared by the Global Transformational Health Research Team at Frost & Sullivan ("**F&S Report**"[89]).[90] Notwithstanding this, PAH submitted that the Parties have considered but concluded that any further segmentation of the relevant product market is unnecessary.[91] Firstly, most laboratories (both public and private) can and do provide a whole range of IVD tests to all types of customers.[92] Secondly, customers can and do purchase tests from all the different types of laboratories (i.e. public and private).[93] While public and private hospitals and independent laboratories have different strengths and weaknesses in terms of turnaround time, customisation of the report, and logistics, etc., they offer the same IVD tests and price levels are generally comparable in like for like situations – with price being a key driver of customers' decisions.[94]

46. **Vertically integrated (i.e. hospital) vs. independent laboratories.** PAH submitted that customers generally view affiliated[95] and non-affiliated[96] laboratories as being substitutes of each other, given that they are able to provide a similar range of IVD tests, and there is no difference between the IVD tests provided.[97] From the supply-side perspective, PAH submitted that vertically integrated laboratories (i.e. public and private hospital laboratories) have ample spare capacity and can easily expand with a low marginal cost of supply if there is a price increase and it is profitable to provide IVD tests to a larger proportion of non-affiliated customers.[98] PAH further submitted that, although affiliated

[88] Paragraph 7.1 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[89] Appendix 8 of Form M1.
[90] Paragraph 20.7 of Form M1.
[91] Paragraph 20.8 of Form M1.
[92] Paragraph 20.8 of Form M1.
[93] Paragraph 20.8 of Form M1.
[94] Paragraph 20.8 of Form M1.
[95] "Affiliated" referring to (i) in the case of an affiliated laboratory, one that belongs to the same group of companies as the customer; and (ii) in the case of an affiliated customer, customers from a laboratory's affiliated hospitals, clinics, medical centres or corporate organisations, from whom in-house requests/referrals for IVD tests are received.
[96] "Non-affiliated" referring to (i) in the case of a non-affiliated laboratory, one that the customer is not related to; and (ii) in the case of a non-affiliated customer, other intermediate or end customers e.g. walk-in customers, referrals from non-affiliated hospitals, clinics etc.
[97] Paragraph 18.4 of Form M1.
[98] Paragraph 24.8 of Form M1.

laboratories could potentially prioritise the supply of IVD tests to their affiliated customers, these laboratories in fact compete actively with independent laboratories for the business of non-affiliated customers[99] and that it will be in the best commercial interests of affiliated laboratories to compete for all potential customers (whether affiliated or non-affiliated).[100] Accordingly, PAH submitted that it is not possible and there is no need to make any distinction between affiliated customers and non-affiliated customers.[101]

CCCS's assessment

47. **Clinical laboratory services vs. IVD tests.** Firstly, although PAH has submitted the relevant product market to be the wider "clinical laboratory services", CCCS does not consider additional services, beyond the directly-related ancillary services (i.e. in line with the set of services considered by the US FTC), to be in the same relevant product market as the provision of IVD tests:

(a) Third-party feedback indicates that certain directly-related ancillary services such as phlebotomy, analysing of patient samples, collection of samples, delivery of test reports and provision of consumables, are the ancillary services most commonly provided by suppliers, and purchased by customers, alongside IVD tests.[102] Most ancillary services are also usually supplied together with the provision of IVD tests to customers at no or minimal additional charges.[103] To an extent, some third-party feedback also suggests that phlebotomy services can be supplied and purchased independently from the IVD tests, but sometimes at a higher price.[104] Notwithstanding this, third-party feedback generally suggests that customers would typically purchase such ancillary services together with IVD tests for convenience, e.g. to avoid the hassle of transferring the sample from the collection provider to the testing provider.[105]

(b) However, some third parties indicated that educational seminars and lectures are usually provided by a separate provider, i.e. not purchased from the same supplier used for IVD tests.[106] In this regard, the additional "clinical laboratory services" submitted by PAH do not appear to typically

[99] Paragraph 15.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[100] Paragraph 15.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[101] Paragraph 24.9 of Form M1.
[102] [✂].
[103] [✂].
[104] [✂].
[105] [✂].
[106] [✂].

be required by customers, or provided by the suppliers of IVD tests, alongside the supply of IVD tests. Accordingly, CCCS does not consider these additional "clinical laboratory services" to be part of the relevant product market.

48. **Types of IVD tests – General vs. specialised tests.** Third-party feedback indicates that customers generally purchase IVD tests from a range of at least three disciplines overall (the specific disciplines generally vary across different customers and customer types),[107] and customers typically require a comprehensive range of IVD tests from their supplier and choose their supplier on this basis[108], although there are some customers which only purchase general tests[109] from each of those disciplines which they require.

49. From the supply-side perspective, PAH has submitted that specialised tests require special instruments to perform, as well as personnel with more advanced skills and knowledge about the testing procedures.[110] This suggests that suppliers may not be able to switch between supplying general and specialised tests easily, contrary to PAH's submission that there is no separate market for general IVD tests and specialised IVD tests (see paragraph 44 above). Third parties also indicated that it is not easy to switch from supplying general tests to specialised tests, as there are high costs involved in respect of the need for personnel with specialised technical knowledge and new equipment facilities.[111]

50. Further, CCCS notes that suppliers do not generally supply a wide range of IVD tests as suggested by PAH. Based on PAH's submissions, four out of the twelve competitors identified by PAH focus only on supplying a limited range of specialised IVD tests,[112] while another four out of the twelve competitors mainly focus on supplying a limited range of general IVD tests[113] (see **Annex A**).[114] This is broadly corroborated by the submissions from third parties.[115]

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[107] [✂].
[108] [✂].
[109] [✂].
[110] Paragraph 14.9 of Form M1.
[111] [✂].
[112] According to Annex A (based on PAH's submissions), [✂], [✂], [✂] and [✂] only specialise in supplying testing in [✂].
[113] According to Annex A (based on PAH's submissions), [✂], [✂], [✂] and [✂] only provide testing in [✂].
[114] Appendix 31 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[115] [✂].

51. That said, a minority of the third-party feedback observed that suppliers of general IVD tests may expand their offerings over time to include specialised tests, through either organic growth or acquiring another laboratory with such capabilities.[116] Some third-party feedback further indicated that suppliers may consider switching to supply specialised tests, although this is subject to the supplier having sufficient customer demand for such specialised tests.[117] Given this, and that customer demand is not generally limited to only certain disciplines of IVD tests, or only general or specialised IVD tests, CCCS does not consider it necessary to further segment the relevant market by the types of IVD tests, for the purpose of the assessment of the Transaction.

52. **Private vs. public laboratories.** The majority of third-party feedback indicates that the supply of IVD tests by public laboratories and the supply of IVD tests by private laboratories are two separate markets.[118] While there are some third parties which view private and public laboratories as substitutes to each other, these are generally in respect of more esoteric or specialised tests that may be sent out[119] (e.g. where even larger private independent laboratories like the Parties may not provide such tests, and have to engage other laboratories such as the public laboratories to perform these tests). These third parties also acknowledged that there are key differences in the supply of IVD tests by public laboratories as compared to private laboratories in Singapore:[120]

(a) **Focus on customer segment.** Most third parties indicated that public and private laboratories do not serve the same customer segments.[121] Many are of the view that public laboratories mainly focus on serving their own in-house customers (i.e. their public hospital patients, or affiliated polyclinics),[122] and do not actively source for or supply to external customers.[123]

(b) **Ability to meet private sector customers' requirements.** Where public laboratories do supply some tests to external private sector customers (e.g., private GPs, specialists, etc), third-party feedback generally indicated that

[116] [✂].
[117] [✂].
[118] [✂].
[119] A send-out test ("**SOT**") refers to an IVD test that is not performed in-house by the laboratory receiving the request for such test, and is instead sent out (i.e. outsourced) to and performed by a third-party laboratory.
[120] [✂].
[121] [✂].
[122] [✂].
[123] [✂].

unlike the private laboratories[124], public laboratories may not be able to meet the requirements of private customers in terms of ancillary support services (e.g. collecting test samples from the customer's premises) and speed of turnaround time and responsiveness.[125]

(c) **Price differences.** Third parties also indicated that the non-subsidised prices charged by public laboratories for IVD tests to external private sector customers (e.g., private GPs, specialists, etc), are generally higher than those charged by private laboratories,[126] although this can vary by specific IVD tests.[127] This is also acknowledged by PAH in its submissions.[128]

53. Considering the differences in the supply of IVD tests by public and private laboratories both in terms of prices and services, as referred above, for the purpose of the assessment of the Transaction, CCCS does not consider the supply of IVD tests by public laboratories to be in the same market as the supply of IVD tests by private laboratories.

54. **Private vertically integrated (i.e. hospital) vs. private independent laboratories, or supply to affiliated vs. non-affiliated customers.** In assessing the Transaction, CCCS has further considered the potential for further segmentation of the market according to (i) the type of private laboratory (i.e. whether private vertically integrated (i.e. hospital) laboratories are substitutes to private independent laboratories); or alternatively (ii) whether, or the extent to which, private vertically integrated (i.e. hospital) laboratories are substitute suppliers for external non-affiliated customers of IVD tests in the market. In this regard, third party feedback indicates that differences from private independent laboratories arise vis-à-vis private hospital laboratories' **focus on customer segments**:

(a) Third-party feedback indicated that private hospital laboratories are generally set up to support the operational requirements of their own affiliated hospital(s), clinics and doctors,[129] and are mainly focused on serving their own affiliated customers.[130] Statistics provided by third parties also indicate that the significant majority [✂] of the supply of IVD tests by

[124] [✂].
[125] [✂].
[126] [✂].
[127] [✂].
[128] Paragraph 4.16 of PAH's submission on Commitments dated 4 March 2019.
[129] [✂].
[130] [✂].

private hospital laboratories is attributable to their affiliated customers.[131] Third-party feedback also indicated that some private hospital laboratories are unlikely to increase their limited supply to non-affiliated customers, or would face existing operational limitations in this regard.[132] Some third parties also raised concerns that vertically integrated private hospital laboratories may be less likely to supply IVD tests to non-affiliated customers that [✂].[133]

(b) Notwithstanding the above, third-party feedback suggests that, of the private hospital laboratories in Singapore, Parkway Laboratory Services Ltd ("**Parkway**") currently supplies IVD tests to non-affiliated customers to a relatively larger extent than other private hospital laboratories. That said, third-party feedback also indicates that the extent of Parkway's supply of IVD tests to non-affiliated customers differs by the types of non-affiliated customers (see also **Table 4** below).

55. Given the above, as private hospital laboratories' capacity that is currently used to meet their internal demand (i.e. of their affiliated customers) is unlikely to be available to external non-affiliated customers in the market, CCCS is of the view that, for the purpose of the assessment of the Transaction, the relevant market does not include the private hospital laboratories' (internal) supply to their affiliated customers, but includes their supply to non-affiliated customers.

56. **Supply to different customer types.** Third-party feedback indicated that the private laboratories (i.e. private hospital laboratories as well as private independent laboratories) currently supplying IVD tests to non-affiliated customers in Singapore, do not serve all customer types to the same extent (see also **Table 4** below). CCCS understands from third-party feedback that this may arise due to differences in the extent of supply-side substitutability in supplying different customer types (e.g. it may be more difficult to switch from supplying GPs to supplying specialists than vice versa, due to these customers' differing needs such as turnaround time[134]). In this regard, the competitive constraints faced by the Parties, and competitive effects of the Transaction, may accordingly differ for different customer types. For the purpose of the assessment of the Transaction, CCCS considered but has not further segmented the relevant market by customer types.

[131] [✂].
[132] [✂].
[133] [✂].
[134] [✂].

57. **Conclusion on relevant product market.** In view of the above, CCCS is of the view that the relevant product market is the supply of IVD tests (with directly-related ancillary services only) by private laboratories, to non-affiliated customers (i.e. customers without an in-house/vertically-integrated laboratory). However, in assessing the competitive constraints faced by the Parties, and competitive effects of the Transaction on different customer types, CCCS has also examined the extent of differing competitive constraints for different customer types, within the overall relevant market.

(b) Geographic Market

PAH's submission

58. PAH submitted that the relevant geographic market is the national market, i.e. Singapore.[135] This is because, due to the short turnaround time requested for some IVD tests, most customers will prefer to engage the services of laboratories in Singapore to conduct such tests, as opposed to overseas laboratories.[136] On the other hand, according to PAH, the relevant geographic market could also be defined as regional (or can at least extend to Malaysian laboratories) for the IVD tests that, by their nature, have longer turnaround times (e.g. certain specialised IVD tests), or where customers can accept longer turnaround times for routine tests (e.g. more than two business days).[137]

CCCS's assessment

59. As a starting point, CCCS notes that only overseas laboratories which have been accredited by an accreditation body approved by MOH will be allowed to conduct IVD tests for Singapore referrers under existing regulations.[138]

[135] Paragraph 20.9 of Form M1.
[136] Paragraph 20.9 of Form M1.
[137] Paragraph 20.10 of Form M1.
[138] Regulation 44(c) of the Private Hospitals and Medical Clinics Regulations (Cap. 248, Rg 1) ("**PHMC Regulations**") provides that where any sample of any matter derived from a human body is taken at a medical clinic for test or examination for the purpose of providing information for the diagnosis, prevention or treatment of any disease or for the assessment of the health of any person, where the sample is intended to be sent for testing or examination overseas, the licensee of the medical clinic must ensure that such sample is tested or examined by a foreign clinical laboratory which has been accredited by an accreditation body approved by the Director of Medical Services ("**Director**") under the Private Hospitals and Medical Clinics Act (Cap. 248) ("**PHMCA**"). Regulation 55(2)(b) of the PHMC Regulations prohibits the licensee of a clinical laboratory from outsourcing any test or examination or any part thereof unless it is outsourced to a foreign clinical laboratory which has been accredited by an accreditation body approved by the Director. Paragraphs 27.1 to 27.3 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

60. The majority of third-party feedback indicated that laboratories in Singapore generally would not refer IVD tests to overseas laboratories, nor would customers in Singapore generally consider sending their IVD test samples to laboratories outside of Singapore, unless this is for IVD tests which are not supplied locally by any Singapore referral laboratory, whether public or private.[139] The concerns cited in this regard include the transportation and logistics costs to deliver the sample to the overseas laboratories, the longer turnaround time, and the reliability of test results.[140]

61. In light of the above, CCCS considers the relevant geographic market to be Singapore.

(c) Conclusion on Relevant Markets

62. Given CCCS's assessment of the relevant product and geographic markets above, CCCS is of the view that the relevant market, for the purpose of the assessment of the Transaction, is the supply of IVD tests (with directly-related ancillary services only) by private laboratories in Singapore, to non-affiliated customers (i.e. customers without an in-house/vertically-integrated laboratory) ("**the Relevant Market**").

VII. Market Structure

(a) Market shares and market concentration

PAH's submission

63. Based on the F&S Report, the Parties' internal data, and ACRA BizFile records in respect of turnover information for specific suppliers, PAH submitted the following market shares (by value), for the relevant markets PAH has considered i.e. the market for clinical laboratory services in Singapore ("**Laboratories Market**") and at the narrowest, the market for clinical laboratory services provided by private laboratories in Singapore ("**Private Laboratories Market**"):

[139] [✂].
[140] [✂].

Table 2: Market shares (by value) for the supply of IVD testing[141] in Laboratories and Private Laboratories Markets[142]

	Laboratories Market (i.e., public and private laboratories)				**Private Laboratories Market**			
	2014	**2015**	**2016**	**2017**	**2014**	**2015**	**2016**	**2017**
Quest	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[10 – 20]%**	**[10 – 20]%**	**[10 – 20]%**	**[10 – 20]%**
Innovative	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**
Meditest[143]	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**
Parkway	[10 – 20]%	[10 – 20]%	[10 – 20]%	[10 – 20]%	[30 – 40]%	[30 – 40]%	[20 – 30]%	[30 – 40]%
Raffles	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%	[10 – 20]%	[10 – 20]%	[10 – 20]%	[10 – 20]%
Pathlab	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%	[0 – 10]%
Others^	[50 – 60]%	[50 – 60]%	[50 – 60]%	[50 – 60]%	[20 – 30]%	[20 – 30]%	[20 – 30]%	[20 – 30]%
Total (Quest and Innovative, inclusive of Meditest)	**[10 – 20]%**	**[10 – 20]%**	**[10 – 20]%**	**[10 – 20]%**	**[20 – 30]%**	**[20 – 30]%**	**[20 – 30]%**	**[20 – 30]%**
Pre-merger CR3	[30 – 40]%	[30 – 40]%	[30 – 40]%	[30 – 40]%	[60 – 70]%	[60 – 70]%	[60 – 70]%	[50 – 60]%
Post-merger CR3	**[30 – 40]%**	**[30 – 40]%**	**[40 – 50]%**	**[40 – 50]%**	**[60 – 70]%**	**[60 – 70]%**	**[60 – 70]%**	**[60 – 70]%**
Market size by value (S$)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

^ – *According to information submitted by PAH, in the Laboratories Market, "Others" includes public hospital laboratories, other private hospital laboratories, other private independent laboratories, and physician office laboratories. In the Private Laboratories Market, "Others" includes private independent laboratories such as Angsana Molecular & Diagnostics Laboratory, Asian Diagnostic Laboratories, New Medical Laboratory and other private hospital laboratories.*[144]

[141] According to PAH's submissions, [✂]. Paragraphs 1.2 and 1.3 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018.

[142] Paragraphs 21.2, 21.4, and 21.5 to 21.8 of Form M1; and Paragraphs 12.6 to 12.7, and 22.3 to 22.4 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

[143] As noted in paragraph 14 above, Innovative acquired Meditest in March 2018. CCCS has accordingly included Meditest's market shares from 2014 to 2017, in the aggregation of the combined market share of the merged Innovative/Quest entity.

[144] Slide 28 of F&S Report in Appendix 8 of Form M1.

CCCS's assessment

64. As set out in the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*, CCCS is generally of the view that competition concerns are unlikely to arise in a merger situation unless the merged entity will have a market share of 40% or more, or the merged entity will have a market share of between 20% to 40% and the post-merger CR3 is 70% or more.[145]

CCCS's estimated market shares for supply of IVD tests by private laboratories to non-affiliated customers in Singapore

65. Based on estimates submitted by PAH on the proportion of supply of IVD tests by each category of private laboratories to affiliated and non-affiliated customers;[146] additional information obtained by CCCS from third parties on such proportions of supply of IVD tests to affiliated and non-affiliated customers;[147] information from PAH on the estimated proportion of IVD tests supplied at the in-house laboratories at Concord, FPH and TMC (which are currently managed by the Parties) to affiliated and non-affiliated customers;[148] and other turnover information obtained by CCCS from third parties,[149] CCCS has adjusted the market shares (by value) submitted by PAH in **Table 2** above, and derived the following market share estimates:

Table 3: Derived estimated market shares (by value) for the supply of IVD testing by private laboratories to non-affiliated customers in Singapore

	Supply of IVD testing by private laboratories to non-affiliated customers in Singapore		
	2015	**2016**	**2017**
Quest	**[30 – 40]%**	**[30 – 40]%**	**[30 – 40]%**
Innovative	**[10 – 20]%**	**[10 – 20]%**	**[20 – 30]%**
Meditest[150]	**[0 – 10]%**	**[0 – 10]%**	**[0 – 10]%**
Parkway	[20 – 30]%	[20 – 30]%	[20 – 30]%
Raffles	[0 – 10]%	[0 – 10]%	[0 – 10]%
Pathlab	[5 – 15]%	[5 – 15]%	[5 – 15]%
Others^	[5 – 15]%	[5 – 15]%	[5 – 15]%

[145] Paragraph 5.15 of *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[146] Paragraph 24.6 of Form M1.
[147] [✂].
[148] Paragraph 2.4 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[149] [✂].
[150] As noted in paragraph 14 above, Innovative acquired Meditest in March 2018. CCCS has accordingly included Meditest's market shares from 2015 to 2017, in the aggregation of the pre-merger CR3 (where Innovative is one of the top three suppliers in the market pre-Transaction), and the combined market share of the merged Innovative/Quest entity.

Total (Quest and Innovative, inclusive of Meditest)	**[50 – 60]%**	**[50 – 60]%**	**[50 – 60]%**
Pre-merger CR3	[70 – 80]%	[70 – 80]%	[70 – 80]%
Post-merger CR3	**[80 – 90]%**	**[80 – 90]%**	**[80 – 90]%**
Market size by value (S$) in million	[✂]	[✂]	[✂]

^ – *According to information submitted by PAH, "Others" includes private independent laboratories such as Angsana Molecular & Diagnostics Laboratory, Asian Diagnostic Laboratories, New Medical Laboratory.*[151]

66. Based on the figures in **Table 3**, CCCS notes that, in the Relevant Market:

(a) The Transaction combines the top two competitors in the Relevant Market, i.e. Quest and Innovative, with the combined market share of the merged entity ([50 – 60]%) significantly exceeding the indicative threshold of 40%. The post-Transaction CR3 is also very significant, at [80 – 90]%.

(b) Parkway, the third-largest player, has a market share that is only about [✂] of the merged entity's combined market share ([20 – 30]% in comparison to [50 – 60]%).

(c) Market shares of the fourth largest player, Pathlab, have [✂] from 2015 to 2017, whilst Innovative has gained market share over this timeframe. CCCS notes that the market shares of most of the other players (where market share estimates (by value) are available) appear relatively stable from 2015 to 2017.

(b) Barriers to entry and expansion

67. In assessing the barriers to entry and expansion, CCCS considered whether entry by new competitors or expansion by existing competitors may be sufficient in likelihood, scope and time to deter or defeat any attempt by the Parties or their competitors to exploit the reduction in rivalry flowing from the Transaction, whether through coordinated or non-coordinated strategies.[152]

PAH's submission

Regulatory barriers

[151] Slide 28 of F&S Report in Appendix 8 of Form M1.
[152] Paragraphs 5.46 and 5.59 of *CCCS Guidelines on Substantive Assessment of Mergers 2016.*

68. **Regulatory requirements**. PAH submitted that the key factor affecting entry into the Laboratories Market and the Private Laboratories Market in Singapore is the regulatory requirements. According to PAH, meeting such requirements is not a complex process, and the regulatory barriers are accordingly not high.[153] To operate as a private laboratory in Singapore, the laboratory needs to obtain a licence which is issued by the MOH.[154] A pre-requisite for such a licence is that the laboratory must hire a pathologist, or a person with relevant qualifications and working experience.[155] PAH considers that the availability of pathologists in Singapore is not a barrier to entry for new laboratories.[156]

69. For overseas laboratories to be able to provide IVD tests to Singapore customers, PAH submitted that, under the PHMC Regulations,[157] only foreign laboratories which have been accredited by an accreditation body approved by the MOH will be allowed to conduct IVD tests for Singapore referrers.[158]

70. **Manpower needs beyond regulatory requirements.** As for laboratories' manpower needs beyond those required under the laboratory licensing regulations under the PHMCA, PAH submitted that the only specialised manpower required, whom the Parties regard as such, are pathologists (i.e. a doctor who has completed further specialist training in pathology) and cytotechnologists.[159]

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[153] Paragraph 28.1 of Form M1.

[154] PAH identified the PHMCA and its subsidiary legislation (in particular, the PHMC (MedAlert System) Regulations, the PHMC (Publicity) Regulations and the PHMC Regulations) as being the main regulations applicable to the operation of pathology laboratories in Singapore. Licensees under the PHMCA are also required to comply with the guidelines issued by the MOH under the PHMCA and its subsidiary legislation. Paragraph 28.2 of Form M1; and Paragraph 26.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

[155] Regulation 47 of the PHMC Regulations provides that a licence for any premises to be used as a clinical laboratory may be issued to:

(a) a medical practitioner who has the relevant higher qualification and training in anatomic pathology, chemical pathology, cytogenetics, forensic pathology, haematology, histocompatibility, immunology, medical microbiology, transfusion medicine or any other discipline acceptable to the Director of Medical Services ("**Director**"); or

(b) a person who has a degree in medicine or any other higher qualification in any of the disciplines specified in paragraph (a) above, and who has at least 5 years' relevant working experience in a clinical laboratory acceptable to the Director.

Paragraph 28.2 of Form M1; and Paragraph 28.2 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

[156] Paragraph 28.2 of Form M1.

[157] Paragraphs 27.1 and 27.2 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018. See also footnote 138 above for details of the relevant regulations.

[158] Paragraph 27.3 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

[159] Paragraphs 10.2, 10.4 and 10.5 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018. According to PAH, cytotechnologists are personnel who generally require some special and longer training in the Cytology discipline, such as a longer "apprenticeship" with a laboratory.

71. Other than the above, PAH submitted that the other technical laboratory staff are all medical laboratory technologists ("**MLTs**") who have biomedical science degrees or medical laboratory science degrees or diplomas, or their equivalent. According to PAH, these MLTs are able to generally work across all the various disciplines of IVD tests with sufficient on-the-job training (e.g. about [✂] to [✂] months of training, depending on the discipline).[160]

Reputation as a potential barrier

72. **Accreditation.** PAH submitted that any laboratory, including the smaller laboratories, can compete effectively through quality, and laboratories take steps to build up their branding and reputation (which tends to be associated with quality) through accreditation by industry accreditation bodies such as the College of American Pathologists ("**CAP**") and ISO 15189, which would provide a strong assurance over the quality of their services to customers. Based on a search of the database of the CAP, PAH submitted that a total of twenty-one laboratories are CAP-accredited in Singapore,[161] including many public hospital laboratories and smaller laboratories such as Angsana, Asia Genomics and Asian Diagnostics.[162] PAH submitted that, with such accreditation, these laboratories will be able to attract more customers and grow further over time.[163]

73. **Brand loyalty**. PAH submitted that, given the homogenous nature of IVD tests (including any pre- and after-sales services), generally speaking, there is no brand loyalty or loyalty towards any specific laboratory. Customers, such as GPs in particular, tend to engage the services of several different laboratories at any given point in time. The choice of which laboratory to use is driven by the needs of the customers, price of the IVD tests, and the quality of the services provided by the laboratory (including turnaround time, accuracy and reliability of results, customisation of the report and logistics). According to PAH, customers prefer to have high quality services at low prices.[164]

Financial barriers

[160] Paragraph 10.3 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018.
[161] Paragraph 5.10 of PAH's Additional Submissions dated 12 October 2018; paragraph 6.15 of PAH's responses dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[162] Paragraph 5.11 of PAH's Additional Submissions dated 12 October 2018.
[163] Paragraph 5.11 of PAH's Additional Submissions dated 12 October 2018.
[164] Paragraph 6.3 of Form M2.

74. **Capital expenditure.** PAH submitted that it is easy for a new competitor to enter the market or for an existing competitor to expand in the market.[165] For a new entrant, the capital expenditure required to enter the Laboratories Market/Private Laboratories Market, including IT, facilities and equipment, is approximately S$[✂] to S$[✂], for the new entrant to be able to provide comprehensive IVD tests.[166] For incumbents which have the relevant technology and expertise, no significant additional capital expenditure will be required.[167]

75. PAH submitted that the cost of entry is low and the usual method of entry is through the use of the reagent rental model, which requires minimal capital investment upfront, and nearly all pathology laboratories operate under this model.[168] According to PAH, the reagent rental model involves a laboratory renting the IVD testing equipment from suppliers such as Roche, Siemens and Abbott etc. at no cost upfront, on the condition that the laboratory commits to purchasing the reagents required from the supplier throughout the term of the contract between them. The laboratory will pay the supplier on a monthly basis for the reagents purchased.[169]

76. The Parties were unable to quantify the time and cost required for laboratories to offer specialised IVD tests, as it is dependent on the specific test and the volumes expected.[170]

77. **Operating expenditure**. Based on PAH's submissions, Innovative's overall operating expenditure increased from around S$[✂] to S$[✂] from FY[✂] to FY[✂], whilst Quest's overall operating expenditure increased from around S$[✂] to S$[✂] over the same period.[171] The Parties' operating expenditures include, amongst others, [✂].[172]

78. Of the types of operating expenditures incurred, PAH also submitted that:

    (a) While some existing laboratories may not have the extensive in-house logistics/courier network of larger laboratories, this could be rectified by

[165] Paragraph 3.4 of PAH's Additional Submissions dated 12 October 2018.
[166] Paragraph 26.1 of Form M1.
[167] Paragraph 26.2 of Form M1.
[168] Paragraphs 3.4 and 5.7 of PAH's Additional Submissions dated 12 October 2018.
[169] Paragraph 11.1 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[170] Paragraph 10.11 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018.
[171] Paragraph 10.8 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018.
[172] Paragraphs 10.9 and 10.10 of PAH's response dated 9 November 2018 to CCCS's RFI dated 23 October 2018.

expanding their logistics network (which can be achieved quickly and at relatively low costs).[173]

(b) Consumables[174] are variable costs which increase as the volume of IVD tests performed at a laboratory increases. Such costs can be passed on to and recovered from customers,[175] and there is no need for laboratories to set aside a large amount of capital upfront to purchase the consumables.[176]

79. PAH further submitted that most existing laboratories can increase their testing capacity by making small incremental investments in labour in pre and post analytics e.g., phlebotomists, couriers and data entry staff, and with almost no increase in capital costs on equipment given the availability of the reagent rental model. In addition, most laboratories have excess capacity and can easily utilise existing capacity by, for instance, running additional shifts.[177] The process required for existing laboratories to expand their supply/capacity with low marginal costs is the same for different types of laboratories.[178]

Scale as a barrier

80. At the end of the Phase 1 review, based on third-party feedback received by CCCS, CCCS identified that, given the importance of scale in the clinical laboratory business, the need for economies of scale may constitute a barrier to entry or expansion.[179]

81. In this regard, PAH acknowledged that scale is a relevant consideration in terms of entry and expansion.[180] However, PAH submitted that the entry of smaller players in the past five years show that it is possible for new players to easily enter the market by offering the basic IVD tests that are needed in the market, which constitute over [90 – 100]% of the IVD tests that are usually ordered, without a

[173] Paragraph 24.18 of Form M1.
[174] The consumables required by laboratories in providing IVD tests are: (a) doctor's consumables (i.e. required for collection of specimens for testing); (b) laboratory consumables (i.e. required by analysers for processing of tests); (c) laboratory calibrator consumables (i.e. required by analysers for calibration); (d) quality control materials (i.e. required by analysers for quality checks); and (e) laboratory reagents (i.e. required by analysers for processing of tests). Paragraph 13.1 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[175] Paragraph 13.4 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[176] Paragraph 13.4 of PAH's response dated 1 October 2018 to CCCS's RFI dated 26 September 2018.
[177] Paragraph 29.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[178] Paragraph 29.2 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[179] Paragraph 2d of CCCS's Letter to PAH dated 23 October 2018.
[180] Paragraph 5.2 of PAH's submission on Commitments dated 4 March 2019.

concern for scale or costs.[181] Any basic set up of a pathology laboratory will allow the laboratory to offer these frequently requested IVD tests.[182] PAH submitted that the Parties have seen new players entering and expanding in the relevant market over the past five years without any difficulties, and identified seven examples of new players entering the market between 2013 to 2016.[183]

82. PAH further highlighted that New Medical is [✂] and is on the verge of expanding in the market, [✂].[184]

83. PAH also reiterated that new entrants as well as laboratories offering IVD tests can easily enter and/or expand in the market with minimal initial investment by entering into reagent rental arrangements with suppliers of IVD tests, thus eliminating any, if at all, concerns that their initial investments are not justified by their low volumes of demand for specific IVD tests.[185] PAH also cited Innovative as an example which had started out small and was able to grow to the scale that it enjoys today with the help of the reagent rental model, but has also differentiated itself from other laboratories by offering high-quality services to customers, which explains its significant growth over the past six years.[186] PAH submitted that other laboratories can also expand in the same manner as Innovative had done; and that it is easy and simply takes initiative.[187]

CCCS's assessment

84. Reviewing the information provided by PAH and third parties, CCCS is of the view that there exist notable barriers to entry and/or expansion in the supply of IVD tests, in particular in respect of the need for scale in the clinical laboratories business. This in turn impacts the financial feasibility and ability of laboratories to justify incurring the capital and/or operating expenditure to enter or expand in the market. However, CCCS notes from third-party feedback that laboratories may be willing

[181] Paragraph 5.2 of PAH's submission on Commitments dated 4 March 2019.
[182] Paragraph 5.2 of PAH's submission on Commitments dated 4 March 2019.
[183] The examples cited by PAH of new players entering the market are: Asia Genomics (2013), Angsana (2014), CardioGenomics (2015), ResteLab (2015), ADL (2016), LucenceDx (2016), New Medical (2016). Paragraph 6.2 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[184] Paragraphs 3.5, 5.3 and 5.4 of PAH's Additional Submissions dated 12 October 2018, and Paragraph 1.1 of PAH's response dated 17 October 2018 to CCCS's RFI dated 15 October 2018.
[185] Paragraph 5.7 of PAH's Additional Submission dated 12 October 2018; Paragraph 6.12 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018; Paragraph 5.1 of Form M2.
[186] Paragraph 5.8 of PAH's Additional Submission dated 12 October 2018; Paragraph 6.13 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[187] Paragraph 5.9 of PAH's Additional Submission dated 12 October 2018; Paragraph 6.14 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.

and able to undertake the necessary entry and expansion over time should there be sufficient volume/demand for them to do so.[188]

Regulatory barriers

85. **Regulatory requirements.** CCCS notes that third-party feedback generally confirmed PAH's submissions in relation to the licensing requirements under the PHMCA and its subsidiary legislation.[189] CCCS notes that although the approval granted to licensed clinical laboratories is specific to the laboratory disciplines(s) applied for, these laboratories may also [✂].[190] Additional requirements are only imposed on hospitals and clinical laboratories performing certain specialised tests under the Fifth Schedule to the PHMC Regulations.[191]

86. **Manpower needs beyond regulatory requirements.** Some third-party feedback indicates that the requirement for skilled or qualified manpower may be a barrier for suppliers due to the insufficient number of qualified pathologists in Singapore.[192] Although some specialised manpower (e.g. pathologists) is required to satisfy MOH's laboratory licensing regulations, CCCS also understands that IVD tests need not be conducted by these specialised staff and that some laboratories employ MLTs to carry out the task.[193] Only laboratories which focus on the provision of certain specialised tests (e.g., Histology, Cytology, Histopathology) tend to employ more specialised manpower.[194]

Reputation as a potential barrier

87. Overall, CCCS notes that reputation – in particular, in respect of the quality, reliability and service standards of IVD testing offered by the laboratory – poses a potential barrier, but may potentially be overcome by laboratories if they are able to improve their service standards, build customer relationships and establish their brands over time.

88. **Accreditation, quality, reliability and service standards.** CCCS notes that a majority of customers indicated that reliability of test results and quality of service standards are relevant factors in choosing a laboratory to purchase IVD tests

[188] [✂].
[189] [✂].
[190] [✂].
[191] [✂].
[192] [✂].
[193] [✂].
[194] [✂].

from.[195] Although it is not mandatory under the PHMCA for licensed laboratories to obtain additional accreditation,[196] some third parties indicated that they consider such additional accreditation as an indicator or base standard of reliable quality (e.g. accreditation from the CAP, ISO 15189).[197] Third party feedback also indicated that it would take approximately two to three years to obtain CAP accreditation,[198] which CCCS notes is similar to PAH's submission on the time frame for Innovative to obtain CAP accreditation.[199] CCCS also notes that the time frame at which IVD testing suppliers may start to apply for CAP accreditation will depend on their assessment of their readiness to do so, and can vary.[200]

89. CCCS further understands from third-party feedback that it is possible for laboratories to improve their service standards and reliability, and hence build up their reputation over time, for example, [✂] to improve their service standards through the development of IT systems and enhancement of their courier services and operations to better meet the requirements of customers.[201]

90. **Brand loyalty.** CCCS notes that some third-party feedback indicates that customers generally have certain supplier preferences (e.g. preferring suppliers with established brands or with whom the customer has a good or established relationship).[202] However, CCCS notes from third-party feedback that customers may also be willing to switch from the merged entity if other suppliers are able to meet their requirements (e.g. sufficient capacity, service standards).[203]

Financial barriers

91. **Operating expenditure.** CCCS notes that a number of third parties indicated that operating expenditure (e.g., manpower, consumables and rental) may be a barrier to entry,[204] as operating costs (e.g., labour, consumables, rental and marketing costs) can potentially account for up to [90 – 100]% or more of the revenue for a start-up laboratory operation.[205]

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[195] [✂].
[196] [✂].
[197] [✂].
[198] [✂].
[199] Paragraph 10.14 of PAH's submissions dated 9 November 2018 to CCCS's RFI dated 23 October 2018.
[200] [✂].
[201] [✂].
[202] [✂].
[203] [✂].
[204] [✂].
[205] [✂].

92. As for operating expenditure as a barrier to expansion, CCCS understands from third-party feedback that:

(a) For the expansion of supply (i.e. increasing the volume of tests supplied, within a laboratory's existing scope of tests provided), operating expenditure may be less of a barrier,[206] if additional equipment or manpower would not be required generally,[207] such as if a laboratory has existing spare capacity that they can tap on.[208]

(b) For the expansion of scope (i.e. expanding to provide additional types of tests not currently offered by the laboratory), feedback was more mixed,[209] with some third-party feedback indicating that such expansion may require that the laboratory obtain or hire new and/or specialised manpower, equipment and additional space, and in turn incur higher operating costs.[210] Such expansion may therefore be subject to the financial feasibility of doing so,[211] for example if there is sufficient volume or demand for laboratories to justify incurring the costs of such expansion of scope.[212] This similarly applies for any expansion of supply/volume that requires additional equipment to increase capacity.

93. **Capital expenditure and reagent rental model.** CCCS notes that some third-party feedback indicated that capital expenditure associated with the facilities required to develop the business, the equipment to perform the services, the accreditation procedure for external quality assurance, and the IT systems can be significant.[213] The costs to supply specialised tests may also be higher when compared to the supply of general IVD tests, considering the need to obtain additional licences from MOH[214] and new specialised equipment.

94. That said, third-party feedback also indicated that the reagent rental model is generally a feasible means for laboratories to enter the supply of IVD tests,[215] as

[206] [✂].
[207] [✂].
[208] [✂].
[209] [✂].
[210] [✂].
[211] [✂].
[212] [✂].
[213] [✂].
[214] [✂].
[215] [✂].

well as expand their supply/volume[216] and scope of IVD tests offered,[217] as it allows laboratories to gain access to IVD testing equipment with no upfront costs,[218] and is generally used by most laboratories to obtain the necessary equipment.[219]

95. The majority of third-party feedback also indicated that the reagent rental model requires laboratories to contractually commit to minimum purchase volumes,[220] and upstream suppliers may not provide a laboratory with a reagent rental model unless a laboratory is also able to commit to a sufficient volume of tests to create a feasible business case for the supplier.[221] Subject to negotiation between the laboratory and the upstream supplier[222], potential penalties involved with the failure to meet these purchase commitments include being required to pay for the shortfall in the committed minimum purchase amount,[223] and termination of the reagent rental contract.[224]

96. In this regard, CCCS notes that the use of the reagent rental model to overcome capital expenditure requirements, and undertake entry or expansion, would still be subject to a laboratory having sufficient volume/demand from customers, in order to sustainably meet its committed minimum purchase amounts under a reagent rental contract.

Scale as a barrier

97. In Phase 1, third-party feedback indicated that the need for economies of scale may constitute a barrier to both entry and expansion. Some third parties indicated that the small size of the market in Singapore and, therefore, the limited demand constitutes such a barrier to expand.[225] As also acknowledged by PAH,[226] third-party feedback noted that volume and economies of scale are important in the clinical laboratories business, as having larger volumes and demand allows a laboratory to introduce more IVD tests and expand its range and scope of tests.[227]

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[216] [✂].
[217] [✂].
[218] [✂].
[219] [✂].
[220] [✂].
[221] [✂].
[222] [✂].
[223] [✂].
[224] [✂].
[225] [✂].
[226] See paragraph 81 above.
[227] [✂].

98. Further third-party feedback received in Phase 2 reinforced the feedback that laboratories need sufficient volume/demand to justify entry[228] and expansion of supply/volume[229] as well as the expansion of their scope of IVD tests offered.[230] CCCS notes that a lack of economies of scale may impede other existing (smaller) laboratories, which currently offer a less comprehensive range of IVD tests than the Parties, from being able to expand their test offerings across a wider range of disciplines (see **Annex A** for PAH's submissions on the disciplines of IVD tests offered by competitors). Given that one factor considered by customers in choosing their supplier of IVD tests is whether the supplier can supply the range of IVD tests that they require (see paragraph 48 above), CCCS notes that insufficient demand or volume and a lack of economies of scale, may limit the competitive constraint that such competitors may be able to pose on the merged entity post-Transaction.

99. However, CCCS notes from third-party feedback that such scale barriers can potentially be overcome if laboratories are able to gain or estimate sufficient volume/demand from their existing or potential customers and hence reach the necessary scale over time to justify entry or expansion (of supply/volume, or scope of IVD tests offered). One possible means of gaining such demand, as indicated from third-party feedback, is when a laboratory sends out (i.e. outsources) IVD tests which it does not currently perform in-house, to a third-party (or referral) laboratory (in the form of SOTs). In this regard, [✂].[231] CCCS notes that the ability to send out IVD tests at competitive rates may help competing laboratories to offer a wider range of tests to meet the requirements of their customers, or to better market themselves to customers, and also gauge the level of available demand to justify performing such IVD tests in-house.

(c) Countervailing Buyer Power

100. The *CCCS Guidelines on the Substantive Assessment of Mergers 2016* provide that the ability of a merged entity to raise prices may be constrained by the countervailing power of customers. The key question is whether customers have a sufficiently strong post-merger bargaining position and how much it will change as a result of the merger.[232]

PAH's submission

[228] [✂].
[229] [✂].
[230] [✂].
[231] [✂]
[232] Paragraphs 5.60 to 5.61 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016.*

101. PAH considers that customers enjoy significant countervailing buyer power, for the following reasons:

Option to self-supply

(a) Hospitals and medical centres, which are customers of Innovative and Quest, are able to self-supply IVD tests as is demonstrated by the hospitals and medical centres that have pathology laboratories today.[233] All private hospitals can self-supply IVD tests and can switch fairly seamlessly from outsourcing to self-supply with little switching costs.[234] Hence, if the merged entity increases price above competitive levels, decreases its service quality or otherwise acts anti-competitively, hospitals, clinic chains and medical centres can self-supply by bringing the services in-house.[235] According to PAH, currently in Singapore, the private hospitals TMC, FPH and Concord have chosen to subcontract their laboratory services to external laboratories, but all of them have the option to perform those services in-house, as Parkway, Raffles and Mount Alvernia do.[236]

Ease of switching

(b) While some contracts with customers may contain exclusivity clauses or lock-in periods, PAH submitted that such contracts are [✂] and typically last for a term of [✂]. PAH submitted that such exclusivity clauses are usually beneficial for customers, as the agreed prices for the customers are [✂].[237] In addition, PAH submitted that customers are able to exercise their countervailing buyer power through negotiations and/or competitive procurement processes whereby laboratories compete for contracts via a tender or request for proposal process.[238]

(c) PAH further submitted that, other than such limited contracts with exclusivity or lock-in periods, there are otherwise generally no exclusive contracts between customers and laboratories which prevent them from switching their purchases to other laboratories, which means that switching

[233] Paragraph 32.1 of Form M1.
[234] Paragraph 7.7 of PAH's submission on Commitments dated 4 March 2019.
[235] Paragraph 32.1 of Form M1.
[236] Paragraph 24.14 of Form M1.
[237] Paragraph 7.1 of PAH's Additional Submissions dated 12 October 2018.
[238] Paragraph 32.2 of Form M1; Paragraph 8.2(a) of PAH's responses dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.

can take place almost immediately i.e. as soon as for the next order.[239] For contracts where there are no early termination clauses, PAH submitted that the relevant customers also utilise other laboratories.[240] PAH also highlighted that [✂] of the customers of both Innovative and Quest are non-contracted customers. With this, PAH considers that generally customers can easily switch to other suppliers of IVD tests,[241] and hence [✂] of the customers of Innovative and Quest can exercise their countervailing buyer power by switching or threatening to switch to other laboratories.[242]

CCCS's assessment

102. Considering the submissions of PAH and the feedback from third-parties, CCCS is of the view that, while there appears be a limited degree of countervailing buyer power pre-Transaction, this is likely to be adversely impacted by the Transaction. The reasons are further elaborated in the paragraphs below.

103. **Other than certain large customers, remaining demand is fragmented.** As a starting point, the level of the countervailing buyer power in the Relevant Market appears to vary significantly, depending on the conditions within individual contracts, the purchasing behaviour of customers, the type and size of the customers, and the services provided by the suppliers.

104. The top customer of Innovative in Singapore is [✂], a contracted customer, that represents [✂]% of Innovative's sales in the Relevant Market. Between the second and the fifth top customers, the proportions vary between [✂]% and [✂]%. Hence, the top five customers of Innovative represent only [✂]% of its sales, and the remaining [✂]% of sales are dispersed into a proportion smaller than [✂]% per customer.

105. As for Quest, its top customer in Singapore is [✂], a contracted customer representing [✂]% of Quest's sales in the Relevant Market, with the next four largest customers representing together [✂]% of Quest's sales. Customers outside of these top five customers account for [✂]% of Quest's sales, and are dispersed into a proportion smaller than [✂]% of Quest's sales per customer.

[239] Paragraph 24.12 of Form M1.
[240] Paragraph 7.4 of PAH's submission on Commitments dated 4 March 2019.
[241] Paragraph 7.2 of PAH's Additional Submissions dated 12 October 2018.
[242] Paragraph 7.3 of PAH's submission on Commitments dated 4 March 2019.

106. In a post-Transaction scenario, CCCS notes that [✂] have expressed uncertainty about [✂] post-Transaction [✂].[243]

107. **Customers unlikely to consider self-supply as viable alternative under present conditions.** Despite PAH's submissions that hospitals and medical centres are able to self-supply IVD tests, a significant majority of third-parties who provided feedback on this issue indicated that customers are unlikely to self-supply, giving reasons such as the costs involved, the lack of trained personnel to carry out testing, lack of resources and/or time to do so, concerns on the reliability of test results, and the lack of volume or demand for tests to justify self-supply, given the economies of scale required in supplying IVD tests.[244]

108. As regards the private hospital customers of the Parties, CCCS notes that such customers have currently outsourced the management of the operations of their in-house laboratories to Innovative and Quest.[245] CCCS notes that the need for economies of scale and associated costs of entering/expanding in the Relevant Market, would similarly act as a barrier to self-supply for such private hospitals, in addition to the factors generally indicated in paragraph 107 above:[246]

(a) [✂].[247] [✂].[248] [✂].[249]

(b) [✂].[250] [✂].[251] [✂].[252] [✂].[253]

109. Therefore, whilst the possibility for private hospital customers to self-supply in the future is not wholly excluded, CCCS notes that there are likely to be high impediments to self-supplying given the operational difficulties generally, and the need for economies of scale and associated financial costs. In this regard, customers are generally unlikely to self-supply or internalise their requirements for IVD tests at present, as an alternative means of exerting countervailing buyer power on the Parties.

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[243] [✂].
[244] [✂].
[245] See paragraphs 16 and 20 above.
[246] [✂].
[247] [✂].
[248] [✂].
[249] [✂].
[250] [✂].
[251] [✂].
[252] [✂].
[253] [✂].

110. **Sponsoring entry or expansion.** Third-party feedback indicated that some customers are open to sponsoring the entry or expansion of competitors as a means of exerting countervailing buyer power on the Parties post-Transaction.[254] However, this is generally subject to various factors or considerations being met, such as pricing, economies of scale, track record, reliability, quality and service standards.[255] Some other customers also indicated that sponsoring entry or expansion indirectly through a minimum purchase commitment may not be feasible, if they are unable to predict their actual usage of laboratory tests and services for the forecasted duration.[256]

111. Given the above, CCCS is of the view that, whilst a customer sponsoring entry or expansion is not wholly excluded, there is at present a lack of certainty as to whether the possibility of such sponsorship would allow customers to exert any countervailing buyer power on the Parties post-Transaction.

VIII. Competition Assessment

(a) Non-coordinated effects

112. Non-coordinated effects may arise where, as a result of the Transaction, the merged entity finds it profitable to raise prices (or reduce output or quality) because of the loss of competition between the merger parties.[257]

PAH's submission

113. PAH submitted that the Transaction will not give rise to any horizontal anti-competitive concerns, as the Parties will continue to face strong competition from its existing and potential competitors:[258]

    (a) Post-Transaction, Parkway will exert strong pressure on the merged entity. In the Private Laboratories Market, Parkway's market share is [30 – 40]%, versus the [20 – 30]% combined market share of the merged entity. PAH further submitted that Parkway is well-known in the market and associated with high quality, quick turnaround times and wide test coverage, which

[254] [✂]
[255] [✂]
[256] [✂]
[257] Paragraph 5.21 of *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[258] Paragraph 34.1 of Form M1.

will still be greater than the merged entity's post-Transaction.[259] PAH also submitted that Parkway has been offering services to non-affiliated primary care customers (such as GPs) for many years and continues to actively participate in the primary care market, Parkway's prices are competitive in relation to the prices offered by the Parties and by Pathlab, and Parkway had participated in most of the tenders that Innovative and/or Quest, as well as other public or private laboratories, had participated in.[260] Moreover, PAH observed that vertically integrated players such as Parkway have a competitive advantage over independent laboratories by offering bundled services to customers,[261] and Parkway also has advantages in relation to non-affiliated tenant clinics being located at its premises (e.g. proximity).[262]

(b) Raffles holds a [0 – 10]% share of the Laboratories Market and a [10 – 20]% share of the Private Laboratories Market. PAH submitted that Raffles offers an expansive list of IVD testing services that is at least comparable to those provided by Parkway, Innovative and Quest, and it will exert strong competitive pressure on the merged entity post-Transaction.[263]

(c) Pathlab has a market share of [0 – 10]% in the Laboratories Market and [0 – 10]% in the Private Laboratories Market, and provides most of the IVD tests that Innovative and Quest provide, and generally at lower prices. PAH submitted that this will curtail the ability of the merged entity to raise the prices of IVD tests after the Transaction.[264] In Singapore, Pathlab's core business is serving the primary care market, i.e. the GP and health screening customer segments.[265]

(d) Several smaller competitors represent in total about [50 – 60]% of the Laboratories Market and [20 – 30]% of the Private Laboratories Market. According to PAH, they will be a constraint on the Parties, and could easily ramp up their capacity to gain a larger share of the market, including by way of aggregation to gain scale and cost synergies. There are no obvious barriers to expansion for existing players, and while some of these players may not have the extensive in-house logistics/courier network of larger

[259] Paragraph 34.2 of Form M1.
[260] Paragraphs 5.3 and 5.4 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018, and paragraphs 4.6.4. and 4.6.5. of PAH's submission dated 12 October 2018.
[261] Paragraph 7.5 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[262] Paragraph 4.4 of PAH's submission on Commitments dated 4 March 2019.
[263] Paragraph 34.3 of Form M1.
[264] Paragraph 34.5 of Form M1.
[265] Paragraph 4.6.6 of PAH's Additional Submissions dated 12 October 2018.

laboratories, this could be rectified by expanding their logistics network (which can be achieved quickly and at relatively low costs).[266] Among these smaller competitors, PAH has highlighted:

(i) New Medical is [✂], having entered the market in 2016.[267]

(ii) Reste entered in 2015 and is seeking to grow and is expanding quickly, and is part of the Reste Group. Reste offers a similar range of IVD tests as those offered by Innovative and Quest respectively. According to its website, Reste serves a wide range of customers, and PAH submitted that Reste is also highly competitive in terms of prices.[268]

(e) Public hospital laboratories conduct all the IVD tests that the merged entity conducts and exert a strong competitive pressure.[269] Furthermore, public hospital laboratories often participate in the same tender processes than the Parties and have, in some cases, been awarded with such contracts.[270]

(f) Foreign laboratories could also enter and compete in the Singaporean market.[271]

114. Other than the presence of strong competition in the market, PAH also submitted that other factors restrict the merged entity's ability and incentive to raise prices, reduce service quality or otherwise act anti-competitively after the Transaction:[272]

(a) The offering of IVD tests is a scale dependent business. If the merged entity attempts to increase prices above competitive levels after the Transaction, the volume of requests it receives from its customers is expected to decrease, and this would make the business no longer profitable given the low margins on certain types of tests. This means that there will not be any incentive for the merged entity to raise prices above competitive levels.

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[266] Paragraph 34.6 of Form M1.
[267] Paragraphs 3.5, 5.3 and 5.4 of PAH's Additional Submissions dated 12 October 2018, and Paragraph 1.1 of PAH's response dated 17 October 2018 to CCCS's RFI dated 15 October 2018.
[268] Paragraphs 3.5 and 5.5 of PAH's Additional Submissions dated 12 October 2018 and paragraph 4.7 of Form M2.
[269] Paragraph 34.7 of Form M1.
[270] Paragraph 3.2.3 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[271] Paragraph 34.8 of Form M1.
[272] Paragraph 34.9 of Form M1.

(b) There are no specific or exclusive and non-substitutable tests which Innovative and Quest provide to the market that their competitors, or very few of their competitors, do not provide. Hence, customers have options to switch to if the merged entity raises prices above competitive levels.

(c) In addition, there is significant countervailing buyer power exerted on Innovative and Quest from larger customers such as hospitals and medical centres (which are able to self-supply IVD tests) as well as third-party payors (who purchase a large volume of IVD tests and hence have strong bargaining power to negotiate favourable terms and conditions).

115. According to PAH, if the Parties raise their prices above competitive levels or reduce their service levels post-Transaction, it is very easy for existing competitors or new entrants to take this opportunity to compete for the customers of the merged entity.[273]

116. PAH submitted that Innovative and Quest are not the closest competitors to each other, given that public hospital laboratories, private hospital laboratories and other private independent laboratories all compete closely with Innovative and Quest. PAH submitted that the competition between Parkway and each of Innovative and Quest may in fact be closer than the competition between Innovative and Quest. PAH further submitted that, given the above, the loss in rivalry between the Parties as a result of the Transaction would not be a cause for concern.[274]

CCCS's assessment

117. The Transaction involves the merger of the top two private independent laboratories in Singapore. The factors described below have been considered by CCCS to determine whether non-coordinated effects are likely to arise from the Transaction.

(a) Market shares/ relative revenues by customer types

118. As set out in **Table 3** above, in the Relevant Market for the supply of IVD tests by private laboratories to non-affiliated customers in Singapore, the Parties are the top two competitors. The post-Transaction combined market share of the merged entity is estimated at [50 – 60]%, significantly higher than the estimated market shares of

[273] Paragraph 8.5 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[274] Paragraphs 4.1 and 4.2 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.

the next two largest competitors in the Relevant Market: Parkway at [20 – 30]% and Pathlab at [5 – 15]%.

119. CCCS has also considered the extent to which there may be differing competitive constraints for different customer types within the overall Relevant Market. In this regard, CCCS has further considered the revenues of each of the Parties, and Parkway and Pathlab, for FY2017 in the supply of IVD tests to each of the identified non-affiliated customer types. As shown in **Table 4** below, the Parties' revenues are significantly larger than those of Parkway and Pathlab in a number of customer types.[275]

Table 4: Relative revenues in key customer types (FY2017) (in S$)

Customer type	Quest	Innovative	Parkway	Pathlab
Private hospitals not operating their own in-house laboratories	[✂]	[✂]	[✂]	[✂]
GPs (including chain and independent clinics)	[✂]	[✂]	[✂]	[✂]
Specialists	[✂]	[✂]	[✂]	[✂]
Health screening companies	[✂]	[✂]	[✂]	[✂]
Insurance companies and/or third-party payors	[✂]	[✂]	[✂]	[✂]
Government bodies and equivalent entities	[✂]	[✂]	[✂]	[✂]
Other corporate customers	[✂]	[✂]	[✂]	[✂]
Other clinical laboratories	[✂]	[✂]	[✂]	[✂]

120. As for other private independent laboratories, from third-party feedback, CCCS understands that these laboratories are significantly smaller than the Parties at present in the overall Relevant Market:

(a) New Medical's estimated annual revenue, based on their estimated monthly revenue as of January 2019, is approximately S$[✂], or approximately [0 – 10]% market share by revenue[276]; and

[275] Paragraphs 21.2 to 21.8 of Form M1, paragraph 9.1 of PAH's submission dated 1 October 2018, paragraph 8.5 of PAH's submission dated 9 November 2018 to CCCS's RFI dated 23 October 2018, [✂]
[276] [✂]

(b) Reste's revenue for FY2017 was S$[✂], or approximately [0 – 10]% market share by revenue.[277] In 2018, Reste's revenue was approximately S$[✂], or approximately [0 -10]% market share by revenue.[278]

121. CCCS concluded that, compared to the next two largest competitors, the Parties are the top two suppliers in the Relevant Market for a number of key non-affiliated customer types, except for "[✂]", where [✂] is the largest player; "[✂]" where [✂] is the second-largest player; and "[✂]" where [✂] is the second-largest player (as in **Table 4** above).

(b) Closeness of competition between the Parties

122. CCCS is of the view that the Parties are considered the closest competitors to each other in the Relevant Market, for the reasons set out below.

123. Third-party feedback indicated that the Parties provide similar services to customers in terms of scope and scale, offering similar types of IVD tests and ancillary services, within a comprehensive range and volume of tests and services.[279] In terms of prices, third-party feedback generally indicated that their prices offered to customers are similar, and there is a history of price rivalry and competition for the same contracts and tenders[280], including recent pre-Transaction instances of direct competition between them.[281]

124. Both Parties also enjoy a favourable reputation in the market, as both are experienced and their service standards and quality level are similarly well-reputed, including turnaround time and the reliability of test results.[282] Furthermore, their business models and their target market – as they actively have been competing for the same customer types over the years – have been also indicated as illustrative of the closeness of competition between the Parties.[283]

125. CCCS further notes that the Parties' offerings and service standards, as described above, have also enabled them to offer services to private hospitals to manage their in-house laboratories, [✂] (i.e. for TMC, FPH and Concord).

[277] [✂]
[278] [✂]
[279] [✂]
[280] [✂]
[281] [✂]
[282] [✂]
[283] [✂]

126. The evidence above shows that the services provided by the Parties have a high degree of substitutability between them, with a history of close price rivalry and direct competition. This closeness of competition is supported by the Parties being the top two competitors in the Relevant Market pre-Transaction, and also the top two competitors for a number of key non-affiliated customer types (as in **Table 3** and **Table 4** above).

(c) Alternative suppliers as competitive constraints to the Parties

127. CCCS has assessed the extent to which competitors in the Relevant Market are able to act as an alternative supplier that each customer type would be able to switch to post-Transaction, as a means of competitively constraining the Parties in the event of an increase in the merged entity's prices or decrease in quality of their services.

i. Parkway

128. **Parkway may potentially exert some competitive constraint on the Parties post-Transaction, although likely only for some customer types, in particular** [✂**]**. Based on the derived estimated market shares in the Relevant Market (in **Table 3** above), Parkway is currently the third largest competitor in the Relevant Market, after Quest and Innovative. According to third-party feedback, Parkway is able to provide a comparable range of IVD tests and ancillary services as the Parties, and also enjoys a favourable reputation in the market due to the quality of its services.[284]

129. Parkway serves different types of non-affiliated customers to differing extents (see also **Table 4** above), including [✂],[285] and has indicated that it accepts [✂] different types of customers.[286] That said, third-party feedback also indicates that Parkway's [✂] the [✂] customer type,[287] where it is currently [✂] (as in **Table 4** above). CCCS further understands that the [✂] of Parkway in relation to [✂] IVD tests are also targeting [✂], which will mainly be purchased by [✂].[288] All these circumstances indicate that Parkway is likely to pose competitive constraint to the Parties in relation to the [✂] customer type post-Transaction.

[284] [✂]
[285] [✂]
[286] [✂]
[287] [✂]
[288] [✂]

130. In relation to the customer type of [✂], whilst Parkway has indicated that it does not dismiss the possibility of [✂] in the future,[289] it has stated that this customer type is [✂].[290] Further, Parkway has indicated that, if it were to consider accepting more IVD test requests from [✂] (e.g. if Parkway is approached by such a [✂]), it would still have to consider whether [✂], or alternatively incur costs to [✂].[291]

131. For the other customer types, such as [✂] or [✂], Parkway's current limited extent of supplying these non-affiliated types of customers[292] may similarly indicate a limited extent of competitive constraint to the Parties. However, as a vertically-integrated supplier (i.e. providing healthcare services under the Parkway Group as well as IVD testing), Parkway may potentially indirectly exert some competitive constraint on the Parties where these customer types may also require healthcare services together with IVD tests. In this regard, [✂].[293] CCCS notes that one such example is in relation to [✂].[294]

132. However, notwithstanding the above, CCCS notes that third-party feedback also indicates that Parkway may not be a sufficient competitive constraint to the Parties for customer types which do not require healthcare services, for example [✂].[295]

ii. Pathlab

133. **Pathlab may potentially exert some competitive constraint on the Parties post-Transaction, but not across all customer types.** Third-party feedback indicated that Pathlab does not provide a comparable range of the IVD tests supplied by the Parties,[296] particularly lacking more specialised disciplines or tests, which accords with PAH's submissions (see **Annex A**), although Pathlab is able to provide a relatively broad range of general IVD tests.[297] Pathlab serves [✂], with supply to other customer types being limited at present (see **Table 4** above).[298]

[289] [✂]
[290] [✂]
[291] [✂]
[292] [✂]
[293] [✂]
[294] [✂]
[295] [✂]
[296] [✂]
[297] [✂]
[298] [✂]

134. Whilst Pathlab has indicated its ability to [✂],[299] and [✂],[300] Pathlab has also indicated that it is unlikely to [✂].[301] This is other than Pathlab's intention to [✂].[302]

135. Whilst third-party feedback indicated that Pathlab's prices are generally comparable to or lower than the prices of the Parties[303] (which may provide some competitive constraint against the Parties in relation to more price-sensitive customers, such as some [✂][304]), some third-party feedback also indicated that the quality of Pathlab's service standards is lower than the Parties', for example in terms of [✂].[305] Pathlab has indicated that [✂].[306]

136. CCCS is of the view that Pathlab is a weaker competitor to the Parties, in particular given its significantly smaller market share in the Relevant Market, and its [✂] market share from 2015 to 2017.[307] Given that customers typically choose their supplier based on, other than price, who can also meet their requirements of range of IVD tests and service standards, the extent of Pathlab's competitive constraint on the Parties post-Transaction may be generally limited. Considering that Pathlab is [✂], Pathlab may pose some competitive constraint on the Parties for this customer type, but may not be a sufficient competitive constraint to the Parties for other customer types.

iii. Reste

137. **Reste does not currently exert significant competitive constraint on the Parties, but may have some potential to do so over time post-Transaction.** Third-party feedback indicated that Reste is a new player in the market recently established in 2016/17,[308] and its current laboratory operations and revenue (see also paragraph 120(b) above) are not of a comparable size and scale to the Parties.[309] Thus, Reste does not appear to be a significant competitor to the Parties.

[299] [✂]
[300] [✂]
[301] [✂]
[302] [✂]
[303] [✂]
[304] [✂]
[305] [✂]
[306] [✂]
[307] As in **Table 3** above.
[308] [✂]
[309] [✂]

138. In terms of types of tests provided, Reste currently supplies general IVD tests from the disciplines Biochemistry, Immunology, Hematology and Serology,[310] and may need to send out (i.e. outsource) other tests it does not currently provide to a third-party laboratory (in the form of SOTs), in order to fulfil customers' needs.[311] Because of its current [✂] capacity and scale, in terms of volume and range of tests provided,[312] third-party feedback indicates that Reste is generally unable to [✂].[313]

139. Feedback also indicates that Reste's prices may be [✂], as Reste is [✂].[314] Some third-party feedback further indicated that Reste's service standards or offerings may not currently be comparable to the Parties'. For example, Reste does not provide [✂], and may have [✂] in the delivery of test results.[315]

140. Although third-party feedback generally indicates that Reste is currently not a significant competitor to the Parties, third-party feedback also suggests that Reste has some potential to grow in the future,[316] and to potentially pose some competitive constraint on the Parties post-Transaction, over time.

iv. <u>New Medical</u>

141. **New Medical does not currently exert significant competitive constraint on the Parties, but may have some potential to do so over time post-Transaction.** Third-party feedback suggests that currently New Medical is not a strong competitor to the Parties, as it is a small new laboratory (having obtained its licence from the MOH in [✂][317]) and its current laboratory operations and revenue (see also paragraph 120(a) above) are not of a comparable size and scale[318] (in terms of volume and range of tests provided; see also **Annex A**) to the Parties.[319]

142. New Medical is currently unable to support a wide range of IVD tests or test profiles [✂],[320] and currently use [✂] for some SOTs as [✂] had rejected receiving its SOTs.[321]

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[310] [✂]
[311] [✂]
[312] [✂]
[313] [✂]
[314] [✂]
[315] [✂]
[316] [✂]
[317] [✂]
[318] [✂]
[319] [✂]
[320] [✂]
[321] [✂]

143. However, third-party feedback indicates that New Medical has some potential to grow.[322] In this regard, New Medical has [✂].[323] [✂].[324] [✂].[325] More recently, PAH submitted that [✂] switched to New Medical.[326] Given this, CCCS notes that New Medical may potentially pose some competitive constraint on the Parties post-Transaction, over time.

v. Other private laboratories

144. CCCS also assessed the extent of competitive constraint posed by the following private laboratories (i.e. private hospital laboratories as well as private independent laboratories), which were identified by PAH as competitors to the Parties:

(a) SAM Laboratory: Third-party feedback indicated that SAM Laboratory is a small, [✂] laboratory, with [✂], and is unable to match the [✂] of the Parties.[327] Although SAM Laboratory has [✂], it has also indicated that [✂]. Instead, SAM Laboratory has expressed that, at present, [✂].[328]

(b) Mount Alvernia: Third-party feedback generally indicated that Mount Alvernia is not an alternative to the Parties, because of its prices,[329] availability and/or quality of directly-related ancillary services and service standards generally (including [✂] services), and that it is set up to support the operational requirements of its own affiliated hospital(s), clinics and doctors.[330]

(c) Raffles: Third-party feedback generally indicated that Raffles is not an alternative to the Parties, because of its prices, availability of directly-related ancillary services and service standards generally (including [✂] services), and that it is set up to support the operational requirements of its own affiliated hospital(s), clinics and doctors, and [✂].[331]

[322] [✂].
[323] [✂].
[324] [✂].
[325] [✂].
[326] Email submission from PAH dated 9 September 2019.
[327] [✂].
[328] [✂].
[329] [✂].
[330] [✂].
[331] [✂].

(d) Setsco: Setsco informed that it had ceased its clinical laboratory operations [✂].[332]

145. Given the above, CCCS is of the view that these laboratories are unlikely to exert sufficient competitive constraint on the Parties in the Relevant Market post-Transaction.

(d) Customers' willingness and ability to switch suppliers

PAH's submission

146. PAH has submitted that it is very easy for non-contracted customers of the Parties, which make up [✂] of their customers, to switch suppliers for IVD tests, because they are not bound by contract obligations to only purchase such tests from Innovative or Quest, nor to fixed terms or exclusivity.[333] In particular, such customers do not normally enter into contracts with any laboratory (but use purchase orders[334]), and due to the lack of contractual restrictions, they can switch from one laboratory to another simply by informing (which could be by way of a telephone call) the other laboratory of their intentions to use that laboratory's services. The threat of such customers switching to other laboratories would thus restrict the merged entity's ability to increase prices.[335]

147. Further, PAH submitted that in the case of contracted customers, which are [✂], contracts are initiated by the customers and they benefit from lower prices as the prices offered to them under their contracts are [✂].[336] In addition, PAH submitted that the number of contracts between the Parties and their customers is [✂], accounting for a [✂] proportion of the Parties' customers – a total of [✂].[337]

CCCS's assessment

148. CCCS notes that third-party feedback indicates customers may be open to consider switching to alternative suppliers post-Transaction, in the following events: if the

[332] [✂].
[333] Paragraph 3.7 of PAH's Additionals Submissions dated 12 October 2018.
[334] Paragraph 32.3 of Form M1.
[335] Paragraph 8.2(b) of PAH's submission dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[336] Paragraph 3.7 of PAH's Additional Submissions dated 12 October 2018.
[337] Paragraphs 2.2(f) and 7.2, and Appendix 71 of PAH's submission on Commitments dated 4 March 2019.

Parties increase their prices[338] or their service level drops;[339] if the Parties are not willing to provide better contractual terms;[340] and if other suppliers are able to provide similar supply conditions[341] (e.g. in terms of capacity, price, quality, contractual terms).[342]

149. However, concerns arise in respect of whether there are indeed alternative suppliers for customers to switch to in the event of any of the above, and some customers are concerned about the lack of alternatives to Quest and Innovative, and the market power of the merged entity.[343] Third-party feedback indicated that customers generally would prefer to purchase IVD tests from suppliers which are able to provide the range of IVD tests that they require, rather than purchasing from multiple suppliers.[344] In this regard, given the limited number of alternative suppliers that are currently able to offer a range of IVD tests comparable to the Parties, this could potentially diminish the ability of customers to negotiate for better conditions of supply from the Parties post-Transaction (for example, as any threat to switch may be significantly less credible). Such customers may therefore not have a choice and would have to bear the costs of the increased prices, possibly transferring the price increase to patients.[345]

150. CCCS also notes that, as assessed above regarding the alternative suppliers in the Relevant Market, some of the alternative suppliers are not of a comparable size and scale to the Parties. In this regard, other than the range of IVD tests offered, CCCS notes that the extent to which existing alternative suppliers may have the capacity and/or resources to absorb customers' demand is also potentially limited, and potentially exacerbated by barriers to expansion, in particular the barriers in respect of scale. These suppliers with limited capacity and/or resources accordingly may not be available as alternative suppliers to customers, in particular for customers with larger volumes of demand, such as health screening companies (for whom, CCCS understands from third-party feedback, their volume requirements can peak at specific times, e.g. purchasing up to [✂] at once[346]; in comparison, some suppliers have existing supply volumes of only [✂] a day or the capacity to run only [✂] a day,[347] and may have difficulty meeting such peaks in demand). Given

[338] [✂].
[339] [✂].
[340] [✂].
[341] [✂].
[342] [✂].
[343] [✂].
[344] [✂].
[345] [✂].
[346] [✂].
[347] [✂].

this, such customers' ability to negotiate for better conditions of supply from the Parties post-Transaction may similarly be diminished (for example, as any threat to switch may be signficantly less credible).

151. On the issue of switching costs, third-party feedback indicated that, for some customers, switching costs may arise from having an IT system that is integrated with the incumbent supplier's, and consequently, IT system compatibility issues if the customer switches suppliers. The compatibility of IT systems can affect how data flows into the customer's electronic medical records systems and potentially affect current service level agreements, or is otherwise an important factor in the services the customer provides.[348] [✂] also indicated that it takes around six months to set up IT linkages with customers, and that [✂].[349] However, for other customers, IT system integration and compatibility issues may not be a relevant factor in whether they would decide to switch to a different supplier.[350]

152. Some customers[351] have also indicated that they face difficulties in switching to other suppliers of IVD tests due to their existing supply contracts that come with locked-in periods, with no early termination clauses (i.e. fixed-term contracts) and/or with exclusivity obligations.

153. While CCCS notes PAH's submissions on the [✂] number of the Parties' contracts with their customers relative to their total number of customers (see paragraph 147 above), CCCS also notes that the contracted customers with exclusivity clauses pre-Transaction (including those where the contracts were entered into pursuant to tenders or other competitive bidding process) account for a sizeable portion (more than [✂]%) of the overall demand (by revenue) in the Relevant Market.[352] All of these exclusive contracts also [✂].[353]

154. CCCS would further highlight that the concerns of such contractual impediments to switching relate not only to the Parties' existing contracts, but also to the potential post-Transaction contracts, if the merged entity were able to impose such contractual terms and conditions on customers as a result of the loss in competition arising from the Transaction.

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[348] [✂].
[349] [✂].
[350] [✂] .
[351] [✂].
[352] Based on CCCS's calculations.
[353] Appendix 71 of PAH's submission on Commitments dated 4 March 2019; Appendices 75B and 76B of PAH's submissions dated 6 May 2019.

155. Given CCCS's assessment above with respect to the alternative suppliers in the Relevant Market, CCCS has also identified that private hospital customers with laboratory management contracts (i.e. which do not operate their own in-house laboratories, and have outsourced said laboratory management) are unlikely to currently have viable alternative suppliers post-Transaction. CCCS notes that these contracts, despite [✂], represent a [✂] percentage of the Parties' turnovers.[354]

156. While [✂] had indicated a willingness to consider other laboratory providers,[355] this was also indicated as being subject to other considerations or factors being met by an alternative provider, such as pricing, economies of scale, track record, reliability and service standards,[356] and overall whether the alternative provider can meet their requirements.[357]

157. In this regard, CCCS notes that private hospital customers which require laboratory management services have significant service requirements that are more demanding than other customers' requirements for IVD tests. In addition to requiring a comprehensive range of tests (including general and specialised tests),[358] fast turnaround times for test results (in particular for inpatients and urgent situations, as fast as one to two hours),[359] high level of other service standards (e.g. reliability of test results, high frequency of collection of samples, accreditations/certifications of the provider, and pricing),[360] and large volume requirements,[361] the management of private hospitals' in-house laboratories also requires that the provider is able to place personnel on-site to operate the hospital's in-house laboratory.[362]

158. Given this, [✂] had also indicated that [✂],[363] and that switching to another laboratory is therefore not easy.[364] Laboratories such as [✂], are therefore considered less viable alternatives at the moment, until they gain the scale and ability to meet these requirements. Further, other private hospital laboratories, such as [✂], may not be alternative suppliers for such customers, given that [✂].[365]

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[354] See also **Table 4** above.
[355] [✂].
[356] [✂].
[357] [✂].
[358] [✂].
[359] [✂].
[360] [✂].
[361] [✂].
[362] [✂].
[363] [✂].
[364] [✂].
[365] [✂].

(e) Other potential new entrants or expansion of capacity

PAH's submission

159. At the outset, PAH identified various overseas clinical diagnostics players, namely from the US, Australia, Japan, and China, as being potentially in a position to enter the market in Singapore.[366] PAH subsequently further submitted that, based on its discussions with certain upstream suppliers of IVD testing equipment, it believed that there are other new players seeking to enter the Singapore market.[367]

160. In January 2019, PAH additionally submitted that it believed that [✂], an international company which has a clinical diagnostics laboratory business overseas, is looking to enter the Singapore market [✂], as it [✂].[368] In this regard, PAH submitted that, given [✂]'s strong global presence and reputation, it would be a formidable competitor to the merged entity,[369] and that [✂] would help [✂] compete effectively with Innovative and Quest in Singapore and [✂].[370]

161. In July 2019, PAH submitted additional information relating to [✂].[371]

CCCS's assessment

162. CCCS notes at the outset that, until very recently, CCCS's market inquiries did not suggest any significant imminent entry or expansion in the Relevant Market. Although [✂] indicated that [✂], [✂].[372] CCCS's inquiries with [✂] also did not suggest any imminent market entry.

163. Very recently, CCCS understands from third-party feedback that [✂] has taken [✂] steps to enter the clinical laboratory services market in Singapore.[373] Specifically, [✂].[374]

[366] Paragraph 24.15 of Form M1.
[367] Paragraph 6.10 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[368] PAH's Email Submission to CCCS dated 7 January 2019.
[369] PAH's Email Submission to CCCS dated 7 January 2019.
[370] PAH's Email Submission to CCCS dated 7 January 2019.
[371] PAH's Email Submission to CCCS dated 22 July 2019.
[372] [✂].
[373] [✂].
[374] [✂].

164. In this regard, CCCS notes that [✂]. [✂] has indicated that [✂].[375] Given the above, CCCS is of the view that, whilst this recent development indicates potential imminent entry into the Relevant Market, this [✂] entry, in and of itself, is unlikely to be immediately sufficient in likelihood, scope and time to deter or defeat any non-coordinated effects arising from the Transaction. CCCS is of the view that any potential competitive constraint on the merged entity arising from this entry may potentially arise only over time, post-Transaction.

CCCS's conclusion on non-coordinated effects

165. Considering the factors described above, CCCS is of the view that the Transaction is likely to give rise to non-coordinated effects, particularly in relation to the customers which have limited alternative suppliers to switch to at present, such as health screening companies, and private hospitals which do not manage their in-house laboratories.

166. In this regard, however, CCCS notes that the commitments proposed by PAH aim to address these non-coordinated effects during the commitments period.

(b) Coordinated effects

167. A merger may also lessen competition substantially by increasing the possibility that, post-Transaction, firms in the same market may coordinate their behaviour to raise prices, or reduce quality or output.[376] Given certain market conditions, and without any express agreement, tacit collusion may arise merely from an understanding that it will be in the firms' mutual interests to coordinate their decisions.[377]

168. Coordinated effects may arise where a merger reduces competitive constraints from actual or potential competition in a market, thus increasing the probability that competitors will collude or strengthening a tendency to do so.[378] Coordinated effects can arise as a result of a merger, even if not all competitors in a given market are involved.[379]

PAH's submission

[375] [✂].
[376] Paragraph 5.33 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[377] Paragraph 5.34 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[378] Paragraph 5.35 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[379] Paragraph 5.37 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.

169. According to PAH's submissions, the characteristics of the Laboratories Market/Private Laboratories Market, i.e. highly fragmented with many different players, lack of public price information making it hard for laboratories to monitor prices, and many different types of IVD tests available, make it very hard for the Parties to coordinate their behaviour with competitors after the Transaction.[380] According to PAH, it is also not difficult for new players to enter the market given that entry barriers are low, and which in turn will act as an effective competitive constraint.[381]

CCCS's assessment

170. Some third parties considered that with the combined market power and market share of the Parties in the private laboratories sector, and the concentration arising as a result of the Transaction, other private laboratories may use the merged entity's prices as benchmarks, and generally prices in the market may therefore become similar and/or increase.[382] However, other than these comments, feedback received from third parties did not suggest a likelihood of coordinated effects arising from the Transaction.[383]

171. In this regard, based on the third-party feedback, CCCS understands that despite the perceived market practice of a standard 50% discount over the catalogue prices of IVD tests, actual prices appear to some extent to be subject to bilateral negotiation between suppliers and customers, and can vary from this perceived market practice.[384] CCCS notes that actual prices are therefore not transparent given that the negotiated prices are not published. Additionally, as laboratories offer different types of IVD tests and services, including test profiles (i.e. 'bundles' of individual IVD tests) that can vary across laboratories and be customised upon customers' request[385], this may make it more difficult for laboratories to coordinate on prices. CCCS further notes that, given the importance of scale in the clinical laboratory business, and the commercial incentives for laboratories to increase their volumes in order to gain economies of scale, it is unlikely that the Parties and their competitors may coordinate on output or capacity post-Transaction.

[380] Paragraph 35.2 of Form M1.
[381] Paragraph 35.4 of Form M1.
[382] [✂].
[383] [✂].
[384] [✂].
[385] [✂].

172. Given the limited third-party feedback suggesting the possibility of price or other forms of coordination, and given the features of the market, CCCS is of the view that the Transaction is unlikely to give rise to coordinated effects.

(c) Conclusion on whether the Transaction results in a SLC

173. Given the above described, CCCS is of the view that the Transaction is likely to give rise to non-coordinated effects and a substantial lessening of competition in the Relevant Market, particularly with respect to customers which have limited alternative suppliers to switch to at present, such as health screening companies, and private hospitals which do not manage their in-house laboratories.

IX. Claimed Efficiencies

PAH's submission

174. PAH submitted that the Transaction is expected to bring about the following two key efficiencies.[386]

175. **Efficiency 1: Merged entity can start offering certain SOTs in-house and at lower costs.** PAH submitted that at present, there are certain tests that Innovative and Quest respectively do not offer in-house, and are instead sent out to other laboratories (such as public hospital laboratories and foreign laboratories)[387]. This is because [✂].[388]

176. The prices that Innovative and Quest quote to their customers for such SOTs include the prices charged by the laboratories who perform the SOTs and [✂].[389] PAH submitted that following the implementation of the Transaction, the Parties will [✂].[390] PAH submitted lists of SOTs which could be potentially be brought in-house post-Transaction and the estimated savings for customers identified by each of Innovative and Quest (e.g., the proposed (lower) pricings for such tests once they are brought in-house).[391]

[386] Paragraph 12.1 of Form M2.
[387] Paragraph 12.2 of Form M2.
[388] Paragraph 12.3 of Form M2.
[389] Paragraph 12.2 of Form M2.
[390] Paragraph 12.4 of Form M2.
[391] Paragraph 12.5, Appendix 52 and Appendix 67 of Form M2.

177. **Efficiency 2: Cost synergies from the Transaction.** PAH submitted that the Transaction, once implemented, will scale up the business of the merged entity and [✂].[392] In this regard, PAH has identified [✂] areas of potential cost synergies:[393]

(a) [✂];

(b) [✂];

(c) [✂]; and

(d) [✂].

178. Based on the above, PAH estimates the annual synergies from the implementation of the Transaction to be [✂].[394] PAH further submitted that each area of cost synergies is targeted at [✂], which would not be feasible without the merger.[395]

179. In addition, PAH submitted that:

(a) In a very competitive market, these efficiencies would be passed on to customers in the form of lower prices.[396]

(b) The merger will also lead to [✂].[397]

(c) The Transaction also provides [✂] scope for efficiencies, notably by [✂].[398]

(d) [✂].[399]

(e) All of these improvements will ultimately advance the Parties' shared goal of providing Singapore consumers with a wider array of tests, at lower prices and better quality (e.g. faster turnaround times, accuracy and

[392] Paragraph 12.6 of Form M2; Paragraph 36.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[393] Paragraph 12.7 of Form M2; Paragraph 36.2 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[394] Paragraph 12.8 of Form M2.
[395] Paragraph 12.8 of Form M2.
[396] Paragraph 42.5 of Form M1.
[397] Paragraph 42.6 of Form M1.
[398] Paragraph 42.7 of Form M1.
[399] Paragraph 42.8 of Form M1.

reliability etc). The combined entity will have the scope and reputational strength to raise awareness of IVD tests and reach consumers across not just Singapore, but also the region, thus boosting Singapore's ambition of becoming a healthcare hub.[400]

180. Pursuant to CCCS's request to PAH to provide any specific strategies or plans, including supporting evidence, on the claimed efficiencies above[401], PAH submitted that this is a factual position for all pathology laboratories, which can be validated by experts/managers across both private and public pathology laboratories.[402] When laboratories reach the minimum scale for an IVD test, it becomes more economical to perform the test in-house rather than to outsource it.[403] In addition, PAH submitted that [✂].[404] [✂].[405] Nonetheless, PAH subsequently submitted lists of SOTs which could be potentially be brought in-house post-Transaction, as identified by each of Innovative and Quest (see paragraph 176 above).

CCCS's assessment

181. The *CCCS Guidelines on the Substantive Assessment of Mergers 2016* provide that CCCS can consider the presence of any economic efficiencies in markets in Singapore that could outweigh the SLC arising from the merger.[406]

182. CCCS may take into account efficiencies where (i) the efficiencies increase rivalry in the market so that the merger does not result in an SLC,[407] or (ii) the efficiencies do not increase rivalry, but will bring about lower cost, greater innovation and greater choice or higher quality and be sufficient to outweigh the adverse effects resulting from the SLC caused by the merger.[408]

183. CCCS notes that in the assessment of net economic efficiencies, merger parties are required to show that these efficiencies will be sufficient to outweigh the adverse effects resulting from SLC caused by the merger.[409] Merger parties should produce

[400] Paragraph 42.9 of Form M1.
[401] With reference to PAH's submissions in paragraphs 42.4 and 42.6 of Form M1.
[402] Paragraph 37.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[403] Paragraph 37.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[404] Paragraph 9.1 of PAH's response dated 7 November 2018 to CCCS's Issues Letter dated 23 October 2018.
[405] Paragraph 37.1 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[406] Paragraph 7.1 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[407] Paragraph 5.66 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[408] Paragraph 7.3 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[409] Paragraph 7.3 of the *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.

detailed and verifiable evidence about the claimed efficiencies, as CCCS will not consider claims if they are vague, speculative, or otherwise cannot be verified.[410]

184. In order to be taken into account by CCCS, merger parties must demonstrate that the efficiencies are:[411]

(a) Demonstrable;
(b) Merger specific, that is, they are likely to arise from the merger;
(c) Timely, in that the benefits will materialise within a reasonable period of time; and
(d) Sufficient in extent.

185. CCCS notes that PAH has provided examples of esoteric tests which could potentially be brought in-house after the Transaction and the proposed (lower) pricings for such tests in this regard. However, CCCS notes that the examples do not substantiate how such proposed (lower) pricings were arrived at (e.g. [✂]), or indeed that such proposed lower pricings are feasible only with the Transaction. In this regard, CCCS has assessed that the information provided is insufficient to show that the claimed efficiencies are demonstrable, merger specific, timely and sufficient in extent to outweigh the adverse effects resulting from the SLC caused by the Transaction.

186. In relation to third-party feedback on whether there will be benefits arising from the merger, CCCS notes that the overall view from third parties is mixed. Some third parties were of the view that there will not be any benefits to customers as choices will be limited and the Parties will have the ability to increase prices post-Transaction due to a lack of credible alternative suppliers.[412] On the other hand, some third parties were of the view that the Parties will be able to gain economies of scale, and may in turn provide a wider range of tests at a cheaper price and/or better service standards.[413] However, other third parties also noted that while the Parties can gain efficiencies from the Transaction, this may benefit the market only if the merged entity is willing to channel the cost savings to their customers or if customers are able to negotiate due to the presence of alternative suppliers post-Transaction.[414]

[410] Paragraph 7.10 of the C*CCS Guidelines on the Substantive Assessment of Mergers 2016*.
[411] Paragraph 7.9 of the C*CCS Guidelines on the Substantive Assessment of Mergers 2016*.
[412] [✂].
[413] [✂].
[414] [✂].

187. On balance, CCCS is of the view that there is insufficient evidence from PAH or third parties to ascertain that the claimed efficiencies will either avert an SLC or be sufficient to outweigh the detriments to competition caused by the Transaction in Singapore.

X. Ancillary Restrictions

188. Paragraph 10 of the Third Schedule to the Act states that "*[t]he section 34 prohibition and the section 47 prohibition shall not apply to any agreement or conduct that is directly related and necessary to the implementation of a merger*" (the "**Ancillary Restriction Exclusion**"). In order to benefit from the Ancillary Restriction Exclusion, a restriction must not only be directly related, but also necessary to the implementation of the merger.[415] In determining the necessity of the restriction, considerations such as whether its duration, subject matter and geographical field of application are proportionate to the overall requirements of the merger will be taken into account.[416]

PAH's submission

189. PAH has submitted three [✂] clauses as ancillary restrictions to the Transaction. These [✂] clauses are placed on (i) [✂]; (ii) [✂] and (iii) [✂].

190. [✂].[417]

191. [✂].[418]

192. [✂]:[419]

(a) [✂].

(b) [✂].

(c) [✂].

[415] Paragraph 9.6 of *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[416] Paragraph 9.10 of *CCCS Guidelines on the Substantive Assessment of Mergers 2016*.
[417] Paragraphs 43.1 and 43.2 of Form M1.
[418] Paragraph 43.3 of Form M1.
[419] Paragraph 43.4 of Form M1.

193. [✂][420]; [✂].[421]

On these [✂] *clauses being directly related to and necessary for the Transaction*

194. PAH submitted that these three [✂] clauses are directly related to and necessary for the Transaction because:[422]

(a) [✂].

(b) [✂].

(c) [✂].

195. PAH further submitted that [✂].[423]

On the geographical field of application of these [✂] *clauses*

196. On the geographical application of the restrictions, PAH submitted that [✂][424]. [✂]. [425] PAH submitted that the same reasoning applies in respect of the geographical field of application of the [✂].[426]

On the duration of these [✂] *clauses*

197. In relation to the duration of these restrictions for periods [✂] after the completion of the respective transactions, PAH explained that [✂].[427] PAH submitted that the same reasoning applies in respect of the duration of the [✂]. Additionally, [✂].[428]

CCCS's assessment

198. The *CCCS Guidelines on the Substantive Assessment of Mergers 2016* state that non-compete clauses, if properly limited, are generally accepted as essential if the

[420] [✂].
[421] Paragraphs 43.6 and 43.7 of Form M1.
[422] Paragraphs 43.8 to 43.10 of Form M1.
[423] Paragraph 38.6 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[424] [✂].
[425] Paragraphs 38.1 to 38.3 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[426] Paragraph 38.7 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[427] Paragraph 38.4 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.
[428] Paragraph 38.8 of PAH's response dated 24 September 2018 to CCCS's RFI dated 17 September 2018.

purchaser is to receive the full benefit of any goodwill and/or know-how acquired with any tangible assets. CCCS considers the duration of the clause, its geographical field of application, its subject matter and the persons subject to it. Any restriction must relate only to the goods and services of the acquired business and apply only to the area in which the relevant goods and services were established under the previous/current owner.[429] A restriction is not automatically deemed directly related to the merger simply because it is agreed at the same time as the merger or is expressed to be so related.[430]

199. At the outset, CCCS notes that the Transaction notified by PAH relates only to PAH's acquisition, through its subsidiaries, of Innovative and Quest. Accordingly, CCCS will consider whether a restriction is ancillary to the Transaction as it has been notified to CCCS.

200. In this regard, CCCS notes that the [✂] relates to the [✂] upstream to the Transaction as notified to CCCS (i.e. PAH's acquisition of Innovative and Quest). As such, CCCS will not assess whether this constitutes an ancillary restriction to the Transaction.

201. As regards the [✂] and the [✂], CCCS notes that these clauses have been established between [✂], and incorporated in [✂]. The scope of those clauses include [✂] of [✂] for [✂] after completion of the applicable acquisitions. The [✂] clauses are applicable to Singapore (where Innovative and Quest operate pre-Transaction), [✂].

202. CCCS has assessed whether certain aspects of these two [✂] clauses, such as the duration ([✂]), and geographical field of application ([✂]), and the persons subject to it, may go beyond what is generally accepted as ancillary restrictions.

203. Given that the entirety of Innovative's and Quest's businesses are transferred to PAH, the [✂] and the [✂] insofar as they relate to the businesses of Innovative and Quest as at the date of completion of the respective transactions, are connected to the Transaction but subordinate to its main object. The [✂] and the [✂] are also applicable to [✂]. Accordingly, the scope of [✂][431] and [✂][432] do not exceed the scope of the Transaction insofar as they are applicable to the businesses of Innovative and Quest respectively. Insofar as these restrictions relate to any other businesses than the businesses of Innovative and Quest within the Transaction,

[429] Paragraph 9.12 of *CCCS Guidelines on the Substantive Assessment of Merger 2016*.
[430] Paragraph 9.9 of *CCCS Guidelines on the Substantive Assessment of Merger 2016*.
[431] Appendix 13 of Form M1.
[432] Appendix 20 of Form M1.

CCCS does not consider such scope of the restrictions to be proportionate to the Transaction.

204. In relation to the duration, CCCS notes that the periods of application of the [✂] and the [✂] are for [✂]. In this regard, CCCS notes that PAH's submissions on the durations of these [✂] do not provide reasons to support why a duration longer than [✂] after the completion of the respective transactions is required for the transfer of goodwill and know-how, and customer loyalty (in the form of such goodwill and know-how), to take place. CCCS further notes that, [✂].[433] [✂][434]. Accordingly, based on the information available to CCCS, CCCS is of the view that a [✂] duration for the [✂] and the [✂], from the time of the completion of the respective transactions, is proportionate to the Transaction.

205. With respect to the geographical scope, given that Innovative and Quest operate only in Singapore at the time of the completion of PAH's respective acquisitions of Innovative and Quest, CCCS does not consider the scope of [✂], insofar as they apply outside of Singapore, to be proportionate to the Transaction.

206. In conclusion, in the circumstances of the case, CCCS considers that the [✂] and the [✂] submitted by PAH as established in [✂] and [✂], when related to the businesses of Innovative and Quest in the context of the Transaction, and for a duration of [✂] from the completion of the respective transactions, are ancillary restrictions to the Transaction and consequently fall within the exclusion under paragraph 10 of the Third Schedule to the Act insofar as it is applicable to Singapore.

XI. Commitments

207. In view of CCCS's assessment that there are likely to be non-coordinated effects arising from the Transaction, particularly with respect to customers which have limited alternative suppliers to switch to at present (such as health screening companies, and private hospitals which do not manage their in-house laboratories); and that there is insufficient evidence to ascertain that the efficiencies claimed by PAH can be shown to outweigh the anti-competitive detriments caused by the Transaction in Singapore, CCCS has considered the commitments proposed by PAH. CCCS notes that the commitments aim to address the competition concerns arising from the Transaction.

[433] Paragraph 8.4 of Form M1, Schedule 2 to the IA (Appendix 14 of Form M1), and [✂].
[434] Slide 4 of [✂] (Appendix 10 of Form M1).

208. On 4 March 2019, PAH proposed a set of behavioural commitments to address competition concerns identified by CCCS in the Phase 2 review, which was subsequently revised in response to CCCS's feedback.

209. On 21 June 2019, pursuant to section 60A of the Act, CCCS conducted a public consultation and invited public feedback on the draft behavioural commitments dated 18 June 2019 submitted by PAH to CCCS (the "**Proposed Commitments**").[435] The Proposed Commitments offered by PAH, and CCCS's assessment on the issues they are intended to address, are summarised below:

(a) **Commitments relating to SOTs and service standards**: Competing laboratories may not have sufficient scale currently to perform certain IVD tests in-house upon receiving requests from customers, and therefore may have to send out such IVD tests to third-party laboratories. These commitments aim to ensure that competing laboratories, while building up their scale of operations, have access to send-out tests (i.e. SOTs) supplied by the Parties, at prices which are fair, reasonable and non-discriminatory ("**FRAND**") relative to the Parties' direct non-contracted customers[436], as well as at service standards consistent with those offered by the Parties to their direct non-contracted customers.[437] CCCS notes that the intention is to allow competing laboratories to meet the range of tests that customers require, and in turn, be able to better compete for customers, as well as to facilitate competing laboratories in gauging the level of available demand to justify undertaking the necessary expansion to perform such IVD tests in-house. With such growth/expansion of competing laboratories, they may over time be able to better act as an alternative supplier to customers post-Transaction, and hence a competitive constraint on the merged entity.

(b) **Commitments relating to exclusivity**: Contracts with customers with exclusivity obligations (including clauses giving rise to *de facto* exclusivity,

[435] More information on CCCS's public consultation on the Proposed Commitments is available at the following link: https://www.cccs.gov.sg/media-and-consultation/newsroom/media-releases/private-clinical-lab-merger-commitment-consultation-21-jun-19.

[436] This commitment provides that the Parties will offer prices which are the same as those that they charge to their direct non-contracted customers for the same IVD test. The commitment does not otherwise restrict the Parties' ability to adjust their prices.

[437] Under this commitment, the benchmark for what constitutes a FRAND price or consistent service standard, does not include the pricing or service standards offered to the Parties' contracted customers. This is on the basis that, according to PAH, the Parties' contracted customers are an exception to the norm, and are different from non-contracted customers because these are customers [✂]. (Paragraphs 6.1 and 6.2 of PAH's submissions on commitments dated 8 May 2019.) Based on PAH's submissions in this regard, CCCS assessed that it may be justifiable to exclude contracted customers from the benchmark for what constitutes a FRAND price or consistent service standard.

such as loyalty-inducing retroactive rebates) may result in such customers' inability to switch to competing laboratories. This commitment intends to prevent the Parties from locking in customers on an exclusive basis going forward, and hence allow such contracted customers, after any existing exclusive contracts have expired, to switch to other suppliers should they choose to do so. CCCS notes that increasing customers' ability to switch away from the merged entity post-Transaction is intended to also increase the incentives (i.e. the gaining of sufficient volume/demand) for competing laboratories to expand their volume of tests supplied, and/or range of tests provided over time.

(c) **Commitments relating to allowing for early termination without cause**: Existing contracts with customers which do not provide for early termination without cause, may result in such customers' inability to readily switch to competing laboratories. CCCS notes that this commitment is similarly intended to lower barriers for customers to switch to other suppliers, and potentially increase competing laboratories' incentives (i.e. the gaining of sufficient volume/demand) to expand their volume of tests supplied and/or range of tests provided, and in turn, increase the extent of competitive constraint on the merged entity over time.

(d) **Commitments relating to prices offered to private hospitals which do not manage or operate their own in-house laboratories, and health screening companies for IVD tests**: These two types of customers generally require high volumes of IVD tests and have other specific requirements which can only be met by the Parties currently. Given that time is required for competitors to enter or expand in the Relevant Market, this commitment generally provides for the Parties to maintain the current terms of their contracts with these two types of customers. CCCS notes that this is intended to address the risk of a price increase or a degradation of quality by the merged entity during the commitment period. This is subject to allowing the Parties the ability to potentially make annual adjustments to prices based on the Singapore Consumer Price Index ("**CPI**")[438].

210. In the Proposed Commitments, PAH also proposed:

(a) A commitment period of two years during which the commitments would be in effect.

[438] "CPI" is defined in the Proposed and Final Commitments to mean the annual all items Singapore Consumer Price Index published from time to time by the Department of Statistics Singapore.

(b) Not to appoint a Monitoring Trustee[439] in the first instance. In lieu of appointing a Monitoring Trustee, PAH proposed to individually notify all customers affected by each of the Proposed Commitments, so that each affected customer is aware of the Parties' commitments and the scope which affects the customer. PAH shall also submit to CCCS an annual internal audit report on the compliance of the Parties with the commitments. While no Monitoring Trustee will be appointed in the first instance, where CCCS has reasonable grounds for suspecting there has been non-compliance with any of the commitments, PAH shall appoint a Monitoring Trustee.

Feedback from public consultation and PAH's responses

211. CCCS received feedback from a total of sixteen (16) customers that purchase IVD tests[440], twelve (12) existing and potential providers of IVD tests in Singapore[441], one (1) association[442] and two (2) private consultants to the healthcare industry[443] during the public consultation.

212. Third-party feedback generally agreed that the Proposed Commitments can broadly address the issues described in paragraph 209 above, namely, help competing laboratories to offer a wider range of IVD tests and gauge demand to consider performing a SOT in-house instead; to lower the contractual barriers for customers to switch suppliers; and to mitigate concerns of the Parties increasing prices charged to health screening companies and private hospitals which do not operate their own in-house laboratories. However, the third-party feedback also identified some gaps in the Proposed Commitments' sufficiency in addressing the identified competition concerns arising from the Transaction. A summary of the key feedback from third-parties and PAH's responses to the feedback are set out below.

213. **Duration of the commitments**: Third-party feedback generally indicated that a two-year duration is an insufficient timeframe for a new entrant or an existing supplier to grow into a significant player in the market, with responses on the timeframe required ranging from more than two years (e.g. between three to seven years), up to as long as fifteen years.[444] In view of the third-party feedback, PAH proposed to amend the duration of the commitment period to four years instead.

[439] A Monitoring Trustee is an independent third-party which is appointed to monitor a party's compliance with the conditions and obligations as set out in commitments provided by that party to the CCCS.
[440] [✂].
[441] [✂].
[442] [✂].
[443] [✂].
[444] [✂].

Taking reference from the past growth experiences of existing competitors in the Relevant Market, and recent market developments such as the potential entry of a new competitor and some instances of customer switching, CCCS assessed that a four-year duration of the commitments would be reasonable and a sufficient timeframe for a significant *sustainable* competitive constraint on the merged entity to arise.

214. **Commitments relating to SOTs and service standards**: Third-parties provided feedback that the Parties' current pricing/discount practices for their Non-SOT Customers[445] (i.e. direct non-contracted customers) may be inconsistent with the practice indicated by PAH in the Proposed Commitments, i.e. of currently offering a standardised 50% discount off the listed price to their direct non-contracted customers. Third-party feedback indicated that discounts offered by the Parties to non-contracted customers can be higher than 50%, or vary depending on, among other factors, the non-contracted customer's projected or actual volume purchases[446].

215. In this regard, PAH submitted that where their Non-SOT Customers (i.e. direct non-contracted customers) currently receive discounts [✂][447] [✂].[448] PAH also submitted that [✂].[449] However, PAH confirmed that if the Parties are to [✂].[450] In this regard, CCCS notes that this would remain in the spirit of the FRAND principle of this commitment. Further, under paragraph 4.2.5 of the Proposed and Final Commitments,[451] the Parties will publish any changes made to this [✂] 50% discount rate on their website(s), and CCCS notes that such changes to the level of the discount would include any future discount structures [✂] that the merged entity may introduce for both SOT Customers and Non-SOT Customers on a FRAND basis.

216. **Commitments relating to early termination without cause**: *Duration of notice period*: Third-parties provided feedback that, in respect of the duration of the notice

[445] As defined in the Proposed and Final Commitments.
[446] [✂].
[447] "SOT Customers" are defined in the Proposed and Final Commitments to mean clinical laboratories in Singapore which request Innovative, Quest and/or the Merged Entity, as the case may be, to perform SOTs.
[448] PAH's email submission dated 5 September 2019; PAH's response dated 9 September 2019 to question 1 and 2 of CCCS's email dated 5 September 2019.
[449] Paragraph 2 of PAH's submission dated 30 September 2019.
[450] Paragraph 1 of PAH's submission dated 2 October 2019.
[451] Pursuant to paragraph 4.2.5 of the Proposed Commitments as well as Final Commitments, the Parties will make public on their website(s), among others, the prevailing level of the discount off the list price applicable for any IVD test (i.e. 50% discount at present, based on PAH's submissions), and any changes to this discount made by the Parties.

period for customers' written notice to the Parties for early termination of their contracts without cause, durations shorter than the ninety (90) Business Days proposed by PAH would be more reasonable and in line with industry practices.[452] In this regard, PAH agreed to reduce the notice period to either sixty (60) or ninety (90) calendar days, whereby these notice period durations will respectively apply to agreements in which the Parties have not incurred, and have incurred any Unrecoverable Expenditure[453]. This excludes circumstances where any Existing Agreement[454] already expressly provides for early termination without cause, with a notice period which is different from the proposed sixty (60) or ninety (90) calendar days.

217. *Unrecoverable Expenditure*: Third-parties also provided feedback that allowing the Parties to claim for Unrecoverable Expenditure against a customer that terminates its contract early may be (i) inconsistent with what is currently provided for in existing contracts[455], and (ii) not reasonable where some of the examples of Unrecoverable Expenditure may be debatable or should only apply in certain circumstances[456].

218. In this regard, PAH has agreed to amend the Proposed Commitments (specifically, paragraph 4.5.2) to make it clearer that paragraph 4.5.2 does not *entitle* the Parties to recover Unrecoverable Expenditure against a customer terminating its contract early. CCCS views paragraphs 4.5.2 and 4.5.3 of the Proposed and Final Commitments as an exception to the provision that the Parties will allow a contracted customer to terminate its contract early without cause, and "*without imposing any penalty on or seeking any other form of remedy or relief from*" the terminating customer. In other words, while paragraph 4.5.2 of the Proposed and Final Commitments sets out a justifiable exception for the Parties to *potentially* seek to claim for Unrecoverable Expenditure against a customer terminating its contract early, it does not give the Parties any additional contractual or legal right to make such claims against the customer nor does it alter any existing rights or obligations between the Parties and the customer in respect of such claims.

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[452] [✂].
[453] As defined in the Proposed and Final Commitments.
[454] "Existing Agreements" are defined in the Proposed and Final Commitments to mean written agreements between Innovative and/or Quest and their respective customers for the provision of the Services (i.e. the supply of any IVD tests and other services in connection therewith), that are in effect and have not been terminated or expired on or before 4 March 2019. This does not include New Agreements, i.e. such written agreements entered into after 4 March 2019.
[455] [✂].
[456] [✂].

219. Further, in respect of the third-party feedback that some of the examples of Unrecoverable Expenditure may be debatable or should only apply in certain circumstances, CCCS notes that the list of items set out in paragraph 4.5.3 of the Proposed and Final Commitments are what can potentially be considered as "Unrecoverable Expenditure" – however, any claims for Unrecoverable Expenditure that the Parties may potentially seek to make against a customer terminating its contract, must fall within the principles set out in paragraph 4.5.2.

220. **Commitments relating to prices offered to private hospitals which do not manage or operate their own in-house laboratories, and health screening companies for IVD tests**: *Price adjustments based on CPI*: Third parties provided feedback that (i) allowing the Parties to make price adjustments based on annual CPI may be inconsistent with the current arrangements in existing contracts (e.g., if prices may be fixed for the period of the contract, and/or there is no provision allowing for an annual review or adjustment of prices under existing contracts),[457] and (ii) for contracts that contain revenue or profit-sharing arrangements, it is unclear whether, and (if applicable) how, such adjustments based on CPI may be applied to the said arrangements.[458] In response to the third party feedback, PAH amended the Proposed Commitments to make clear that such CPI adjustment shall not apply to agreements where prices are fixed for the duration of, or beyond, the commitment period, nor to revenue and profit-sharing arrangements set out in the Existing and New Agreements[459]. PAH also amended the Proposed Commitment to make clear that the Parties' ability to seek to make such adjustments to prices would apply where the Existing or New Agreement sets out such ability for the Parties to do so.

221. *Commitment to extend or renew Existing Agreements*: Given that this commitment is targeted to customer types with requirements that can only be met by the Parties currently, third parties also enquired whether, in addition to maintaining the current terms of their contracts with these two types of customers in Existing and New Agreements, the Parties are also obligated to renew or extend their existing contracts with, or offer new contracts to, these customers.[460] To address this gap, PAH agreed to commit that the Parties shall extend or renew such Existing Agreements with these customers during the commitment period, unless there are commercially justifiable reasons not to do so. Notwithstanding this additional

[457] [✂].
[458] [✂].
[459] "New Agreements" are defined in the Proposed and Final Commitments to mean written agreements entered into between Innovative, Quest and/or the merged entity and their respective customers for the provision of the Services (i.e. the supply of any IVD tests and other services in connection therewith) after 4 March 2019.
[460] [✂].

commitment by PAH, CCCS notes that the customer will retain the ability to decide whether or not to accept the offer by the Parties.

Final Commitments

222. PAH submitted the Final Commitments dated 17 October 2019, incorporating the further amendments as described above. CCCS notes that the Final Commitments are meant to work together holistically as a package, as described in paragraph 209 above, to address the competition concerns identified by CCCS. With the amendments made by PAH to address the abovementioned feedback from third-parties, CCCS considers the Final Commitments sufficient to address the competition concerns which may arise from the Transaction.

223. A copy of the Final Commitments can be found at **Annex B**. The Final Commitments are summarised below:

(a) **Commitments relating to SOTs and service standards (paragraphs 4.2 and 4.3 of the Final Commitments)**: The Parties shall supply SOTs to competing laboratories, at prices which are fair, reasonable and non-discriminatory (i.e. FRAND) relative to the Parties' direct non-contracted customers, as well as at service standards consistent with those offered by the Parties to their direct non-contracted customers[461].

(b) **Commitments relating to exclusivity (paragraph 4.4 of the Final Commitments)**: The Parties shall not include, and shall remove without conditions, any exclusivity obligations (including *de facto* exclusivity clauses) in any New Agreement, or any Existing Agreement which is renewed, extended or rolled over after 4 March 2019.

(c) **Commitments relating to allowing for early termination without cause (paragraph 4.5 of the Final Commitments)**: The Parties shall allow for early termination without cause by Existing Customers [462] and New Customers[463], subject to a prior written notice period, and without imposing

[461] Non-contracted customers which currently receive discounts [✂], can continue to receive their existing discounts. CCCS is agreeable for these existing [✂] arrangements to remain in place and not be regarded as part of the benchmark for what constitutes a FRAND price for a SOT, subject to any future discount structures [✂] that the merged entity may introduce for Non-SOT Customers (including new discount structures for [✂] customers) being applied on a FRAND basis to SOT Customers.

[462] "Existing Customers" are defined in the Proposed and Final Commitments to mean customers with Existing Agreements.

[463] "New Customers" are defined in the Proposed and Final Commitments to mean customers with New Agreements.

any penalty or seeking any other form of remedy or relief from such Existing Customer or New Customer. This is subject to an exception to allow the Parties to potentially seek to claim Unrecoverable Expenditure against a customer terminating its contract early, where such claims fall within the principles of this exception (see paragraph 4.5.2 of the Final Commitments).

(d) **Commitments relating to prices offered to private hospitals which do not manage or operate their own in-house laboratories, and health screening companies for IVD tests (paragraph 4.6 of the Final Commitments)**: The Parties shall not increase its prices and shall maintain the same terms and conditions set out in its Existing Agreements with these two customer types. The maintenance of the Parties' existing prices and terms and conditions shall apply to any Existing or New Agreement in effect during the commitment period, subject to allowing the Parties to seek to make annual adjustments to prices based on CPI, in certain circumstances. The Parties shall extend or renew the Existing Agreements with these two customer types, unless there are commercially justifiable reasons not to do so. For the avoidance of doubt, customers will retain the ability to decide whether or not to accept the offer by the Parties.

(e) **Durations of the Commitments**: The commitment period shall be four years from the date of CCCS's final decision on the Transaction.

(f) **Monitoring Trustee**: PAH shall individually notify all customers affected by the commitments and shall conduct an internal audit annually, and submit signed yearly compliance statements to CCCS. While no Monitoring Trustee will be appointed in the first instance, where CCCS has reasonable grounds for suspecting there has been a breach of the commitments, PAH shall appoint a Monitoring Trustee.

XII. Conclusion

224. Under section 60A(1) of the Act, CCCS may accept commitments from such person as it thinks appropriate, which remedy, mitigate or prevent the substantial lessening of competition or any adverse effect which has resulted or may be expected to result from a completed merger which has been notified to CCCS.

225. Pursuant to section 60B(1) of the Act, CCCS concludes that, subject to the implementation of and compliance with the Final Commitments, the Transaction has not infringed section 54 of the Act.

Sia Aik Kor
Chief Executive
Competition and Consumer Commission of Singapore

ANNEX A

PAH's classification of IVD tests provided by competitors

	Specialised/ General	**Parkway Laboratory Services**	**Pathology & Clinical Lab**	**Raffles Diagnostica**	**Mt Alvernia Hospital Lab**	**New Medical Laboratory**	**Reste Laboratory**	**Setsco Clinical Lab**	**SAM Laboratory**	**Angsana**	**Asia Genomics**	**Asian Diagnostics Lab**	**LucenceDx**
Haematology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Biochemistry	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Immunology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Toxicology (including Industrial Toxicology)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Microbiology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Molecular Diagnostics	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Histology/ Histopathology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cytology/ Cytopathology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cytogenetics	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Allergy Testing	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Frozen Sections	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Genomics	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Serology	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Note: Based on PAH's submissions, Innovative and Quest also supply tests across all disciplines of IVD tests above, except for Cytogenetics. See **Table 1** in paragraph 30 above.

Source: Appendix 31 of PAH's responses dated 24 September 2018 to CCCS's RFI dated 17 September 2018

ANNEX B

17 October 2019

BEHAVIOURAL COMMITMENTS TO THE COMPETITION AND CONSUMER COMMISSION OF SINGAPORE

RAJAH & TANN SINGAPORE LLP

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Behavioural Commitments to the Competition and Consumer Commission of Singapore

1. Introduction

1.1. Pursuant to paragraph 6.8 of the CCCS Guidelines on Merger Procedures 2012, Pathology Asia Holdings Pte. Ltd. ("**PAH**") hereby proposes and agrees to the commitments set out at paragraph 4 below ("**Commitments**") following discussions with the Competition and Consumer Commission of Singapore ("**CCCS**") with the aim of enabling CCCS at arriving at a decision, pursuant to Section 60A of the Competition Act (Cap. 50B) ("**Act**"), that the acquisition by PAH of Innovative Diagnostics Private Limited ("**Innovative**") and Quest Laboratories Pte Ltd ("**Quest**") (collectively the "**Parties**") and the intended integration of the businesses of Innovative and Quest (the "**Transaction**") has not infringed Section 54 of the Act.

1.2. PAH enters into these Commitments with the CCCS, although it disagrees with the concerns identified by the CCCS, given that it sincerely believes, and with the objective of assuring the CCCS, that the Transaction does not result in any substantial lessening of competition in any market in Singapore.

1.3. PAH shall use all reasonable efforts to ensure compliance with the Commitments, provided that if this requires PAH to take such action which would, or would be likely to, have a detrimental effect on the current or future development of PAH, Innovative, Quest, and/or their respective related entities, PAH reserves the right, at any time during the Commitment Period, to make an application to the CCCS to vary, substitute, or release PAH from any of the Commitments.

2. Definitions

2.1. In these Commitments, unless the context otherwise requires:

"**Act**" means the Competition Act (Cap. 50B) of Singapore;

"**Business Day**" means any day on which the banks in Singapore are open for business, excluding Saturdays, Sundays and public holidays;

"**CCCS**" means the Competition and Consumer Commission of Singapore;

"**Commitments**" shall have the meaning ascribed to it at paragraph 1.1 above;

"**Commitment Period**" means a period of 4 years starting from the Effective Date, during which the Commitments are in effect, unless the Commitments are terminated in accordance with the terms herein;

"**CPI**" means the annual all items Singapore Consumer Price Index published from time to time by the Department of Statistics Singapore;

"**Customers**" means, collectively, Existing Customers and New Customers;

"**Effective Date**" means the date on which the CCCS issues a favourable decision that the Transaction has not infringed Section 54 of the Act based on the Commitments provided by the Parties and accepted by the CCCS;

"**Existing Agreements**" means written agreements between Innovative and/or Quest and their respective Customers for the provision of the Services, that are in effect and have not been terminated or expired on or before 4 March 2019, and does not include New Agreements;

"**Existing Customers**" means customers with Existing Agreements;

"**Innovative**" means Innovative Diagnostics Private Limited, and includes its successors and permitted assigns;

"**IVD Tests**" means in-vitro diagnostic tests;

"**Merged Entity**" means the entity through which the businesses of Innovative and Quest are integrated pursuant to the Transaction and includes its successors and permitted assigns;

"Monitoring Trustee" means one or more natural or legal person, independent from PAH, Innovative, Quest and/or the Merged Entity, approved by CCCS and appointed by PAH, and who has the duty to, upon appointment pursuant to paragraph 4.7.3, monitor PAH's compliance with the conditions and obligations as set out in the Commitments;

"**New Agreements**" means written agreements entered into between Innovative, Quest and/or the Merged Entity and their respective Customers for the provision of the Services after 4 March 2019;

"**New Laboratory**" means any new pathology laboratory set up by Innovative, Quest and/or the Merged Entity pursuant to an Existing Agreement or a New Agreement, as the case may be, with a Customer;

"**New Customers**" means customers with New Agreements;

"**PAH**" means Pathology Asia Holdings Pte. Ltd., and includes its successors and permitted assigns;

"**Parties**" shall have the meaning ascribed to it in paragraph 1.1 above;

"**Public Tender**" means any tender issued by any public or private entity, which is open to bidding by any person, subject to such person meeting the requisite criteria stipulated by the entity issuing such tender, and includes any tender published on the GeBIZ website (at https://www.gebiz.gov.sg/), and/or any media regardless of form and whether electronic or otherwise which is accessible by any person at all times;

"**Quest**" means Quest Laboratories Pte Ltd, and includes its successors and permitted assigns;

"**Services**" means the supply of any IVD Tests and other services in connection therewith provided by Innovative, Quest and/or the Merged Entity to their respective Customers;

"**Service Standards**" shall have the meaning ascribed to it in paragraph 4.3.1 below;

"**SOT**" means a send-out test, which is an IVD Test that is not performed in-house by the clinical laboratory receiving the request for such IVD Test, but is sent out to and performed by third party laboratories;

"**SOT Customers**" means clinical laboratories in Singapore which request Innovative, Quest and/or the Merged Entity, as the case may be, to perform SOTs; whilst "**Non-SOT Customers**" means all other businesses, apart from Customers as defined, which request Innovative, Quest and/or the Merged Entity, as the case may be, to perform IVD Tests;

"**Transaction**" shall have the meaning ascribed to it in paragraph 1.1 above;

"**Turnaround Time**" refers to the total time from the time that a specimen is registered in the laboratory information system of the laboratory to the time that the result is available to the referrer; and

"**Unrecoverable Expenditure**" means costs which cannot be recovered through the redeployment, sale and/or return of the employees, equipment and reagents, and shall include costs which were incurred, in relation to a New Laboratory, the fitting out of that New Laboratory, costs incurred in relation to IT systems, and costs which are necessary to reinstate the premises as well as IT systems when the contract is terminated.

3. Effective Date

3.1. These Commitments shall commence on the Effective Date and shall have effect throughout the Commitment Period, unless terminated earlier in accordance with the terms herein.

4. Commitments

4.1. To address the concerns arising from the Transaction identified by the CCCS, PAH hereby enters into the following Commitments from the Effective Date.

4.2. Commitments Relating to SOTs

4.2.1. The commitments in this paragraph 4.2 shall only apply to SOTs which a SOT Customer does not offer in its own in-house laboratory(ies) at the time of the SOT request, and which such SOT Customer requests to send to Innovative, Quest and/or the Merged Entity to perform in-house.

4.2.2. PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity, as the case may be, shall supply SOTs to SOT Customers and such supply shall be at prices and on terms and conditions which are fair, reasonable and non-discriminatory.

4.2.3. As a benchmark for what is a fair, reasonable and non-discriminatory price for any specific SOT for a particular service level it offers, Innovative, Quest, and/or the Merged Entity, as the case may be, will offer prices which are the same as those that it charges to its Non-SOT Customers for the same IVD Test.

4.2.4. Innovative, Quest and/or the Merged Entity, as the case may be, will use the same formula to determine the prices that it charges to SOT Customers for the SOTs requested for by such SOT Customers as that which is used to determine the prices that it charges to Non-SOT Customers for the same IVD Tests, as follows:

For all in-house IVD Tests: $P = P_L \times (100 - D)\%$

where

(a) P_L refers to the list price of the IVD Test in the published price catalogue of Innovative, Quest and/or the Merged Entity, as the case may be, at any given point in time. P_L is typically only adjusted once a year; and

(b) D refers to the percentage discount applied to the listed price, which is a value set at 50%, subject to D being adjusted based on any pre-existing reciprocal relationship extended by the SOT Customer to Innovative, Quest and/or the Merged Entity for SOTs purchased by Innovative, Quest and/or the Merged Entity from the SOT Customer. For example, if the SOT Customer gives a higher discount than the industry standard of 50% to Innovative, Quest and/or the Merged Entity, as the case may be, Innovative, Quest and/or the Merged Entity, as the case may be, will reciprocate. If the SOT Customer gives a lesser discount to Innovative, Quest and/or the Merged Entity, as the case may be, Innovative, Quest and/or the Merged Entity, as the case may be, will similarly reciprocate.

4.2.5. The prevailing P_L and D and any changes thereto made by Innovative, Quest and/or the Merged Entity, as the case may be, for any IVD Test will be made public on the website of Innovative, Quest and/or the Merged Entity, as the case may be.

4.3. **Commitments Relating to Service Standards**

4.3.1. PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity, as the case may be, shall apply consistent service standards which are offered to Non-SOT Customers ("**Service Standards**") to all SOT Customers for all SOTs, as set out in the table below, subject to paragraphs 4.3.2 and 4.3.3 below, and where the SOT Customer requires that an IVD Test be performed outside of the Service Standards:

S/N	Service Type	Service Standards
1	Frequency of the scheduled collection of IVD test samples collected from a Customer, i.e. number of scheduled courier visits within a day.	Up to two (2) times a day on weekdays. One (1) time a day on Saturdays. None on Sundays and public holidays. Such scheduled collections shall be applied equally to all customers of Innovative, Quest and/or the Merged Entity, and as agreed.
2	Availability of on-demand collection outside of scheduled courier collections.	An on demand (i.e. unscheduled) collection of test samples outside of scheduled rounds will be made available during normal operating hours on Business Days within stipulated existing cut-off times. Additional Charges may apply for an urgent on demand collection.
3	Frequency and/or flexibility of delivery of consumables required for IVD Tests	For 90% of the requests, consumables will be replenished within three (3) Business Days from the request date.
4	Frequency and/or flexibility of delivery of the results/reports for IVD Tests	Electronic copies of patients' test reports will be sent to customers or made available to customers on Innovative, Quest and/or the Merged Entity's online portal. After the IVD Tests are completed, and as soon as the test results are loaded into the system of Innovative, Quest and/or the Merged Entity, as the case may be. Innovative, Quest and/or the Merged Entity will also provide hard copy

		test reports should the customers request for them, to be circulated to the customers during the scheduled courier runs as set out in item 1 above.
5	Turnaround Time for IVD Tests	For 90% of cases, the Turnaround Time for non-urgent, basic and routine IVD tests that are conducted on a daily basis will be between two (2) hours to the next Business Day, depending on the location of the customer and the quality of the samples. For certain IVD Tests, the Turnaround Time may be up to a few months (such as scheduled tests, SOTs and tests requiring a long analytical period due to the nature of the methodology of the test). For urgent IVD Tests for which faster Turnaround Times are required, the IVD Tests will be conducted immediately without delay, and the Turnaround Time will depend on when the customer makes such a request, the availability for pick-up of the samples and the quality of the samples. Additional charges will apply for such urgent requests.

4.3.2. Innovative, Quest and/or the Merged Entity shall retain the discretion to vary the Service Standards to comply with best practices, changes in technology and/or any regulatory requirements imposed by any applicable laws and regulations, or by any regulatory authority and accreditation body including but not limited to the Ministry of Health, Enterprise Singapore and the College of American Pathologists.

4.3.3. Innovative, Quest and/or the Merged Entity, as the case may be, shall publish the latest copy of the Service Standards, as may be amended from time to time pursuant to paragraph 4.3.2, on its website.

4.3.4. It shall not be a breach of the commitments set out in this paragraph 4.3 should Innovative, Quest and/or the Merged Entity fail to meet the Service Standards as a result of factors which are not within its reasonable control, including but not limited to delays by its suppliers, changes in regulation, non-compliance by SOT Customers to Innovative's, Quest's or the Merged Entity's standard operating procedures as required by regulatory bodies and/or accreditation bodies, pandemics, epidemics, fire, natural disasters, rebellion, insurrection, riots, acts of terrorists, wars, acts of governments or acts of God.

4.4. **Commitments Relating to Exclusivity**

4.4.1. PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity shall not include any exclusivity obligation (including de facto exclusivity clauses) in any New Agreement, or any Existing Agreement which is renewed, extended or rolled over after 4 March 2019, and shall remove without conditions any exclusivity obligation (including de facto exclusivity clauses) contained in any such New Agreement or any such Existing Agreement, as the case may be, except where such New Agreement or such Existing Agreement is entered into pursuant to a Public Tender.

4.4.2. Notwithstanding paragraph 4.4.1 above, PAH undertakes not to [CONFIDENTIAL INFORMATION].

4.4.3. PAH undertakes to notify all Customers affected by the commitment set out in this paragraph 4.4, as set out in **Schedule 1** to these Commitments (which shall be updated as New Agreements are entered into), within fourteen (14) Business Days from the Effective Date or, in the case of a New Agreement entered into by Innovative, Quest and/or the Merged Entity which comes into force after the Effective Date, within fourteen (14) Business Days after the date of such New Agreement coming into force. The notification shall be a standard notification and shall be in such form and manner to be approved by the CCCS. Innovative, Quest and/or the Merged Entity, as the case may be, shall provide copies of such notifications to the CCCS within five (5) Business Days from the dates on which such notifications are made.

4.5. **Commitments Relating to Allowing for Early Termination Without Cause**

4.5.1. PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity shall allow any Existing Customer or any New Customer, if they so request, to terminate their fixed term contracts prior to the respective termination or expiry dates of such contracts without cause, subject to a prior written notice period of either sixty (60) calendar days or ninety (90) calendar days, and without imposing any penalty on or seeking any other form of remedy or relief from such Existing Customer or New Customer for such early termination without cause (save only for the circumstance described in paragraph 4.5.2), as the case may be, except where such New Agreement is entered into pursuant to a Public Tender. The notice period of sixty (60) calendar days shall apply to Existing Agreements or New Agreements in respect of which Innovative, Quest and/or the Merged Entity has not incurred any Unrecoverable Expenditure, and the notice period of ninety (90) calendar days shall apply to Existing Agreements or New Agreements in respect of which Innovative, Quest and/or the Merged Entity has incurred Unrecoverable Expenditure. Notwithstanding the foregoing, where any Existing Agreement expressly provides for a notice period for early termination without cause which is different from that provided in this paragraph 4.5.1, the said notice period shall apply to such Existing Agreement. For the avoidance of doubt, the right to early termination without cause as referred to in this paragraph 4.5.1 will operate regardless of whether Innovative, Quest and/or the Merged Entity intends to claim for Unrecoverable Expenditure in the terms described in paragraph 4.5.2 below.

4.5.2. The circumstance referred to in paragraph 4.5.1 above is where Innovative, Quest and/or the Merged Entity has incurred or is required to incur incremental capital expenditure and/or incremental operating expenditure which directly result from a request made by an Existing Customer or a New Customer in connection with an Existing Agreement or a New Agreement, as the case may be, which would otherwise not have been incurred if not for the entry into the New Agreement or Existing Agreement here referred to, and which constitutes Unrecoverable Expenditure by Innovative, Quest and/or the Merged Entity, as the case may be, having used its best endeavours to recover or redeploy such incremental capital expenditure and/or incremental operating expenditure. In such a case, and without prejudice to any other remedies available to Innovative, Quest and/or the Merged Entity under law or in equity, Innovative, Quest and/or the Merged Entity, as the case may be, may recover such Unrecoverable Expenditure incurred which is unrecovered as a result of early termination without cause by the Existing Customer or the New Customer. In the case where Innovative, Quest and/or the Merged Entity intends to claim for Unrecoverable Expenditure, PAH undertakes to notify the Customer of such intention within thirty (30) Business Days from the date when such Customer gives the written notice referred to in paragraph 4.5.1. For the avoidance of doubt, PAH is not required to have assessed and set out specific claims in the notice of intent referred to in this paragraph, which will be separately notified to such Customer at a later date.

4.5.3. The following capital expenditure and/or operating expenditure may be considered Unrecoverable Expenditure within the meaning of paragraph 4.5.2 above, with the burden of proof on a balance of probabilities being on PAH:

(a) all remaining rental payments under the lease for the premises used to set up a New Laboratory, as lease agreements tend to be for fixed periods;

(b) costs of renovating and fitting out the premises for a New Laboratory, which are sunk costs and are simply not recoverable;

(c) costs of obtaining certification or other approvals required for the operation of the New Laboratory, which is tied to the location of the laboratory, and which are sunk costs;

(d) manpower costs for employees who are hired to manage the New Laboratory, including any costs incurred for the redeployment and/or termination of such employees;

(e) costs incurred in purchasing or leasing any new equipment for a New Laboratory, which cannot be diverted or redeployed for the use of other customers or sold to other parties within a reasonable period of time;

(f) costs of integration and disintegration of the IT systems of Innovative, Quest and/or the Merged Entity, as the case may be, and that of a customer; and

(g) any penalties imposed by supplier(s) for early termination of any agreement for reagent rentals or rentals of any other equipment not here caught by the above paragraphs for a New Laboratory.

4.5.4. Notwithstanding paragraph 4.5.1 above, PAH undertakes, in relation to a New Agreement entered into from 4 March 2019, [CONFIDENTIAL INFORMATION], that it shall, during the Commitment Period, [CONFIDENTIAL INFORMATION].

4.5.5. PAH further undertakes to ensure that Innovative, Quest, and/or the Merged Entity, as the case may be, includes a clause into all New Agreements, other than New Agreements entered into pursuant to Public Tenders, stating that the New Customers with whom such New Agreements are entered into may, for the duration of the Commitment Period, terminate such New Agreements without cause, subject to a prior written notice period of either sixty (60) calendar days or ninety (90) calendar days, and without being subject to any penalty for such early termination without cause, subject to Innovative's, Quest's and/or the Merged Entity's rights as stated in this paragraph 4.5.

4.5.6. PAH undertakes to notify all Customers affected by the commitment set out in this paragraph 4.5, as set out in **Schedule 2** to these Commitments (which shall be updated as New Agreements are entered into), within fourteen (14) Business Days from the Effective Date or, in the case of a New Agreement entered into by Innovative, Quest and/or the Merged Entity which comes into force after the Effective Date, within fourteen (14) Business Days after the date of such New Agreement coming into force, in such form and manner to be approved by the CCCS, and to provide copies of such notifications to the CCCS within five (5) Business Days from the dates on which such notifications were made.

4.6. **Commitments Relating to Prices Offered to Private Hospitals Which Do Not Manage or Operate Their Own In-House Laboratories and Health Screening Companies for IVD Tests**

4.6.1. PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity, as the case may be, shall not increase its prices and shall maintain the same terms and conditions in relation to IVD Tests and Services set out in the Existing Agreements with private hospitals which do not manage or operate their own in-house laboratories and health screening companies. Such prices and terms and conditions shall be maintained in any Existing Agreements or New Agreements entered into with such customers for as long as such Existing Agreements or such New Agreements remain in effect during the Commitment Period. This excludes SOTs which are provided for under such Existing Agreements or such New Agreements, and which cannot be performed in-house by Innovative, Quest and/or the Merged Entity and are sent out by Innovative, Quest and/or the Merged Entity to third party laboratories either locally or overseas. PAH further undertakes that Innovative, Quest and/or the Merged Entity, as the case may be, shall, during the Commitment Period, extend or renew any Existing Agreement with any private hospital which does not manage or operate its own in-house laboratory and any health screening company which may expire within the Commitment Period, unless there are commercially justifiable reasons not to do so.

4.6.2. In the case of SOTs provided for under any Existing Agreements or New Agreements entered into between Innovative, Quest and/or the Merged Entity, as the case may be, and private hospitals which do not manage or operate their own in-house laboratories and/or health screening companies, as the case may be, and which cannot be performed in-house by Innovative, Quest and/or the Merged Entity in their own laboratories and are sent out by them to third-party laboratories, PAH undertakes that, during the Commitment Period, Innovative, Quest and/or the Merged Entity, as the case may be, shall not increase its pre-4 March 2019 markup, administrative fee, handling fee and marketing support fee, [CONFIDENTIAL INFORMATION], where these are imposed by Innovative, Quest and/or the Merged Entity, as the case may be, and, subject to paragraph 4.6.3 below, shall not impose any other fees or charges on the said customers.

4.6.3. Notwithstanding paragraph 4.6.2 above, Innovative, Quest and/or the Merged Entity may pass through, without any markup, all third-party costs incurred directly for the supply of SOTs under any Existing Agreements or New Agreements with private hospitals which do not manage or operate their own in-house laboratories and/or health screening companies, as the case may be.

4.6.4. In the case of SOTs provided for under any Existing Agreements or New Agreements, PAH will provide to any Customer affected by this Commitment [CONFIDENTIAL INFORMATION].

4.6.5. The Commitments specified in this paragraph 4.6 are subject to the ability (as set out in Existing Agreements or New Agreements) of Innovative, Quest and/or the Merged Entity, as the case may be, to make adjustments to the prices as set out in Existing Agreements or New Agreements for IVD Tests or to the markup, administrative fee, handling fee and marketing support fee referred to in paragraph 4.6.2 during the Commitment Period. Where there is any change in the CPI during the Commitment Period, any such annual adjustment shall be no more than the value equal to the change in such CPI expressed in terms of a percentage, and may be made in the month immediately following the public release of the CPI data in January of that year. Notwithstanding the foregoing, the ability of Innovative, Quest and/or the Merged Entity, as the case may be, to adjust the prices provided in Existing Agreements or New Agreements with private hospitals which do not manage or operate their own in-house laboratories and health screening companies based on CPI under this paragraph 4.6.5 shall

not apply to Existing Agreements or New Agreements with such customers where prices are fixed for the duration of or beyond the Commitment Period. For avoidance of doubt, this ability of Innovative, Quest and/or the Merged Entity, as the case may be, to adjust the prices based on CPI does not apply to revenue and profit-sharing arrangements set out in Existing Agreements and New Agreements.

4.6.6. PAH undertakes to notify all Customers affected by the commitment set out in this paragraph 4.6, as set out in **Schedule 4** to these Commitments, within fourteen (14) Business Days from the Effective Date, in such form and manner to be approved by the CCCS, and to provide copies of such notifications to the CCCS within five (5) Business Days from the dates on which such notifications were made.

4.6.7. For avoidance of doubt, the commitments as set out in paragraphs 4.4. and 4.5 above apply equally to the private hospitals which do not manage or operate their own in-house laboratories and health screening companies with Existing Agreements, to the extent applicable and the effects of the commitment as set out in this paragraph 4.6 shall not supersede the commitments as set out in paragraphs 4.4 and 4.5 above.

4.7. **Cooperation with the CCCS**

4.7.1. PAH shall provide the CCCS with all such cooperation, assistance and information as the CCCS may reasonably require to ensure compliance by PAH with these Commitments, provided that any confidential information disclosed to the CCCS will not be made available to any third parties without the prior written consent of the Party(ies) concerned.

4.7.2. Within thirty (30) Business Days or such longer period as the CCCS considers reasonable and practicable from the end of every twelve (12) calendar month cycle, commencing from the Effective Date to the end of the Commitment Period, PAH shall submit to CCCS an internal audit report, signed off by PAH's management, on the compliance by PAH, Innovative, Quest and/or the merged entity, as the case may be, with these Commitments. The internal audit shall be carried out by PAH in accordance with an audit plan to be approved by CCCS, which in any event, shall be reasonable and not onerous so as to incur unreasonable costs in undertaking the audit. PAH shall submit a draft audit plan within six (6) calendar months from the Effective Date for CCCS' approval.

4.7.3. Where the CCCS has reasonable grounds[1] for suspecting non-compliance with any of the Commitments by PAH, Innovative, Quest and/or the Merged Entity, the CCCS reserves the right to request that PAH appoints, and PAH shall appoint, a Monitoring Trustee on terms and conditions approved by the CCCS. Prior to the CCCS requesting the appointment of the Monitoring Trustee by PAH, the CCCS shall, subject to any confidentiality obligations that the CCCS has, give PAH reasonably detailed information on the alleged non-compliance and an opportunity to respond and provide an explanation on the alleged non-compliance. The CCCS shall have the discretion to approve or reject PAH's proposed Monitoring Trustee. The Monitoring Trustee shall be remunerated by PAH, Innovative, Quest and/or the Merged Entity in a way that does not impede the independent and effective fulfilment of its mandate. The CCCS may, on its own initiative or at the request of the Monitoring Trustee or PAH, give any order or instruction to the Monitoring Trustee in order to ensure compliance of PAH with the Commitments.

[1] An example of such reasonable grounds for CCCS to suspect non-compliance with any of the Commitments may be if CCCS receives one or more substantiated complaints or consistent complaints of purported non-compliance from multiple credible sources.

5. Term and Termination

5.1. Subject to paragraph 5.2 below, PAH shall comply with the Commitments for the Commitment Period.

5.2. The CCCS may, at any time during the Commitment Period, in accordance with paragraphs 6.14 to 6.16 of the CCCS Guidelines on Merger Procedures 2012, vary, substitute or release PAH from one or more of the Commitments pursuant to Sections 60A(3) and (4) of the Act, pursuant to an application by PAH supported by reasons, including but not limited to:

(a) any material changes in market and competitive conditions; or

(b) circumstances where compliance with any of the Commitments exceeds the objective set out in paragraph 1.2 above or has such a detrimental effect on the current or future development of the Parties and/or their respective related entities.

6. Governing Law

6.1. These Commitments shall be governed by and construed in accordance with the laws of Singapore.

SCHEDULE 1

[CONFIDENTIAL INFORMATION]

SCHEDULE 2

[CONFIDENTIAL INFORMATION]

SCHEDULE 3

Definitions

1. "**SOT Price**" means the price of SOTs referred to in paragraph 4.6.2 of the Commitments which cannot be performed in-house by Innovative in its own laboratories and are sent out to third-party laboratories. [CONFIDENTIAL INFORMATION].

   [CONFIDENTIAL INFORMATION]

2. "**Cost Price**" means the price of the SOT charged by third-party laboratories to Innovative.

[CONFIDENTIAL INFORMATION]

SCHEDULE 4

[CONFIDENTIAL INFORMATION]

THESE COMMITMENTS have been entered into on the date first above written.

Signed by FRANCIS WOO)
for and on behalf of)
PATHOLOGY ASIA HOLDINGS PTE. LTD.)