FS 2021 – 1

Draft Final Determination on Proposed Fuels Market Definition

UTILITY REGULATION AND COMPETITION OFFICE
THE CAYMAN ISLANDS

Publication Date: 28 January 2021

Contents

1. Background

1. The Utility Regulation and Competition Office ('OfReg' or the 'Office') is the independent regulator established by section 4 of the Utility Regulation and Competition Law (as revised) (the 'URC Law') for the electricity, information and communications technology, water, wastewater and fuel sectors in the Cayman Islands.

2. Under its enabling legislation, the Office has several functions, one of which is to effectively monitor and supervise the fuel sector, to achieve its mandate of assuring competition, transparency, efficiency and innovation in the markets. In order to strengthen and fully establish its regulatory role in the sector, the Office conducted a comprehensive study to define the relevant markets within the fuel sector, to further be able to assess the extent and effectiveness of competition within these defined markets, as a tool to implement the required regulatory mechanisms to achieve its mandate under the various laws

3. On 26 March 2020, the Office published FS 2020 - 1 - Consultation Proposed Fuels Market Definition[1] ("the Consultation") . The Proposed Fuels Market Definition ('the Draft Market Definition') was appended to the consultation document.

   The Office published an Extension Notice[2] extending the closing date for submissions from 27 March 2020 to 11 May 2020. A further extension was given until 30 July 2020. The Office accepted one submission beyond the extension deadline due to a respondent's extenuating circumstances.

4. As at the close of the consultation period, Rubis Cayman Islands limited ('Rubis'), Sol Petroleum Cayman Limited ('Sol'), Refuel, Home Gas Limited ('Home Gas'), Clean Gas Limited ('Clean Gas'), and Mostyn's ESSO ('Mostyn's') provided comments in response to the Consultation.

5. In this document, the Office outlined its draft determination along with the proposed Fuels Market Definition, which is attached.

[1] https://www.ofreg.ky/upimages/commonfiles/158532169120200326FS2020-1-Consultationfinal1.pdf
[2] https://www.ofreg.ky/upimages/commonfiles/1588053492ExtensionNoticeFS2020-1-PFMD.pdf

2. Legal Framework

6. The Office is guided by its statutory remit in developing the Market Definition Report, notably the provisions which follow.

7. The URC Law is the principal legislation governing the Office's mandate in respect of the Fuel Sector. Alongside the URC Law, the sector-specific legislation governing the Fuel Sector are the Dangerous Substances Law (2017 Revision) (the 'DS Law') and its supporting Regulations ('DS Regulations'), and the Fuel Market Regulation Law, 2017 (the 'FMR Law').

8. Section 6(1) of the URC Law outlines that the principal functions of the Office, in the markets and sectors for which it has responsibility, include "*to promote appropriate effective and fair competition*", "*to protect the short and long term interests of consumers in relation to utility services*", and "*to promote innovation and facilitate economic and national development*".

9. Section 5(1)(b) of the FMR Law provides that one of the functions of the Office in relation to the Fuel Sector is to "*promote fair competition in the fuel sector*".

10. Section 5(1) of the FMR Law states in part:

> 5. (1) The Office shall supervise the fuel sector in accordance with its jurisdiction under the Utility Regulation and Competition Law, 2016 and, in doing so, the functions of the Office are as follows–
>
> (a) To implement policy objectives set out in directions issued by Cabinet pursuant to the Utility Regulation and Competition Law, 2016;
>
> […]
>
> (b) promote fair competition in the fuel sector;
>
> […]
>
> (e) to monitor the prices of fuel;
>
> […]
>
> (k) to prevent discrimination against, or preferential treatment of, any person in the fuel sector, and to prevent monopolistic control of any segment of the chain of supply of fuel; and
>
> (l) to minimise barriers to entry for new participation and investors in the fuel markets.

11. Section 6(2)(o) of the URC Law states that the Office, in performing its functions and exercising its powers under the URC Law or any other Law, may "*conduct*

research and studies into any matter or technology which may be relevant to its functions and publish its findings, if appropriate".

12. Section 7(1) of the URC Law requires the Office, before issuing an administrative determination which in the reasonable opinion of the Office is of public significance, "*… to allow persons with sufficient interest or who are likely to be affected a reasonable opportunity to comment on the draft administrative determination*."

13. It is the position of the Office that it retains the right to propose amendments to the Market Definitions when appropriate but not so frequent as to render the Office's mandate in respect of the Fuel Sector arbitrary or capricious, but in any event only after consultation.

3. FS 2020 – 1 – Consultation

14. In the Consultation, the Office considers that it is in the interest of the public to consider options for a comprehensive regime to effectively monitor and regulate the Fuel Sector, in order to achieve the Office's mandate in respect of the Fuel Sector including to promote fair competition in the Fuel Sector. This process will ensure that the Fuel Sector delivers the most competitive and desirable outcomes possible for residents, businesses, and other stakeholders in the Cayman Islands.

15. The draft Market Definition Report was attached to the consultation document as "APPENDIX 1". In the consultation document, the Office noted that market definition is generally the first step in a comprehensive competition assessment of markets. A defined "market" in competition assessment and competition law is the product and geographic space in which rivalry and competition take place; it identifies those products and locations that may potentially constrain the economic decisions of participants in that field of competition, including because there is strong substitution among the products/services and geographies within the defined market if there is sufficient price incentive for customers to substitute among the alternative products/services and geographies.

16. The draft Market Definition Report proposes that market definitions for all relevant fuels in the Fuel Sector should be segmented into separate markets according to the relevant level of the supply chain, the product dimension, and the geographic dimension, in accordance with widely internationally accepted approaches to market definition in the fuels and other sectors.

17. In the Consultation, the Office posed seven specific questions (with sub-questions) regarding the draft Market Definition Report, and also asked respondents to discuss any other matters that they considered relevant to this consultation.

4. Comments Received and Office Responses

18. The Office received six responses to **FS 2020 – 1 – Consultation**, from Rubis, Sol, Refuel, Home Gas, Clean Gas, and Mostyn's.[3] The Office has reviewed all comments received and its responses are set out below each comment.

4.1 Rubis

19. Rubis did not provide a response to Questions 1-8, and reserved its right to make comment to the current Consultation.

4.2 Sol

A) Question 1

What are your views on the segmentation of the functional levels of the relevant fuel markets into:
a) the importation of the relevant fuels?
b) the wholesale and bulk sale and marketing of the relevant fuel?
c) the retail sale and marketing of the relevant fuels?

20. Sol stated (in summary) that the "importation of the relevant fuels" vertical market segment as described in the draft Market Definition Report does not clearly contemplate the international transportation aspect (including international transportation costs) of importation into the Cayman Islands, and that such transportation costs ought not to be included in the "wholesale and bulk distribution" vertical market segment.
21. Sol also stated that participants in the wholesale and bulk distribution vertical market segment *"do and can pursue varied strategies"* and that *"[t]he creation of segments should not restrict participants from participating in any or all segments"*.

[3]https://www.ofreg.ky/upimages/commonfiles/1589464381ReponsetoProposedFuelsMarketDefinition.pdf

Office Response

22. In relation to Sol's first comment regarding the appropriate treatment of international transportation costs in the different vertical industry segments, the Office acknowledges and agrees with Sol's comments. The "importation of fuels" vertical market segment is intended to include the activities required for the importation of fuels to the point of the on-shoring of the fuels, including transportation costs to the Cayman Islands. Although the draft Market Definition Report is structured in line with this proposed market segmentation, the Office will add appropriate words of clarification to ensure that this is sufficiently clear without scope for alternative interpretations.

23. The Office notes Sol's second comment proposing that the creation of segments should not restrict cross-segment participation. The Office observes that the purpose of the market definition process is to reflect and observe the delineations in markets on product and geographic dimensions and that this process has no inherent regulatory implications of the kind contemplated by Sol.

B) Question 2

What are your views on the proposition that upstream production activities and refining, need not be defined for the Cayman Islands on the basis that such activities do not take place on an appreciable commercial level and there is no realistic prospect of market activities taking place in the Cayman Islands in the foreseeable future?

24. Sol stated that it *"agree[s] with the statement"*, while noting that this also applies "for the transportation of refined products to the Cayman Islands", and also noting that *"[t]here is little to no realistic prospect of Cayman Islands' market forces influencing the market for transportation of refined fuels to the Cayman Islands"*.

Office Response

25. The Office acknowledges Sol's agreement, and refers to its response to Sol's response to question 1 in relation to the appropriate treatment of international transportation costs.

C) Question 3

What are your views on the different fuels considered under the product markets (Section 4) in the draft Market Definition Report? This would include the fuels currently in use and the potential future fuels with a realistic prospect of these fuel introduced into the fuel mix in the Cayman Islands in the foreseeable future?

26. Sol referred the Office to its responses to questions 4 and 5.

Office Response

27. N/A.

D) Question 4

a) What are your views on the proposed definition of gasoline plus gasoline-ethanol blends up to a "blend wall" of 10% ethanol as comprising one product market, and all gasoline-ethanol blends with more than 10% ethanol including pure ethanol as comprising a separate product market?
b) Similarly, what are your views on the proposed definition of petroleum-derived diesel ("diesel") plus diesel-biodiesel blends up to 20% biodiesel as comprising one product market, and all diesel-biodiesel blends with more than 20% biodiesel including pure biodiesel as comprising a separate product market?

28. In response to question 4(a), Sol stated that it does "*not agree with the market delineation of gasoline-ethanol blends*", proposing that "*gasoline plus gasoline-ethanol blends are generally substitutes for one another and compete for the same consumer*" and that therefore "*all gasoline with no or any Ethanol blends should be considered part of the same product market*". SOL expanded by stating (in summary) that E15 gasoline is marketed in the U.S. and increasingly accepted by vehicles of more recent construction, and proposed that a blend wall of more than 10% ethanol may not be appropriate for the purposes of this market definition, while noting that gasoline blends with more than 10% are not currently sold in the Cayman Islands. SOL further stated that the draft market definitions were "*not based on detailed information on the fleet of cars in the Cayman Islands or an empirical analysis of substitution patterns*."

29. In response to question 4(b), Sol stated that it takes "*a similar view*" as to its response to question 4(a).

Office Response

30. The Office acknowledges Sol's submission on the appropriate "blend wall" to be considered in reaching the relevant market definitions. The Office agrees that gasoline and gasoline-ethanol blends at blend proportions below the "blend wall" "*are generally substitutes for one another and compete for the same consumer*", and this conclusion is reflected in the proposed market definitions.

31. However, blends of a higher proportion of gasoline are not yet sufficiently widely usable in different vehicles for the "blend wall" to currently exceed 10%. To the contrary, the Office's information is that E15 is still not authorized for use in a substantial proportion of vehicles manufactured internationally, and that warranties of many vehicles do not cover damage related to the use of E15 gasoline. The Office acknowledges that E15 gasoline is marketed in the United States, and notes that this is noted in the draft Market Definition Report. However, while the availability of E15 gasoline means that some vehicles are able to accommodate this blend, this does not imply that all or most vehicles can do so (any more than the availability of diesel implies that gasoline-fuelled vehicles are able to accommodate diesel).

32. The Office notes that the proposed market definition is dependent on the current state of the relevant factors affecting the appropriate "blend wall", and would be adjusted if in the future those factors change sufficiently for a significant part of the consumers of gasoline and diesel fuels in the Cayman Islands to be able to accommodate (and be readily willing to substitute to) fuels containing higher proportions of the respective blends. Specifically, in the draft Market Definition Report, the Office stated that:

> *"This market definition is dependent on the state of technology of internal combustion engine production as is available in motor vehicles available to the mass market, associated regulatory standards regarding the "blend wall" for ethanol-gasoline blended fuels, and other related factors. Should the state of engine technology change so that a sufficient number of motor vehicles can readily use higher-level ethanol blends without modification or risk of engine damage, then the present product market assessment may be changed in line with changing technology. Similarly, should regulatory standards change in a way materially affecting the ability and willingness of consumers to substitute between potential alternatives, then the present product market definition would likely need to be adjusted in accordance with those changes."*
>
> Accordingly, when the blend wall changes sufficiently, taking into account all the relevant factors as they apply to the Cayman Islands, based on sufficient evidence, then the relevant aspects of the market definitions will change.

33. The Office is therefore satisfied that the proposed market definition and associated blend wall best reflects the current state of the relevant factors, and is therefore the most appropriate market definition. The Office is further satisfied that the proposed approach, whereby this aspect of the market definitions would change with sufficient evidence that a sufficient part of the consumer base could readily switch to higher blend proportions, appropriately accommodates the potential for those relevant facts to change. The Office is therefore satisfied that the proposed market definitions are appropriate.

34. The Office notes that it is open to market participants to make appropriate submissions on this issue in the future for consideration by the Office. The Office encourages any such submissions to be made based on verifiable and demonstrable facts.

E) Question 5

What are your views on the proposed definition of:
a) propane,
b) natural gas,
c) butanes, and
d) acetylene
as separate product markets?

35. Sol notes that it *"will require more time to properly consider this question as some of the products are substitutes for each other".*

Office Response

36. The Office notes that Sol had not made a submission to this question at the time that the response period for this consultation, as extended, had closed.

F) Question 6

a) What are your views on the proposed geographic market definition that each of Grand Cayman, Cayman Brac, and Little Cayman is a separate

geographic market for all of the fuels considered except for jet fuel and kerosene, and aviation gas?
b) What are your views on the proposed geographic market definition that a single Cayman Islands-wide geographic market is proposed for jet fuel and kerosene, and aviation gas?

37. In response to question 6(a), Sol notes that it will *"require additional time to properly consider this question."*

38. In response to question 6(b), Sol notes that it agrees that there should be a single Cayman Islands wide geographic market for the aviation-related fuels, but observes that "*because customers in this market have access to alternatives outside of the Cayman Islands, the definition may be too narrow"*.

Office Response

39. The Office notes that SOL had not made a submission to question 6(a) at the time that the response period for this consultation, as extended, had closed.

40. The Office notes SOL's response to question 6(b). However, the Office observes that the proposed geographic market definition is consistent with the applicable ordinary principles of market definition. As is outlined in Section 3 of the draft Market Definition Report, a market for competition assessment purposes includes those products and geographies which are *sufficiently close* substitutes to one another. Specifically, in relation to the geographic market definition, alternative locations are considered to be in the same geographic market "[i]f a customer will easily switch to a different location as an alternative potential source for a product". It is therefore not sufficient for the expansion of a geographic market for consumers of a product merely to have access to product from another location; rather, expansion of the geographic market definition requires that consumers are able and willing to switch readily to product from that other locations. The test proposed by SOL in its comment therefore is not the appropriate test for geographic market definition. The information assessed by the Office, applied to the appropriate test, leads to the geographic market definition proposed by the Office.

G) Question 7

a) What are your views on the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels and other fuels (except for jet fuel and kerosene) considered, rather than being

further segmented into highly localized geographic markets according to the different Districts of Grand Cayman or other similar basis?
b) In your view, are the conditions and outcomes of competition in the different Districts of Grand Cayman broadly similar and connected to each other?
c) Are there Districts of Grand Cayman where fuels suppliers could increase their local prices without substantially losing customers to retail stations or suppliers in other parts of Grand Cayman?
d) If yes to 7 c) please explain.

41. In response to question 7(a), Sol stated that is does "*not agree with the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels*" and submitted that "*Grand Cayman currently has trade areas within which participants in segment (c) who are in close proximity behave more alike than clusters that are not in as close proximity. This suggests that submarkets may already exist"*.

Office Response

42. The Office notes Sol's disagreement with its proposed market definition and notes Sol's assertions (without providing further detail) regarding what it calls "clusters" of participants.

43. The Office notes that Sol has not provided any additional information regarding the nature, identity, characteristics, behaviour, or any other aspect of the "clusters" it asserts to exist. The Office also notes that, as part of the earlier request for information process forming part of this market study, Sol was requested to provide information regarding its customers' sensitivity to relevant factors including location but did not provide data or other substantive information.

44. The proposed market definitions contained in the draft Market Definition Report were obtained using orthodox and widely accepted techniques of market definition. Both qualitative and quantitative techniques were employed, with the analysis being based on detailed pricing data and other information pertaining to the relevant fuels and to the specific characteristics and behaviour by consumers and suppliers in the Cayman Islands. The resulting conclusions are consistent with analogous analysis and conclusions in other jurisdictions.

45. The Office is therefore satisfied that the proposed market definitions are based on the appropriate foundations. Moreover, the Office is not of the view that the

statements submitted by Sol provide a sufficient basis for reconsideration of any of the Office's conclusions.

H) Question 8

Please provide your views on any other matters you consider relevant to this Consultation.

46. No comments.

Office Response

47. N/A.

4.3 Refuel

A) Question 1

What are your views on the segmentation of the functional levels of the relevant fuel markets into:
a) the importation of the relevant fuels?
b) the wholesale and bulk sale and marketing of the relevant fuel?
c) the retail sale and marketing of the relevant fuels?

48. No comment.

Office Response

49. N/A.

B) Question 2

What are your views on the proposition that upstream production activities and refining, need not be defined for the Cayman Islands on the basis that such activities do not take place on an appreciable commercial level and there is no realistic prospect of market activities taking place in the Cayman Islands in the foreseeable future?

50. Refuel stated that "*[t]his is certainly true today, but it is worth noting the Refuel Vision's is to make modern, renewable content fuel commonplace in Cayman while facilitating the introduction of locally manufactured renewables. No viable renewable is on the immediate horizon, but if and when a drop in technology*

becomes commercially available and substitutable its introduction will be considered."

Office Response

51. The Office notes Refuel's response. The Office notes specifically that Refuel agrees that no viable production in the Cayman Islands "is on the immediate horizon" in the foreseeable future. Should the industry change in a way that is not currently reasonable foreseen, through the development of commercially material upstream production and/or refining activities in the Cayman Islands, the Office would re-assess at the appropriate future time.

C) Question 3

What are your views on the different fuels considered under the product markets (Section 4) in the draft Market Definition Report? This would include the fuels currently in use and the potential future fuels with a realistic prospect of these fuel introduced into the fuel mix in the Cayman Islands in the foreseeable future?

52. Refuel stated that "*[t]he list is comprehensive with existing fuels but we do not agree entirely with some of the descriptions particularly with reference to E10's suitability in Marine environments. All major outboard engine manufacturers approve the use of E10 today, and with proper preventative measures E10 absolutely is acceptable for everyday use. Mercury Marine has stated that "After the transition period from E0, E10 may actually be a superior marine fuel as it tends to keep low levels of water moving through the fuel system, Mercury, Honda, and Evinrude approve petrols up to 10% ethanol.*"

Office Response

53. The Office notes Refuel's comments regarding the description of E10's suitability in marine environments. However, the Office does not propose to amend the proposed market definition and relevant sections of the draft Market Definition Report and makes the following two associated remarks.

54. First, the Office's information is partly inconsistent with the conclusion proposed by Refuel and instead supports the conclusion that there remain material limitations and manufacturer concerns around the use of E10 fuels in marine environments, which justify the position described in the draft Market Definition Report. Second, the Office notes the final paragraph in section 4.3.3 of the Market Definition Report, which observes that this market definition is based on prevailing technology, regulatory standards, and other factors, and is subject

to change as those factors change. Accordingly, this market definition may change in the foreseeable future as the relevant factors change.

D) Question 4

a) What are your views on the proposed definition of gasoline plus gasoline-ethanol blends up to a "blend wall" of 10% ethanol as comprising one product market, and all gasoline-ethanol blends with more than 10% ethanol including pure ethanol as comprising a separate product market?
b) Similarly, what are your views on the proposed definition of petroleum-derived diesel ("diesel") plus diesel-biodiesel blends up to 20% biodiesel as comprising one product market, and all diesel-biodiesel blends with more than 20% biodiesel including pure biodiesel as comprising a separate product market?

55. Refuel stated that the Office's proposed market definition is *"in line"* with Refuel's view regarding the relative substitutability of the relevant blends. Refuel also stated that *"if CIG would like to promote renewables E10 should be treated differently for importation, and the renewable content (10%) of the fuel should be subject to a different and lower duty than that of petroleum"*.

Office Response

56. The Office acknowledges Refuel's general agreement in relation to the issues relevant to fuels market definition. The Office also notes Refuel's observations in relation to import duties on fuels but observes that such issues are outside the remit of the scope of the present market definition consultation process, but shall be otherwise considered.

E) Question 5

What are your views on the proposed definition of:
a) propane,
b) natural gas,
c) butanes, and
d) acetylene
as separate product markets?

57. No comment.

Office Response

58. N/A.

F) Question 6

a) What are your views on the proposed geographic market definition that each of Grand Cayman, Cayman Brac, and Little Cayman is a separate geographic market for all of the fuels considered except for jet fuel and kerosene, and aviation gas?
b) What are your views on the proposed geographic market definition that a single Cayman Islands-wide geographic market is proposed for jet fuel and kerosene, and aviation gas?

59. No comment.

Office Response

60. N/A.

G) Question 7

a) What are your views on the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels and other fuels (except for jet fuel and kerosene) considered, rather than being further segmented into highly localized geographic markets according to the different Districts of Grand Cayman or other similar basis?
b) In your view, are the conditions and outcomes of competition in the different Districts of Grand Cayman broadly similar and connected to each other?
c) Are there Districts of Grand Cayman where fuels suppliers could increase their local prices without substantially losing customers to retail stations or suppliers in other parts of Grand Cayman?
d) If yes to 7 c) please explain.

61. In response to question 7a, Refuel stated that "*[t]traffic is a factor that is not explicitly mentioned but is certainly an impediment to the customer travelling to certain locations*".

62. In response to question 7b, Refuel had no comment.

63. In response to question 7c, Refuel responded "*Yes*", expanding in response to question 7d that "*Refuel has consistently had prices from 30c to 60c below the national average*" and proposing that "*[t]therefore there are districts of Grand Cayman where fuel suppliers could and do have increased prices and do not*

substantially lose their customers to retail stations in other parts of Grand Cayman".

Office Response

64. In response to Refuel's comment relating to question 7a, the Office notes that, in addition to "traffic" being explicitly mentioned in the draft Market Definition Report, the analysis of the geographic catchment areas leading to the proposed market definitions implicitly considers traffic as one of the various factors determining consumer behaviour. The Office has expanded the language of the relevant section of the Market Definition Report to enhance clarity in this respect.

65. The Office has also considered Refuel's comment relating to questions 7c and 7d. The Office acknowledges that products which are substitutable but not identical may command different prices in the market. For this reason one would expect that there would be (and indeed, there commonly are) differences in prices between gasoline with different octane levels, and differences in prices between non-blended gasoline and gasoline-ethanol blended products. However, this does not affect the proposed market definitions in the way that Refuel appears to suggest. First, different products with different prices may still be in the same defined product market if consumers view them as being sufficiently substitutable for each other – this standard proposition of market definition is consistent with differences in prices as long as the products are sufficiently substitutable. Second, Refuel's response appears to conflate the product and geographic dimensions of market definition incorrectly, by suggesting that differences in prices of different (although substitutable) products has implications for geographic price differences. However, this is not the case. The quantitative analysis conducted by the Office regarding the geographic market definition leads to the conclusion that prices for specific products are very closely correlated across the different areas of Grand Cayman, leading to the conclusions outlined in the draft Market Definition Report. While the Office appreciates Refuel's response, this response appears to conflate the related by separate considerations of product and geographic market definition in a way not consistent with standard market definition practice, and the Office has therefore not reflected Refuel's comment in the updated Market Definition Report.

H) Question 8

Please provide your views on any other matters you consider relevant to this Consultation.

66. No comment.

Office Response

67. N/A.

4.4 Home Gas

A) Question 1

What are your views on the segmentation of the functional levels of the relevant fuel markets into:
a) the importation of the relevant fuels?
b) the wholesale and bulk sale and marketing of the relevant fuel?
c) the retail sale and marketing of the relevant fuels?

68. In relation to question 1(a), Home Gas stated that "*Home Gas is not sure why the importation of the fuel affects the segmentation of the market. It would seem the market would be determined by the fuel type or fuel usage. How it arrives on the Island would seem irrelevant to this conversation except for making sure the method is safe, quality can be controlled, and the product can be accurately measured for import duty assessment.*"
69. In relation to question 1(b), Home Gas stated that "*We can see that being important to measure. For propane you may want to differentiate between bulk and cylinder fuel sales, which would make sense. To a lesser extent you can compare Commercial to Retail sales.*"

70. In relation to question 1(c), Home Gas stated that "*[a] fuel like propane can be used for a number of end use applications. You may want to differentiate the sale of propane and other fuels by the final use of the fuel. Propane is a versatile fuel that can be used for heat, cooking, electrical production, pest control, and the operation of motor vehicles.*"

Office Response

71. The Office notes Home Gas's comment in response to question 1(a), and responds that the draft Market Definition Response in fact does not segment any markets according to the method of importation of the fuel. The vertical

market segmentation into importation, wholesale/bulk, and retail reflects the different vertical activity levels of the entire supply chain of sourcing the fuel to bringing it to the customer. The vertical segmentation of such a supply chain does not inherently affect the horizontal division into different markets at any particular vertical level. The horizontal segmentation into different markets is primarily driven by consumer behaviour in respect of the substitutability (or non-substitutability) of different fuels from the consumers' perspective, for all reasons relevant to the consumers' decisions including (as Home Gas notes) the fuel type or fuel usage. The approach in the draft Market Definition Report is therefore essentially consistent with Home Gas's observation.

72. In response to Home Gas's comment in relation to question 1(b), the Office notes that the proposed market definitions in fact do distinguish between wholesale/bulk sales and retail sales.

73. In response to Home Gas's comment in relation to question 1(c), the Office notes that different end uses do not necessarily suggest finer market gradations. Consumers may commonly have different uses for a particular product without this leading to defining separate markets for different uses. A simple example would be that potatoes may be mashed, boiled, gratinéed, or roasted, but one would not ordinarily define separate markets for "mashing potatoes", "boiling potatoes", etc. So long as consumers are sufficiently willing to substitute between different types of potatoes for their different uses, then one would define a market simply for "potatoes"; one would only consider a market for different types of potatoes where those different types of potatoes are so different to each other that consumers are not willing to substitute between different types of potatoes for different uses. In this case, there is not a suggestion that there are different types of propane that consumers are not willing to substitute between for different uses. There is therefore no justification for any further market segmentation for market definition purposes. The Office acknowledges that propane suppliers may consider such market segmentation for marketing or other internal management purposes, but these are different considerations to those relevant to market definition in this context. Furthermore, the Office notes that Home Gas's comment to question 1(c) may suggest that markets can be defined according to end use *instead* of according to the fuel type. The Office acknowledges that this is a reasonable proposition which can have application in some market definitions, but also notes that it would not be appropriate in this instance. The reason is that, while consumers may be able to switch between different fuel types for a particular use (e.g. cooking) over a very long term time horizon where they are not locked into a particular device (e.g. cooker), over a more immediate time horizon where they have invested in the relevant device (e.g. cooker) consumers cannot readily switch to other fuels because devices are generally created to be powered by

a particular fuel (as is also noted in the Market Definition Report). For the purposes of market definition, it is substitutability over this shorter time horizon that is most relevant, and in this case dictates that the relevant product markets be defined according to fuel types.

B) Question 2

What are your views on the proposition that upstream production activities and refining, need not be defined for the Cayman Islands on the basis that such activities do not take place on an appreciable commercial level and there is no realistic prospect of market activities taking place in the Cayman Islands in the foreseeable future?

74. Home Gas stated that "*[i]t is not impossible to think in the not too distant future you will begin to see local production of syngas, bio-fuels or even Hydrogen based products. Home Gas believes it will be important to regulate these products and ensure safety and quality. Some of these new products can easily be created at a small scale from a waste to bio-fuel process where the product is interchangeable with petroleum-based fuels. It is important that all fuel activities are inspected and properly regulated to ensure the safety of the residents of the Cayman Islands. We have noticed there are plans for Natural Gas in Cayman which would mean a Regasification plant. This type of facility is extremely costly and has significant risk associated with the process. Like all other fuels on the Island those infrastructure costs should be placed upon the fuel company and not the people of Cayman*".

Office Response

75. In relation to local production of certain fuels such as syngas, bio-fuels, or hydrogen-based products, the Office notes that it does not have information to support that appreciable commercial of those or other fuels has a sufficiently realistic prospect of being introduced into the Cayman Islands in the foreseeable future. However, as is outlined in section 5.4 of the draft Market Definition Report, should fuels production in the Cayman Islands come into realistic (rather than speculative) consideration in the foreseeable future, then new markets may be defined in accordance with the same analytical approaches as are used in the draft Market Definition Report.

76. In accordance with its regulatory functions, the Office acknowledges Home Gas's submissions regarding safety and quality regulation, but notes that such issues are beyond the scope and remit of the present market study.

C) Question 3

What are your views on the different fuels considered under the product markets (Section 4) in the draft Market Definition Report? This would include the fuels currently in use and the potential future fuels with a realistic prospect of these fuel introduced into the fuel mix in the Cayman Islands in the foreseeable future?

77. Home Gas responded that "*[i]t concerns Home Gas that the Cayman Islands Integrated Resource Plan for Energy through the year 2045 was created by a shell company for Siemens, who is a World leader in Natural Gas production and products. We believe the list of fuels is fairly comprehensive. One fuel that should be considered for the list is Dimethyl Ether (DME) which is a promising syngas fuel that could be produced locally. We are not sure if you want to mention other fuels like Coal and Nuclear just to ensure they are prohibited from the Island in the future.*"

Office Response

78. The Office acknowledges Home Gas's response that the list of fuels is "fairly comprehensive".

79. In relation to dimethyl ether (DME) or other potential future syngas fuels, the Office notes as follows. First, the Office does not have information to support that DME is a fuel with sufficiently realistic prospect of being introduced into the fuel mix in the Cayman Islands in the foreseeable future. Second, as is outlined in section 5.4 of the draft Market Definition Report, should other fuels not currently in the reasonably foreseeable fuels mix in the Cayman Islands come into realistic consideration, new markets may be defined in accordance with the same analytical approaches as are used in the draft Market Definition Report.

80. The Office notes that Home Gas's comment relating to the Cayman Islands Integrated Resource Plan is beyond the scope and remit of the Market Definition Report. Similarly, as regards Home Gas's comment on coal and nuclear fuels, the Office notes that continuing strategic considerations of preventing future use of certain fuels are more appropriately considered in different arenas and are beyond the scope and remit of the Market Definition Report. Nonetheless, the Office notes that commercial level fuel imports will require an Import Permit and an Operating Permit from the Office for the storage after importation, meaning that the relevant fuel and storage facility have to be approved by the Office.

D) Question 4

a) What are your views on the proposed definition of gasoline plus gasoline-ethanol blends up to a "blend wall" of 10% ethanol as comprising one product market, and all gasoline-ethanol blends with more than 10% ethanol including pure ethanol as comprising a separate product market?
b) Similarly, what are your views on the proposed definition of petroleum-derived diesel ("diesel") plus diesel-biodiesel blends up to 20% biodiesel as comprising one product market, and all diesel-biodiesel blends with more than 20% biodiesel including pure biodiesel as comprising a separate product market?

81. In relation to question 4(a), Home Gas stated that its "*experience with the use of ethanol based fuels is they cause a lot of engine issues especially if they sit around for any period of time due to breakdown of the organic matter. There is a significant difference in BTU content that is not always factored into environmental formulas. The new petroleum fuels have lower carbon and sulphur emissions over their predecessors and might actually be nearly as clean in the overall emissions per BTU without causing engine performance issues. Home Gas feels the end-use of the product should define the market more than the actual product.*"

82. In relation to question 4(b), Home Gas stated that it believes that "*the bio-diesel market has a promising future but feel it should be in the same market as regular diesel since it has the same end-use. Adjusting import duties based upon the true life-cycle carbon footprint of the fuel seems reasonable, but it should not be based solely on the burner tip emissions method that is often used to mask true emissions results*."

Office Response

83. As regards Home Gas's comment on the proposed gasoline and gasoline-blend market, the Office notes that, as explained in the draft Market Definition Report, market definition is significantly driven by consumers' (end users') perspectives and their willingness (or unwillingness) to substitute readily between different products.

84. As regards Home Gas's comment on the proposed diesel-biodiesel market definition, the Office notes that the proposed market definition does include diesel-biodiesel blends within the same market as diesel up to the "blend wall" within which blends are sufficiently substitutable from consumers' perspectives to merit inclusion in the same market. Home Gas's observation regarding

import duty rates is beyond the scope of the present market definition phase but may be considered during the market assessment phase.

E) Question 5

What are your views on the proposed definition of:
a) propane,
b) natural gas,
c) butanes, and
d) acetylene
as separate product markets?

85. Home Gas submitted in relation to propane that "*[o]nly HD-5 LPG should be allowed to be imported into the Cayman Islands. Almost all propane products sold in the Cayman Islands will be based on North American propane standards which require a 90% propane mix. We should not allow lesser grades of propane like HD-10, industrial propane or the other lower grade mixtures found in Central and South America. Over recent years propane is being used in medium scale electricity production that would be similar to the size requirements on the Cayman Islands. This is often used in smaller Islands like Cayman where Natural Gas importation is cost prohibitive and/or dangerous*."

86. Home Gas submitted in relation to natural gas that it believes that "*Natural Gas and Propane would basically be the same market since their end-usage is basically identical.*"

87. Home Gas provided no responsive in relation to butanes and acetylene as Home Gas stated that it has no experience with these products in the Cayman Islands.

Office Response

88. The Offices acknowledges Home Gas's submission regarding different grades of propane and Home Gas's views regarding what grades should be permitted for use in the Cayman Islands. However, such licensing and related issues are not within the scope of the present market study.

89. The Office notes Home Gas's observation in relation to the comparable final end uses of propane and natural gas. However, as outlined in the draft Market Definition Report, these fuels are generally not substitutable within specific devices, as combustion devices are generally designed to operate using specific fuels, and other fuels cannot ordinarily be substituted without harm to the device or danger to the operator. This means that the owners of devices designed to operate using propane cannot generally substitute natural gas for

propane in the device, and vice versa. This means that consumers and other combustion device operators will ordinarily not view propane and natural gas as sufficiently close substitutes to switch between them in response to a small, sustained price rise in one of these fuels. As a consequence, separate defined markets for propane and natural gas are warranted. The rationale is comparable to that meriting different markets for gasoline and diesel – both are fuels used to operate vehicles for the end use of providing transportation services, but the owners of vehicles cannot readily substitute between the two fuels, meaning they are defined as separate markets. The Office acknowledges that over a long-run time horizon, meaning a time horizon sufficiently long for device owners to contemplate switching devices, capital investments in new devices may result in some level of substitution over such a longer time horizon (e.g. changing from a gasoline-fuelled car to a diesel-fuelled car, or from a propane-fuelled stove to a natural gas-fuelled stove); however, such longer term substitution is not the ready and easy degree of substitution contemplated by the standard approach to market definition used in the draft Market Definition Report.

90. The Office notes Home Gas's response in relation to butanes and acetylene.

F) Question 6

a) What are your views on the proposed geographic market definition that each of Grand Cayman, Cayman Brac, and Little Cayman is a separate geographic market for all of the fuels considered except for jet fuel and kerosene, and aviation gas?
b) What are your views on the proposed geographic market definition that a single Cayman Islands-wide geographic market is proposed for jet fuel and kerosene, and aviation gas?

91. In relation to question 6(a), Home Gas responded that it agreed with this assessment, adding that "*[i]t would be nice if there was a rebate on import duties for fuels sold in the Sister Islands to make those pricing more comparable to Grand Cayman*".

92. In relation to question 6(b), Home Gas responded that "this seems like a rational approach".

Office Response

93. The Office acknowledges Home Gas's concurrence with its approach to these market definitions, and notes that questions of import duty rebates are beyond the scope of this market study, and will be otherwise considered.

G) Question 7

a) What are your views on the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels and other fuels (except for jet fuel and kerosene) considered, rather than being further segmented into highly localized geographic markets according to the different Districts of Grand Cayman or other similar basis?
b) In your view, are the conditions and outcomes of competition in the different Districts of Grand Cayman broadly similar and connected to each other?
c) Are there Districts of Grand Cayman where fuels suppliers could increase their local prices without substantially losing customers to retail stations or suppliers in other parts of Grand Cayman?
d) If yes to 7 c) please explain.

94. In response to question 7(a), Home Gas stated that it *"does agree with further geographic breakdown of the market in Grand Cayman, it would create more overhead that would drive up the price for everyone"*.

95. In response to question 7(b), Home Gas stated that it "*makes no differentiation between Districts in Grand Cayman*".

96. In response to question 7(c), Home Gas states that "*[t]his should be matter for each supplier to decide on their marketing strategies*" and that it "*does not change prices per District nor have such plans at this time*".

Office Response

97. As regards Home Gas's response to question 7(a), the Office assumes that Home Gas intended to respond that it "does not agree with further geographic breakdown" and inadvertently omitted the key word "not", as this reading would be consistent with Home Gas's subsequent stated rationale in the same response.

98. The Office notes Home Gas's responses to questions 7(b) and 7(c) that it does not distinguish, including in pricing, between different Districts in Grand Cayman, and observes that this supports the proposed geographic market definitions regarding the relevant fuels.

99. Additionally, the Office notes, contrary to Home Gas's possible perception as suggested by its responses to questions 7(a) and 7(c), that there is no prescriptive element to this market definition process as far as the marketing

and other organizational aspects of the suppliers within the markets. A particular geographic market definition has no inherent implication for how suppliers run their businesses, such as the geographic segmentation of how suppliers supply their customers.

H) Question 8

Please provide your views on any other matters you consider relevant to this Consultation.

100. Home Gas stated that it "strongly believes we need protection for the fuel suppliers who own equipment on someone else's property as part of their fuel supply strategy. We need a national registry where we can register this equipment. It creates many potential legal issues for this issue not to be addressed.

Office Response

101. The Office acknowledges Home Gas's statement but notes that the issues raised by Home Gas are outside of the scope of the present market definition assessment.

4.5 Clean Gas

A) Question 1

What are your views on the segmentation of the functional levels of the relevant fuel markets into:
a) the importation of the relevant fuels?
b) the wholesale and bulk sale and marketing of the relevant fuel?
c) the retail sale and marketing of the relevant fuels?

102. Clean Gas stated that its "*primary concern with the current segmentation is that retail does not distinguish between residential and commercial sales*". In summary, Clean Gas submitted that a separation of residential and commercial sales is standard industry practice in other jurisdictions. Clean Gas also provided significant detail regarding the fine delineations that it uses for its internal management purposes, while noting that it treats the residential and commercial segments as "*entirely separate product markets*", and that "*[r]esidential customers would not be expected to switch to a commercial service in the face of a SSNIP (and vice versa)*". Clean Gas also submitted that consumer exchange and refill ought to be considered as being different to other consumer retail.

103. However, Clean Gas then noted that it "*expects that industrial end users are considered by the Office to be covered by the "wholesale/bulk" market delineation*" and that Clean Gas therefore "*does not take any issue with that assessment*".

Office Response

104. The Office notes Clean Gas's comment and observes that industrial scale purchases would be covered by the "wholesale/bulk" market as Clean Gas has also observed.

B) Question 2

What are your views on the proposition that upstream production activities and refining, need not be defined for the Cayman Islands on the basis that such activities do not take place on an appreciable commercial level and there is no realistic prospect of market activities taking place in the Cayman Islands in the foreseeable future?

105. Clean Gas stated that it "appreciates the Office's position on this question", and noted that its own concerns regarding upstream production activities relate to quality control matters.

Office Response

106. The Office acknowledges Clean Gas's response and notes (as Clean Gas also noted) that quality control issues are beyond the scope of this particular market study and consultation.

C) Question 3

What are your views on the different fuels considered under the product markets (Section 4) in the draft Market Definition Report? This would include the fuels currently in use and the potential future fuels with a realistic prospect of these fuel introduced into the fuel mix in the Cayman Islands in the foreseeable future?

107. Clean Gas submitted that, in relation to the market definition process, "*Clean Gas takes no issue with the delineations suggested*".

108. Clean Gas also stated that "*from a marketing/advertising/quality perspective, there is a potential argument for breaking down further into sub-categories for potential grades of fuels. For example, there are different qualities of diesel within a single rating, such as a 40 cetane diesel)/ can have impurities like gasoline, heavy oils, and sulphur. This happens with all of the grades of heavy fuels and white fuels and there are no strict quality controls in place to ensure what is being advertised is what is received. Truth in advertising standards should be an imperative. This is an issue that should be closely monitored and regulated; however Clean Gas appreciates it may be out of scope for this consultation*".

109. Clean Gas stated that "*[i]n terms of the definition of propane, Clean Gas would note that HD-5 Propane is 95% propane with 5% iso butanes, propylene's and other impurities. The HD-90 the Office refers to is a high-grade commercial propane that is used in the petrochemical industry. It does not have to be odorized and has a higher BTU content and costs a lot less, which is why it is used in manufacturing and industry. However, HD-90 is not accepted in the Cayman Islands. Clean Gas only uses HD-5"*.

Office Response

110. The Office acknowledges Clean Gas's concurrence with the proposed market definitions. The Office also notes Clean Gas's additional comments relating to further segmentation from a marketing and related perspective, but notes that market definition in this process is determined significantly by consumer responses and willingness to substitute between different potential products, rather than by suppliers' marketing organization and consideration.

111. The Office further notes Clean Gas's statements in relation to advertising and regulation, but notes (as Clean Gas also noted) that such issues are beyond the scope of this market study and consultation.

112. The Office also notes Clean Gas's observations in relation to the definitions of propane grades and has made appropriate minor adjustments to the draft Market Definition Report.

D) Question 4

a) What are your views on the proposed definition of gasoline plus gasoline-ethanol blends up to a "blend wall" of 10% ethanol as comprising one

product market, and all gasoline-ethanol blends with more than 10% ethanol including pure ethanol as comprising a separate product market?
b) Similarly, what are your views on the proposed definition of petroleum-derived diesel ("diesel") plus diesel-biodiesel blends up to 20% biodiesel as comprising one product market, and all diesel-biodiesel blends with more than 20% biodiesel including pure biodiesel as comprising a separate product market?

113. No comments.

Office Response

114. N/A.

E) Question 5

What are your views on the proposed definition of:
a) propane,
b) natural gas,
c) butanes, and
d) acetylene
as separate product markets?

115. Clean Gas states that it "*agrees with the Office that there should be separate product markets for these fuels*", stating that "*[p]ropane is a distinct product, used with specific equipment*" and that an "*[a]pplication of SSNIP would not therefore result in natural gas, acetylene or butane being substituted*".

116. Clean Gas further noted that "*butane has no useful market in Cayman and acetylene is an industrial gas only used in the industrial and medical sectors. Neither are substitutes for propane (or natural gas/ or each other)*".

Office Response

117. The Office acknowledges that Clean Gas's agreement with the proposed market definitions and the rationales for them as outlined in the draft Market Definition Report.

F) Question 6

a) What are your views on the proposed geographic market definition that each of Grand Cayman, Cayman Brac, and Little Cayman is a separate

geographic market for all of the fuels considered except for jet fuel and kerosene, and aviation gas?
b) What are your views on the proposed geographic market definition that a single Cayman Islands-wide geographic market is proposed for jet fuel and kerosene, and aviation gas?

118. In response to question 6(a), Clean Gas expressed general agreement with the Office's approach and conclusions. However, Clean Gas also stated that it "*can also see the logic of having a consistent approach to geographical scope for all fuel products, and would certainly be grateful to see consistency in the fuel market generally across all Islands/ in terms of regulation, oversight and management*".

119. In response to question 6(b), Clean Gas stated that it "*has no concerns*" with the Office's approach.

Office Response

120. The Office acknowledges Clean Gas's general agreement with the Office's approach and conclusions.

121. As regards to Clean Gas's elaboration to its response to question 6(a), the Office notes first that different substitution possibilities and behaviour in different markets can dictate different geographic market definitions for the purposes of market and competition analysis, as is the case here, but that such differences in geographic market delineations do not have any inherent implications for any differences in regulation, oversight and management between the different geographic markets.

G) Question 7

a) What are your views on the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels and other fuels (except for jet fuel and kerosene) considered, rather than being

further segmented into highly localized geographic markets according to the different Districts of Grand Cayman or other similar basis?
b) In your view, are the conditions and outcomes of competition in the different Districts of Grand Cayman broadly similar and connected to each other?
c) Are there Districts of Grand Cayman where fuels suppliers could increase their local prices without substantially losing customers to retail stations or suppliers in other parts of Grand Cayman?
d) If yes to 7 c) please explain.

122. In response to questions 7(a) and 7(b), Clean Gas stated that it "*does not consider that it would be appropriate to further segment the market by district for propane*" and that it "*is not aware of any difference in competition related to district and notes that the needs and infrastructure of the districts are roughly consistent*".

123. In response to questions 7(c) and 7(d), Clean Gas responded that it was not aware of Districts of Grand Cayman where fuels suppliers could raise local prices without substantially losing customers to other parts of Grand Cayman, augmenting that any such ability would be "*limited for most fuels by the size of the Island*". Clean Gas also stated that "*it should be a matter for the supplier if they choose to take the risk of increasing local prices*", while distinguishing the case of price reductions to "*predatory levels*".

Office Response

124. The Office acknowledges Clean Gas's response and notes that these responses are consistent with the Office's analysis and proposed market definitions.

H) Question 8

Please provide your views on any other matters you consider relevant to this Consultation.

125. No comment.

Office Response

126. N/A.

4.6 Mostyn's

A) Question 1

What are your views on the segmentation of the functional levels of the relevant fuel markets into:
a) the importation of the relevant fuels?
b) the wholesale and bulk sale and marketing of the relevant fuel?
c) the retail sale and marketing of the relevant fuels?

127. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report.

Office Response

128. The Office notes Mostyn's agreement.

B) Question 2

What are your views on the proposition that upstream production activities and refining, need not be defined for the Cayman Islands on the basis that such activities do not take place on an appreciable commercial level and there is no realistic prospect of market activities taking place in the Cayman Islands in the foreseeable future?

129. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report.

Office Response

130. The Office notes Mostyn's agreement.

C) Question 3

What are your views on the different fuels considered under the product markets (Section 4) in the draft Market Definition Report? This would include the fuels currently in use and the potential future fuels with a realistic prospect of these fuel introduced into the fuel mix in the Cayman Islands in the foreseeable future?

131. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report.

Office Response

132. The Office notes Mostyn's agreement.

D) Question 4

a) What are your views on the proposed definition of gasoline plus gasoline-ethanol blends up to a "blend wall" of 10% ethanol as comprising one product market, and all gasoline-ethanol blends with more than 10% ethanol including pure ethanol as comprising a separate product market?
b) Similarly, what are your views on the proposed definition of petroleum-derived diesel ("diesel") plus diesel-biodiesel blends up to 20% biodiesel as comprising one product market, and all diesel-biodiesel blends with more than 20% biodiesel including pure biodiesel as comprising a separate product market?

133. Mostyn's replied that it does not agree that the fuel should be segmented into separate product markets based on the concentration of ethanol (in the case of gasoline) or biodiesel (in the case of diesel) being blended into the fuel, noting specifically that "[i]n the future if the market dictates or based on demand those fuels would be the natural progression of the fuel market".

Office Response

134. The Office notes Mostyn's response. The Office observes that Mostyn's specific concern about a delineation of fuels markets based on the concentration of ethanol or biodiesel blending may be subject to future market developments.

135. The Office observes that the proposed market definition is driven substantially by the current states of technology of the relevant engines, associated regulatory standards, and other related factors. This is outlined in the draft Market Definition Report, including specifically in sections 4.3.3 and 4.3.5. Moreover, those sections outline that should the relevant factors (such as engine technology or regulatory standards) change so that consumers would consider higher levels of blending in fuels as realistic substitutes, then the present proposed market definition may be adjusted in accordance with these changes. The Office has therefore anticipated the types of dynamic technology, market, and other changes that may lead to changes in the precise product market delineation, and which Mostyn's notes.

E) Question 5

What are your views on the proposed definition of:
a) propane,
b) natural gas,
c) butanes, and
d) acetylene
as separate product markets?

136. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report.

Office Response

137. The Office notes Mostyn's agreement.

F) Question 6

a) What are your views on the proposed geographic market definition that each of Grand Cayman, Cayman Brac, and Little Cayman is a separate geographic market for all of the fuels considered except for jet fuel and kerosene, and aviation gas?
b) What are your views on the proposed geographic market definition that a single Cayman Islands-wide geographic market is proposed for jet fuel and kerosene, and aviation gas?

138. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report.

Office Response

139. The Office notes Mostyn's agreement.

G) Question 7

a) What are your views on the proposed geographic market definition that Grand Cayman is a single geographic market for all road vehicle fuels and other fuels (except for jet fuel and kerosene) considered, rather than being

further segmented into highly localized geographic markets according to the different Districts of Grand Cayman or other similar basis?
b) In your view, are the conditions and outcomes of competition in the different Districts of Grand Cayman broadly similar and connected to each other?
c) Are there Districts of Grand Cayman where fuels suppliers could increase their local prices without substantially losing customers to retail stations or suppliers in other parts of Grand Cayman?
d) If yes to 7 c) please explain.

140. Mostyn's indicated that it is in agreement with the classification proposed in the draft Market Definition Report, noting specifically in relation to question 7(c) that "the island is too small if the segmentation at the district level".

Office Response

141. The Office notes Mostyn's agreement and specific elaboration in relation to question 7(c).

H) Question 8

Please provide your views on any other matters you consider relevant to this Consultation.

142. No comments.

Office Response

143. N/A.

5. Determinations

144. Having considered all the submissions made by the respondents, the Office determines that it will adopt the Fuels Market Definition contained in the Market Definition Report outlining the relevant market definitions as proposed in the Consultation, pursuant to sub-**sections 5(2)(a), 5(2)(g) and 10(1)(d)** of the FMR Law and reasons set out above, with the following changes:

a. The first paragraph of section 4.2.1 is amended to read "Importing of fuels is the bulk purchase of commercial quantities of the relevant fuel from abroad and the shipping or other transportation of them to the Cayman Islands" and "The suppliers are manufacturers and

refiners abroad and the providers of shipping and other transportation services". The last paragraph of section 4.2.2 is amended to read "As a result of these considerations, markets for fuels should be defined separately at the landed import level distinctly from the wholesale/bulk and retail levels of the supply chain".

145. In addition to the changes identified in paragraph 144 above, the Office is making the following other, minor changes to the Market Definition Report subsequent to the closing of **FS 2020 – 1- Consultation Proposed Fuels Market Definition**:

a. The second paragraph of section 4.3.7 is amended to read "The United States Heavy Duty 5 (HD-5) standard for propane is blended with no more than 5% propylene along with allowable butanes and ethane according to the relevant ASTM International standard. There are other standards of propane, such as HD-10 which contains no more than 10% propylene along with allowable butanes and ethane; HD-10 has not been considered for importation into the Cayman Islands".

b. The fourth paragraph of section 5.3.1 is amended to read "It is the closest alternatives, as importantly influenced by the distance of the nearest alternative and taking into account factors relevant to the consumer including traffic, the road network, and other relevant factors, that exercise the closest and tightest competitive constraints on each station's pricing behaviour".

c. References to chemical formulae are removed from sections 4.3.7, 4.3.8, 4.3.10, 4.3.11, 4.3.12, and 4.3.13.

146. The Office considers that the aforementioned changes are either typographical or clarificatory in nature and have no material impact on the outcome of the Consultation or this draft Determination, and therefore would not change the position of any party if they were to have been included in the Consultation. They will therefore be included in '*the final Fuels Market Definition*'.

Annex 1
–
Final Proposed Fuels Market Definition

Market Definition Report

A Consultation Report prepared for the Cayman Islands Fuel Sector – Fuel Market Definition and Economic & Regulatory Assessment Study

9 January 2020

Economics Partners Limited
Authorised by Dr. Derek Ritzmann
as adopted by the Chief Fuels Inspector and Director, Fuels Market

TABLE OF CONTENTS

1 INTRODUCTION AND SUMMARY

1.1 Background

The Utility Regulation and Competition Office ("**OfReg**" or the "**Office**") is the independent multi sector regulator with responsibility for the key utility providers including the fuel sector in the Cayman Islands (the "**Fuel Sector**"). The Utility Regulation and Competition Law (as revised) (the "**URC Law**") is the principal legislation governing the Office's mandate in this respect in the Cayman Islands. Alongside the URC Law, the sector-specific legislation governing the Fuel Sector are the Dangerous Substances Law (2017 Revision) (the "**DS Law**") and its supporting Regulations ("**DS Regulations**"), and the Fuel Market Regulation Law, 2017 (the "**FMR Law**").

1.2 The Market Study

The Office is in the process of establishing a comprehensive regime to effectively monitor and regulate the Fuel Sector, in order to achieve the Office's mandate of assuring competition, transparency, efficiency and innovation in the markets, along with its continuing function of safety and compliance across the sector. As a part of the establishment of the Office's regulatory role in the Fuel Sector, the Office is undertaking a comprehensive assessment of the Fuel Sector entitled the *Cayman Islands Fuel Sector – Fuel Market Definition and Economic & Regulatory Assessment Study (the "**Market Study**")*. The objective of the Market Study is to define the relevant markets within the Fuel Sector, and to assess the extent and effectiveness of competition within these markets, in order to provide guidance and a foundation for the regulatory mechanisms that will be required, for the Office to achieve its mandate under the various laws. The Market Study intends to reflect all the types and grades of fuels currently offered in the Cayman Islands, and consideration is given to fuels which are under review, and may be introduced to the Island's fuel mix in the near future.

Economics Partners Limited ("**Economics Partners**" or the "**Firm**") is a firm of economic consultants specialising in competition and regulatory economics and market assessments. The Firm was appointed in September 2019 pursuant to an open tender to conduct the Market Study on behalf of and in cooperation with the Office. The Market Study will consist of two principal elements:

1. An assessment of and report on the market definitions for competition assessment purposes for the various fuels markets in the Fuel Sector which are to be assessed during the course of the Market Study (the "**Market Definition Report**"); and
2. An assessment of the effectiveness of competition of all fuels markets defined in the Market Definition Report, and any recommendations regarding potential regulatory models, intervention strategies, recommended market rules, and regulatory determinations to be considered and implemented in the relevant markets in the Fuel Sector (the "**Market Assessment Report**").

After its appointment, the Firm has undertaken a comprehensive process of information gathering pertaining to the different potential markets in the Fuel Sector in

the Cayman Islands, and has analysed this information using commonly accepted techniques and approaches of market definition for competition assessment. The present report is the Market Definition Report and it is the product of the Firm's analysis after comprehensive input from the Chief Fuels Inspector and Director, Fuels Market.

2 SUMMARY OF FINDINGS

This Market Definition Report analyses the market definitions applying to different fuels on sale and potentially on sale in the Cayman Islands. It uses the orthodox approach to market definition, comprised of consideration of different relevant factors including quantitative measurements where possible, and relevant qualitative factors to conclude as follows:

On a functional Level, the markets for all relevant fuels are segmented into separate markets according to the relevant level of the supply chain, consisting of:

1. The importation of the relevant fuel;
2. The wholesale and bulk sale and marketing of the relevant fuel; and
3. The retail sale and marketing of the relevant fuel.

On a product dimension, the markets are delineated as follows:

1. Gasoline, and all gasoline-ethanol blends with 10% or less of ethanol.
2. Gasoline-ethanol blends with more than 10% of ethanol, including pure ethanol.
3. Petroleum-derived diesel, and all diesel-biodiesel with 20% or less of biodiesel.
4. Diesel-biodiesel blends with more than 20% biodiesel, including pure biodiesel.
5. Jet fuel and kerosene.
6. Propane (LPG).
7. Natural gas (including LNG and CNG).
8. Aviation gas.
9. Butanes.
10. Acetylene.
11. Hydrogen (potential future market).
12. Methanol (potential future market).

On a geographic dimension, the markets are delineated as follows:

1. World-wide for the market for imported fuels.
2. Cayman Islands-wide for the retail and wholesale markets for the aviation fuels (jet fuel and kerosene, and aviation gas).
3. Grand Cayman for all other fuels at the wholesale and retails supply chain levels.
4. Cayman Brac for all other fuels at the wholesale and retails supply chain levels.
5. Little Cayman for all other fuels at the wholesale and retails supply chain levels.

Each of these market definitions is based on current information, including available information on consumer behaviour, regulatory standards, and other information. Should relevant factors change in a material way in the future, such as changes in regulatory standards affecting fuel blends, then the relevant market definitions may need to be adjusted to reflect those changes.

Not all the defined relevant markets are currently being actively supplied. In particular, certain fuels are not currently actively supplied in the Fuel Sector, and certain other fuels (including for instance aviation fuels) are not currently actively supplied in all defined geographic markets and at all defined functional levels. The relevant markets are nevertheless defined for competition analysis purposes based on information on consumer behaviour and other relevant information – should those markets become

supplied in the future, the relevant market definitions would apply. The current absence of supply in those markets will be reflected in the next step of the Market Study, which will be the competition and market assessment.

3 PRINCIPLES OF MARKET DEFINITION

Competition assessment defines relevant markets in a particular way that may not always match how market participants think about their "markets". It is therefore useful to begin by outlining how markets are thought of in competition assessment, and what factors are taken into account in competition market assessment. This section outlines these concepts.

3.1 Market definition in competition assessments

Assessing how competition is functioning in a market commonly involves defining the relevant market in which the structure of the market and the conduct of the market participants may influence the conditions of competition. Market definition of the various relevant markets in the Fuel Sector is the purpose of this present Market Definition Report.

A defined "market" in competition assessment and competition law has a particular meaning. A market for competition law and analysis purposes is the product and geographic space in which rivalry and competition take place. Market definition establishes the relevant "field of inquiry" for competition analysis; it identifies those products and locations that may potentially constrain the economic decisions of participants in that field.

A market is commonly defined by reference to a product/service and its close substitute products/services, and a geography in which there is similar substitution. Within the bounds of a defined market there is substitution: substitution between one product and another, and between one source of supply and another, in response to changing prices. So a market is the field of actual and potential transactions between buyers and sellers amongst whom there can be strong substitution, at least in the long run, if given a sufficient price incentive.

Market definition is purposive, which means that the definition of a relevant market cannot be separated from the particular competition issue under investigation. Market definition always depends on the specific facts and circumstances of an inquiry, and evidence from market participants will often be highly important. Decisions relating to market definition in previous, albeit similar, competition inquiries may also be instructive as additional guidance.

3.2 Substitution as the key to market definition

Identifying relevant substitutes is key to defining a market. Substitution involves switching from one product to another in response to a change in the relative price, service or quality of two products (holding unchanged all other relevant factors, such as income, advertising or prices of third products). Market definition begins by selecting a product supplied by market participants in a particular geographic area and incrementally broadening the market to include the next closest substitute until all close substitutes for the initial product are included.

There are two types of substitution: demand-side substitution, which involves customer-switching; and supply-side substitution, which involves supplier-switching.

It will often be possible for consumers to substitute a wide variety of products in various geographic regions for the products of the market participants to some degree. Not all of these substitutes will be included in the relevant market. For instance, some customers might view seemingly remote products as substitutes under some limited circumstances, but not under many other circumstances. Such limited substitution may not be sufficient to result in the inclusion of those partial substitutes in the defined market. On the other hand, substitution does not have to be complete or instantaneous, and products do not have to be "perfect" substitutes to form part of the same market; they merely have to be sufficiently close substitutes to offer a meaningful and close competitive constraint on the particular geographic region (or a group of products or regions) in question.

3.3 The product dimension of a market

Product markets are therefore defined by evaluating the range of products (or services) that competitively constrain the product (or service) in question. Based on economic principles, all potential alternative products should be included in the same market if customers are likely to switch readily to said alternatives (demand side substitutability), or if production can switch readily to making those alternatives (supply side substitutability), or both. Demand side substitutability is commonly the starting point for the evaluation of market boundaries, but where supply side substitution can be done rapidly and readily, and without significant additional expense, then markets should be expanded on economic principles to include those ready supply side substitutes.

3.4 The geographic dimension of a market

Concurrent with evaluating the market in relation to the products (or services) that make up the market, the market is commonly also evaluated on its geographic dimensions. A defined product market determines the variety of alternative products that competitively constrain the product in question; a defined geographic market determines the geographic range over which that competitive constraint operates. If a customer will easily switch to a different location as an alternative potential source for a product, then that alternative location would be said to be in the same geographic market by principles of demand side substitutability. An assessment of the geographic market therefore commonly requires analysing how readily consumers will substitute between products located in different geographic locations and whether those different geographic locations will competitively constrain one another. Similarly, if the producer will readily switch to supplying the product from an alternative location, then that alternative location would be said to be in the same geographic market because of supply side substitutability.

3.5 The hypothetical monopolist test of market definition

To define markets, one therefore commonly starts by analysing how readily consumers will switch to other products and geographies. A common method of analysing consumer switching behaviour is to apply the so-called "hypothetical monopolist test". The hypothetical monopolist test starts with the smallest candidate market (in terms of products and geographies) and asks: if there was a hypothetical monopolist of the product in question, and the supplier increased the price by a small but meaningful amount, would consumers readily switch to other products (or locations), thereby rendering the price rise unprofitable for the hypothetical monopolist because of strong switching away? If consumers would switch readily to another product (or location), then that other product (or location) is a close enough substitute that it should also be included in the market – and as a result the defined market boundaries should be expanded to include it. On the other hand, if consumers would not readily switch away, then that other product (or location) is not a sufficiently close substitute, and therefore should not be included in the defined market. The price rise used to apply this test is usually a hypothetical small but significant, non-transitory increase in price (known as a "SSNIP") of a given product or service, which is commonly taken to be a long-lasting price rise of 5% or 10%.

However, while the hypothetical monopolist is a useful tool and "intellectual aid" for analysis, it is less often strictly applied to factual circumstances in a competition assessment, because it typically requires large amounts of complex data, and those data are often not sufficiently available. Consequently, in many competition assessment, other quantitative and qualitative information must be used as the basis of market definition. Nevertheless, the hypothetical monopolist test provides the analytical foundation for how such other information is applied, and the questions it seeks to answer: will consumers readily switch to other products and locations, or will they not readily switch?

3.6 Other factors to consider in market definition

A wide range of different information can be useful in different circumstances to identify close demand-side and supply-side substitutes and therefore to determine the product and geographic boundaries of defined markets. These include the following:

- Information from market participants to identify and assess the strength of substitution possibilities.
- The function or end use of the product.
- The physical and technical characteristics of the product.
- The costs to consumers of switching purchases between the product and potential substitutes, and of obtaining supply from alternative regions.
- Any limitations on the ability of customers to access alternative products, or sources of supply in alternative regions.
- The views and past behaviour of buyers regarding the likelihood of substitution between products
- Evidence of buyers switching to other products in response to price increases in the recent past.

- Evidence of producers redeploying their production capacity in response to price increases in the recent past.
- Costs of switching production and distribution systems from another product line to a product that is closely substitutable with the relevant product
- Views, business records and past behaviour of suppliers of the relevant products regarding the impact of price and marketing decisions by suppliers of potential substitute products on their own pricing and marketing decisions.
- Relative price levels and price movements of the product compared to potential substitutes, and relative to different geographic sources of supply.
- The portability of the relevant product as determined by its perishability, weight, etc.
- Transportation costs to move the relevant product between regions (particularly the transportation costs as a proportion of total value of the product)
- Any regulatory or other practical constraints on suppliers selling alternative products or selling to alternative regions.
- Records relating to trade flows and the actual movement of customers and/or suppliers between geographic regions, especially related to changes in relative prices across regions in the recent past.
- Views and business records of buyers and suppliers regarding the likelihood of switching between geographic sources of supply.

In some circumstances, a market may comprise several products or regions that overlap with each other in "chains", even where the extreme ends of the "chains" are not directly closely substitutable. An example is in geographic market definition where transport costs matter. Consumers or suppliers might be limited to certain areas around their location (a consumer's residence, or a supplier's plant) because of the existence of transport costs. However, if the distribution of locations of the different consumers or suppliers is such that there are strong overlaps between the areas around different consumers or plants, then it may be that the pricing of the relevant products will be constrained by a chain substitution effect, and lead to the definition of a broader geographic market. As a practical matter, for a chains of substitution effect to be established for market definition purposes, this would require showing price interdependence across the chain, including determining that price levels at the opposite ends of the chain are sufficiently close related to each other for the whole chain to be considered as part of the same market.

3.7 The resulting defined market

The resulting defined market will be the narrowest set of products (or services), over the narrowest geographic range, in which the products and locations are sufficiently close constraints on each other that the market is a sufficiently unified (or homogeneous) field of rivalry between different producers.

4 PRODUCT MARKETS

The previous Section 3 outlined the principles adopted for market definition in standard competition analysis and by most modern government competition authorities. In this section, those principles are applied to the Fuel Sector in the Cayman Islands to determine the product dimensions of the market definitions that we recommend should be applied to the Fuel Sector.

4.1 The Industry levels

Fuels generally pass through a number of stages and hands before reaching their final customers.

Over its entire production cycle, the fuels industry is commonly considered to be divided into two main segments:

- The "**upstream**" segment, consisting of the exploration of oil, development, extraction, transport and sales of crude oil in relation to petroleum-derived products, and analogous production activities in relation to other non-petroleum fuels; and
- The "**downstream**" segment, consisting of oil refining, primary transport and storage of refined products, wholesale operations, secondary transport and storage and retail sales in retail stations on and off motorways and other roadways.

The downstream segment of fuels products may be more finely divided into different activities and production levels in accordance with the supply chain segments of fuels. The supply chain of petroleum products in the downstream segment involves several stages. Three main stages in the value chain of refined products may be highlighted:

- The **Refining or Importing of Fuels** – this stage refers to the refining of crude oil to produce petrol or diesel in the case of petroleum-derived fuels, the blending of fuel components, or the import of fuels from abroad.
- The **Wholesale Transportation and Bulk sales of Fuels** – this stage is where the fuels (which are the refined products in the case of petroleum-derived fuels) are then transported to large capacity storage which serves as a distribution terminal. Transport modes generally may include marine tankers, pipelines, road tankers, rail, and barges – not all these transport modes are used in the Cayman Islands. Large-scale operators may resell part of their purchases in bulk to other operators, to retailers and to major industrial clients. This is a second level of distribution, as it normally involves lower quantities when compared to ex-refinery sales. The refined products are transported to the customer (either a wholesaler or a retailer) by road tanker or truck bearing ISO containers.
- The **Retailing of Fuels** – this stage refers to sales in retail stations to final consumers, typically from retail stations in the case of road vehicles, marinas in the case of marine vessels, or from other retail outlets or channels in the case of other fuels. Different categories of retail stations exist: retail stations selling under

the brand of oil companies, independent retail stations, and retail stations selling under the brand of retail distribution chains.

There are several markets in the fuel sector, placed at different stages of the value chain, with diverse supply and demand characteristics. The various markets have different geographic dimensions, from markets with a global scale to markets which are national, regional or local in scope. In the short term, price movements in these markets may not always go together. Nonetheless, these groups of markets are closely interconnected, and although time lags and asymmetries in the adjustment of prices downstream to changes in the prices upstream exist, prices in these different markets are interrelated in the long term.

4.2 The industry levels in the Cayman Islands

The Fuel Sector in the Cayman Islands does not include any material activities in the upstream sector: there is no crude oil extraction in the Cayman Islands, nor is there any large commercial-scale production of any other non-petroleum fuels beyond local production of small quantities of biodiesel. None of the relevant upstream markets therefore exist in the Cayman Islands, and these are therefore not considered further in the Market Definition Report. However, these upstream markets *are* further considered in the Market Assessment Report to the extent that they influence the competitive dynamics of markets that exist in the Fuel Sector in the Cayman Islands.

Similarly, at the "highest" level of the downstream segments, no refining takes place in the Cayman Islands, and there is no reasonable prospect that there will be refining in the foreseeable future. All fuels of meaningful commercial quantities in the Cayman Islands are imported. Refining of fuels is therefore also not considered further in the Market Definition Report, although it is considered in the Market Assessment Report to the extent that the competitive dynamics in refining influences markets existing in the Fuel Sector in the Cayman Islands.

The three activities that do take place directly in the Cayman Islands are the remaining three activities in the Fuel Sector supply chain: importing of fuels, wholesale distribution of fuels, and retail distribution of fuels. These three activities are therefore considered as the three potential candidate supply chain levels for market definition.

4.2.1 Importing of fuels

Importing of fuels is the bulk purchase of commercial quantities of the relevant fuel from abroad and the shipping or other transporation of them to the Cayman Islands. In the Cayman Islands, fuel is essentially imported by two different routes: (1) as bulk shipments brought in dedicated vessels and transferred ashore by way of a pipeline to bulk storage tank facilities at Jackson Point on Grand Cayman and Creek on Cayman Brac, and (2) in standardised International Organisation for Standardisation ("**ISO**") compliant container-sized tanks brought in container vessels and brought ashore by way of the container port on Grand Cayman and by barge to Cayman Brac and Little Cayman.

Purchasers of imports in the Fuel Sector are principally Cayman Islands commercial purchasers and bulk users. The suppliers are manufacturers and refiners abroad and the providers of shipping and other transporation services.

As outlined in Section 3 above, a central question in market definition is whether customers of a particular product or service (or location) would readily switch to an alternative product or service (or location) in the event of a certain price rise e.g. a permanent 5% price rise in the product in question (a SSNIP). In the case of the Fuel Sector and the importation of fuels, the following points are most relevant in delineating the industry level of the markets:

- Similarly, while switching from retail to wholesale/bulk local sources may in theory be possible, it is unlikely to take place in sufficient quantities to competitively constrain imports. This is for similar reasons: local bulk sales are ultimately entirely sourced from imports, and invariably have higher prices than pure import landed prices because of additional costs and margins. Switching to local bulk sales, while it may take place in restricted quantities including in cases of temporary supply interruptions, in the general case switching will not be strong enough to merit the inclusion of imports and wholesale/bulk sales in the same market.
- The geographic scope for the sourcing of imports is by definition outside the Cayman Islands, and is at least regional (North America and adjacent regions) and potentially world-wide.
- There is little prospect that an importer of fuels would turn to local retail sources as an alternative to importing fuels if the price of imports rose by a SSNIP, as the local retail sources are all themselves entirely dependent on imports. Retail prices are in almost all cases invariably substantially higher, as retail prices also incorporate additional costs and margins from the wholesale/bulk and retail supply chain elements, which pure imports ordinarily do not need to take into account. Retail unit prices are therefore generally too high (compared with the comparable import unit prices) to incentivise sufficient switching. Moreover, switching to local retail sources for bulk quantities is in most cases not practical and therefore not realistically feasible. Switching would therefore not be sufficient to merit the inclusion of imports and retail sales in the same market.

As a result of these considerations, markets for fuels should be defined separately at the landed import level distinctly from the wholesale/bulk and retail levels of the supply chain.

4.2.2 Wholesale and Bulk Distribution of fuels

The wholesale and bulk distribution of fuels is the part of the supply chain where fuels, once imported (in the case of the Cayman Islands), are then transported to large capacity storage, and transported and on-sold to other operators, to retailers and to major industrial clients.

This functional level ultimately concerns the sale of fuels within the Fuel Sector in the Cayman Islands. From this very broad perspective, this functional level therefore comprises of broadly comparable activities to those in the retail level, which also

concerns the sale of fuels to customers. One must therefore consider whether wholesale and retail should be considered to be within the same defined markets for competition purposes. The following points are the most relevant in delineating the wholesale and retail segments of the Fuel Sector:

- It is conventional in the industry to distinguish between wholesale and retail sales as comprising quite different activities and market dynamics.
- It is similarly conventional within competition analysis in most jurisdictions to distinguish wholesale and retail sales, as the functional activities, market participants, and market dynamics in these different segments are quite distinct from one another. The buyers in the wholesale/bulk segments are generally other operators, retailers, and large-scale industrial clients; the buyers in the retails segments are generally end consumers and small-scale commercial buyers.
- These quite distinct customer groups will generally not substitute sufficiently or plausibly between bulk-scale purchases and retail-scale purchases in the face of a SSNIP. Bulk sales are conducted at large volumes that are generally incompatible with the volumes needs of retail customers. Bulk sales also require storage facilities that retail customers generally do not possess. Moreover, as outlined above, retail prices are almost invariably higher than wholesale prices, because they involve an additional step in the supply chain and thereby involve additional costs and margins. It is therefore highly unlikely that sufficient wholesale customers would switch to retail sources in the face of a SSNIP in the ordinary course of these markets' operation.

4.2.3 Retail Distribution of fuels

Retail distribution of road fuels commonly takes place through retail stations for the fuelling of road vehicles. In case of other fuels such as home cooking fuels, retail distribution commonly takes place through other retail outlets or home delivery by the supplier. Retail distribution is essentially the sale of fuels in quantities and through outlets amenable to the final end consumer of these products (other than large bulk sales to commercial customers).

As outlined immediately above, retail customers would not be expected to switch to bulk sources (imports or wholesale sources) in the face of a SSNIP.

4.2.4 Market Definition at the supply chain level

As a result of the considerations in this section, markets in the Fuel Sector should be defined separately for:

- The importation of fuels;
- The wholesale or bulk sales of fuels; and
- The retail sale of fuels.

4.3 The Products

A number of fuels are sold in the Fuel Sector in the Cayman Islands and are potentially covered by the URC Law, the DS Law, the DS Regulations, and the FMR Law. This section outlines the different fuels potentially at issue, and the appropriate product market definition in relation to those fuels.

4.3.1 Gasoline (Petrol)

Gasoline (also known as "petrol") is a petroleum-derived flammable liquid. It is produced in oil refineries.

Gasoline is primarily used as a fuel in internal combustion engines that are designed for gasoline use. In practice, gasoline-fueled internal combustion engines are primarily found used in passenger cars, with smaller numbers in heavier vehicles such as buses.

From consumers' perspective, different grades of gasoline are further differentiated according to their octane ratings. The octane rating is a standard measure of an engine fuel: the higher the octane rating, the higher the fuel performance in a gasoline engine, but also the higher the price consumers are willing to pay.

The principle issue for determining the product dimension of market dimension is whether or not consumers, when faced with a price rise (SSNIP) in relation to the product in question, will readily switch to other alternatives in large numbers, in which case the market definition must be expanded to include the alternative(s), or whether they will reduce their consumption of the product somewhat but will not readily switch to alternatives, in which case the market definition should not be expanded to include the alternative(s). Where there is evidence of switching, quantitative studies of the kind outlined in Section 3 may be the best evidence to determine the extent of switching. However, where there are clear constraints on switching of a regulatory or technical nature, then this may be sufficient evidence to determine the market definition.

Internal combustion engines are designed for particular fuels. Engine modifications may permit some substitution of fuels in certain specific cases, but in the general case it is not possible to substitute a different fuel for that fuel for which the engine was designed. For instance, if one puts diesel fuel or kerosene into an engine designed for gasoline fuel, then the engine will not operate (at best) and may require repair or be ruined.

This is sufficient to conclude that gasoline is generally not a viable substitute with other fuels. Specifically, the ordinary consumer, when faced with a 5% increase in the price of gasoline relative to the price of diesel, will not readily fill their car with diesel instead, because their car will not work and may be ruined.

One can therefore readily conclude that gasoline is manifestly not in the same product market as diesel, kerosene, hydrogen, or most other fuels.

Two issues remain in relation to defining the product dimension of gasoline markets:

1. Should one define separate markets for different grades of gasoline according to different octane ratings? The evidence suggests that different grades of gasoline should all be defined as constituting a single market. First, from an

engineering perspective, different grades of gasoline are closely substitutable for one another in gasoline-designed engines. Second, there is good evidence that consumers *are* sufficiently price sensitive as regards the relative prices of different ratings of gasoline, and readily switch between them in response to changes in relative prices. Third, there is ready supply-side substitutability between different grades of gasoline as they are all delivered using the same equipment and facilities, which can readily accommodate a supplier switching the grade of gasoline being delivered at the pump. Fourth, no major competition authority has defined separate markets for different grades of gasoline, but authorities have instead generally defined the relevant market as being the market for "gasoline" of all grades.

2. Should ethanol and ethanol blends be defined as constituting separate market, or should they be defined as belonging to the same market as gasoline? This issue is addressed in the sections immediately following.

Market participants have raised the issue of whether racing fuel may be defined as comprising part of the product market for gasoline. Racing fuel is very high octane gasoline containing other boosting agents, and it is currently imported into the Cayman Islands in small but commercial quantities. We judge that racing fuel ought to be defined as part of the general gasoline market. Performance differences aside, it is fully functionally interchangeable with regular and premium gasoline in engines for most purposes. To our understanding racing fuel gasoline is governed by the same safety standards as regular gasoline, meaning that there is no impediment to consumer substitutability from the regulatory perspective. However, should separate safety standards apply to racing fuel in the future in a way that materially reduces the ability of consumers to switch between regular gasoline and racing fuel gasoline, then this may alter the analysis sufficiently in favour of racing fuel being defined as a separate market.

4.3.2 Ethanol

Ethanol fuel is the chemical ethyl alcohol (C_2H_5OH). It is produced industrially by ethanol fermentation of glucose from crops such as corn and sugarcane, and as a product of petroleum by hydration of ethylene or acetylene.

Industrially-produced ethanol is primarily used as a fuel in internal combustion engines. Ethanol is also the same type of alcohol found in alcoholic beverages.

Pure ethanol (not blended with gasoline, diesel, or other petroleum-derived fuels) can only be used as a fuel in engines that have been designed or modified for that purpose. Vehicles that may run on pure hydrous ethanol (also called "E100") are currently principally in use in Brazil as a result of sustained government policy to promote "neat ethanol" vehicles.

This is sufficient to conclude that pure ethanol is not generally a viable substitute for gasoline or other road fuels. Specifically, similar to lack of substitution between gasoline and diesel, the ordinary consumer faced with a 5% increase in the price of gasoline relative to the price of pure ethanol, will not readily fill their car with ethanol instead. Similarly, ethanol is also not a ready substitute for other road fuels such as diesel, or other non-road fuels.

One can therefore readily conclude that ethanol is not in the same product market as gasoline, diesel, kerosene, hydrogen, or most other fuels.

4.3.3 Ethanol Blends

Ethanol blended fuels are mixtures of gasoline and ethanol in varying proportions. They are primarily used in internal combustion engines.

The degree to which ethanol blends can be used in internal combustion engines as substitutes for pure gasoline depends on the proportions of gasoline and ethanol in the blend. Any mixture of 10% or less ethanol with the remainder being gasoline can generally be used in most modern gasoline-powered vehicles without the need for any modification of the engine or fuel system in the vehicle. Gasoline/ethanol blends with 10% ethanol (known as "E10") or lower proportions of ethanol such as 5% ("E5" gasoline) and 7% ("E7" gasoline) are in common, legal use in a number of countries and jurisdictions including the United States of America, Jamaica and the Cayman Islands.

At blend ratios with more than 10% of ethanol, substitution between pure gasoline and ethanol/gasoline blends becomes more difficult. The expert evidence suggests that there is a "blend wall" of 10% ethanol above which the blends can no longer be substituted for pure gasoline without consequences or difficulties, with these adverse consequences increasing as the proportion of ethanol increases. Blends with 15% ethanol ("E15" gasoline) are also in use in some locations and for some motor vehicles, but subject to greater restrictions. For instance, in the United States the Environment Protection Agency has authorised the use of E15 gasoline in passenger cars with a model year of 2001 or later, but not for cars older than this, and not for use in motor-cycles, heavy-duty vehicles, or non-road engines. Moreover, most vehicles in current production are not approved by their manufacturers as compliant with E15 gasoline; moreover, a number of major vehicle manufacturers have warned that the warranties attached to their vehicles do not cover damage related to the use of E15 gasoline.

Marine equipment and marine vessels commonly have a lesser ability to tolerate ethanol blending in gasoline than do modern road vehicles, because the ingression of traces of water that is more likely in a marine environment is not suitable for ethanol blended gasoline, meaning that ethanol blends are generally not recommended for (and commonly prohibited by the manufacturers of) marine engines. As a result, gasoline customers in a marine environment are less likely to substitute readily between pure gasoline and ethanol blended gasoline. However, the appropriate analysis in market definition as to whether a potential substitute is not whether *all* consumers would switch to the substitute in the face of a SSNIP price rise; the appropriate analysis is whether *sufficient* consumers might switch to make the price rise unprofitable, in which case the market definition is widened. In the case of marine engines, this means that the inability of some gasoline-fueled engines to tolerate ethanol blends does not prevent a market definition that includes ethanol blends, as long as a sufficiently large number of customers operating road vehicles are able to and would readily switch to ethanol blends. In the Fuel Sector, the substantial majority of gasoline sales are in respect of road vehicles able to substitute to blends.

As a consequence, we judge that ethanol-gasoline blended fuels with 10% or less of ethanol are readily substitutable with pure gasoline and are in the same product market as pure gasoline. However, ethanol-gasoline blended fuels with more than 10% of ethanol are *not* sufficiently readily substitutable with pure gasoline to satisfy the conditions for being in the same market.

As a result, we conclude that there is a separate market for competition purposes for ethanol-gasoline blended fuels with more than 10% of ethanol.

This market definition is dependent on the state of technology of internal combustion engine production as is available in motor vehicles available to the mass market, associated regulatory standards regarding the "blend wall" for ethanol-gasoline blended fuels, and other related factors. Should the state of engine technology change so that a sufficient number of motor vehicles can readily use higher-level ethanol blends without modification or risk of engine damage, then the present product market assessment may be changed in line with changing technology. Similarly, should regulatory standards change in a way materially affecting the ability and willingness of consumers to substitute between potential alternatives, then the present product market definition would likely need to be adjusted in accordance with those changes. However, a changing product market definition would require that a substantial proportion of vehicles in current use can use the higher-level ethanol blends without adverse consequences; as vehicles currently in use are expected to have remaining lives of many years, any change in this market definition would only likely occur on a time horizon of many years in the future, and would require evidence that a sufficient proportion of cars on the road can use the higher-level blends highly interchangeably.

4.3.4 Diesel

Petroleum-derived diesel (hereafter known simply as "**diesel**") is a petroleum-derived flammable liquid. It is produced in oil refineries as a fractional distillate of petroleum fuel oil.

Diesel is used in internal combustion engines that are designed for diesel use. Diesel-powered engines have a wider use than gasoline-powered engines. Diesel-powered passenger cars are commonly available, and widely used in some areas (in particular Europe) but less in other areas (in particular North America). However, heavy vehicles such as buses, trucks, tractors, off-road vehicles, and military vehicles are more commonly equipped with diesel engines and much less commonly with gasoline engines. One reason is that diesel engines are particularly fuel efficient (relative to gasoline engines) when run at part-load, such as is relatively common for heavier vehicles. Diesel is also in common use in heavier industrial machinery, including as the primary fuel driving turbines in the generation of electricity; in the Cayman Islands, aside from a relatively small amount of peak load solar capacity, essentially all commercial electricity is generated using diesel-fueled turbines.

From consumers' perspectives, different grades of diesel are further differentiated according to their sulphur contents, with ultra-low-sulphur diesel ("**ULSD**") referring to diesel that has been refined with substantially lowered sulphur contents. Currently, virtually all diesel in the North American and European markets and in the Cayman

Islands for vehicle use is ULSD. Diesel fuels are also differentiated according to their cetane number ratings, with fuels with higher cetane numbers having higher performance characteristics and commonly commanding higher prices in the form of "premium" diesel or similar.

As discussed earlier, internal combustion engines are designed for particular fuels, and different fuels cannot generally be substituted for one another in such engines. This is sufficient to conclude that diesel is generally not a viable substitute with other fuels. The ordinary consumer, when faced with a 5% increase in the price of diesel relative to the price of other road fuels, will not readily fill their car with those other fuels instead.

Similar consideration apply in relation to the other uses of diesel. A significant use of diesel in the Fuel Sector in the Cayman Islands is in electricity generation, with the electricity generating companies being bulk purchasers of diesel from the wholesalers for this purpose. Evidence gathered from the market establishes that the current electricity generating assets in the Cayman Islands could from the technical perspective not be switched to using other fuels without very significant capital works; moreover, there has been no switching in the face of diesel price fluctuations that would be sufficient to constitute a "SSNIP" price change. As a result, one can conclude that diesel is in a separate market to other fuels at the wholesale/bulk level as well as at the retail level.

One can therefore readily conclude that diesel is not in the same product market as other fuels.

Two issues remain in relation to defining the product dimension of diesel markets:

1. Should one define separate markets for different grades of diesel according to their sulphur contents? The evidence suggests that different grades of diesel should all be defined as constituting a single market. First, from an engineering perspective, different grades of diesel are almost perfectly substitutable for one another in diesel-designed engines; the different sulphur contents do not generally prevent such substitution. Second, there is ready supply-side substitutability between different grades of diesel as they are all delivered using the same equipment and facilities, which can readily accommodate a supplier switching the grade of diesel being delivered at the pump. Third, no major competition authority has defined separate markets for different grades of diesel, but authorities have instead generally defined the relevant market as being the market for "diesel" of all grades.
2. Should biodiesel and biodiesel blends be defined as constituting separate market, or should they be defined as belonging to the same market as diesel? This issue is addressed in the sections immediately following.

4.3.5 Bio Diesel and Bio Diesel Blends

Bio diesel is a flammable liquid derived from oils or fats through an industrial process also involving alcohol.

Bio diesel has essentially interchangeable uses with petroleum-derived diesel. It can be used in diesel-powered engines as pure bio diesel or blended with petroleum-derived diesel, subject to certain limitations.

Blends of bio diesel and petroleum-derived diesel are products most commonly distributed for use in retail diesel markets. Blends are commonly indicated by a "B" factor, with for instance B100 referring to pure 100% bio diesel, B20 referring to 20% bio diesel blended with 80% petroleum-derived diesel, and similar.

As with petroleum-derived diesel, there is an upper limit (a "blend wall") on the proportion of bio diesel that can be blended with petroleum-derived diesel without potential adverse consequences for the engine or consumers. Blends of 5% biodiesel or less can almost universally be used fully interchangeably with pure petroleum-derived diesel; and blends of 20% bio diesel or less can generally also be used in diesel equipment without modification or only minor modifications necessary. Blends of above 20% bio diesel (including pure bio diesel, B100) may require more substantial modifications.

As a consequence, we judge that diesel-biodiesel blended fuels with 20% or less of biodiesel are readily substitutable with pure diesel and are in the same product market as pure diesel. However, diesel-biodiesel blended fuels with more than 20% of biodiesel are *not* sufficiently readily substitutable with pure diesel to satisfy the conditions for being in the same market.

As a result, we conclude that there is a separate market for competition purposes for diesel-biodiesel blended fuels with more than 20% of biodiesel, including pure biodiesel.

As was also observed in relation to gasoline-ethanol blends, this market definition is dependent on the state of technology of internal combustion engine production as available in passenger and other vehicles and available to the mass market, associated regulatory standards regarding the "blend wall" for diesel-biodiesel blended fuels, and other related factors. Should the state of engine technology change so that a sufficient number of motor vehicles can readily use higher-level biodiesel blends without modification or risk of engine damage, then the present product market assessment may be changed in line with changing technology. Similarly, should regulatory standards change in a way materially affecting the ability and willingness of consumers to substitute between potential alternatives, then the present product market definition would likely need to be adjusted in accordance with those changes. However, a changing product market definition would require that a substantial proportion of vehicles in current use can use the higher-level biodiesel blends without adverse consequences; as vehicles currently in use are expected to have remaining lives of many years, any change in this market definition would only likely occur on a time horizon of many years in the future, and would require evidence that a sufficient proportion of cars on the road can use the higher-level blends highly interchangeably.

4.3.6 Jet Fuel and Kerosene

Jet fuel refers to a class of petroleum-derived flammable liquids produced in oil refineries. The majority of jet fuel commercially sold is based on kerosene, a petroleum-based flammable liquid; other jet fuels are based on naphtha, a flammable liquid produced from petroleum distillates or natural gas condensates. There are different types of jet fuel commercially available, with the different types being defined

according to performance specifications. Type Jet A-1, a kerosene-based jet fuel, is the standard jet fuel used in most of the world, except in the former Soviet states where the kerosene-based TS-1 is also in common use. Naphtha-based jet fuels are generally used only in military aviation rather than in civil aviation, and are therefore not considered further in this report.

Jet fuel is based on kerosene, but refined to a higher standard, with the addition of additives to aid in clean burning and to prevent ice formation and corrosion.

As with combustion engines generally, aviation turbine engines are designed to operate using specific fuels, and other fuels cannot ordinarily be substituted without harm to the engine. Accordingly, users of jet fuel are prevented by technical restrictions from substituting to other fuels, and would therefore manifestly not substitute even in the face of an appropriate price rise (a SSNIP).

Accordingly, one can define the product dimension of this market as being for "jet fuel and kerosene."

4.3.7 Propane (LPG)

Propane is a flammable hydrocarbon. It is produced as a by-product of petroleum refining and natural gas processing. Propane is a gas at standard temperatures and pressure, but it is commonly compressed to a liquid for transportation and storage. In its liquid form, it is also commonly known as liquified petroleum gas ("**LPG**").

Commercially available propane is generally not pure C_3H_8, but rather is C_3H_8 blended with other hydrocarbons such as ethane, propylene, or butanes, in proportions varying by location and commercial factors. The United States Heavy Duty 5 (HD-5) standard for propane is blended with no more than 5% propylene along with allowable butanes and ethane according to the relevant ASTM International standard. There are other standards of propane, such as HD-10 which contains no more than 10% propylene along with allowable butanes and ethane; HD-10 has not been considered for importation into the Cayman Islands. For certain uses such as cooking fuels, propane can be mixed with higher proportions of butane; depending on the applicable safety standards, propane/butane mixes with butane proportions of up to 50% may be used.

As LPG, propane is commonly transported and stored in standardised steel cylinder tanks. Propane is commonly used as a cooking fuel both in home use and for portable cooking facilities such as barbeques, for home heating, and for small-scale electricity generation such as home generators. Propane also has certain commercial and industrial uses.

As with combustion devices generally, including home cooking devices and similar devices powered by propane, they are designed to operate using specific fuels, and other fuels cannot ordinarily be substituted without harm to the device, or danger to the operator. Accordingly, users of propane in such devices are prevented by technical restrictions from substituting to other fuels, and would therefore manifestly not substitute even in the face of an appropriate price rise (a SSNIP). However, propane users are not similarly prevented from substituting to propane-based fuels blended with butane or ethane up to the blend proportions tolerated by propane equipment.

Accordingly, one can define the product dimension of this market as being for "propane gas and propane gas blends able to be used on propane-based equipment."

4.3.8 Natural Gas (LNG and CNG)

Natural gas has is a flammable mixture of hydrocarbons consisting mainly of methane, mixed with certain amounts of ethane. It is produced from hydrocarbon natural deposits. Natural gas is a gas at standard temperatures and pressure, but it liquifies when sufficiently cooled in temperature. In its liquid form at cool temperatures, natural gas is also commonly known as liquified natural gas ("**LNG**"); in its compressed form at ambient temperatures, it is also commonly known as compressed natural gas ("**CNG**"). Natural gas is commonly transported through long-distance pipelines in a gaseous but compressed state, or as ocean-going cargo in its LNG form. The principle difference between LNG and CNG is the storage method; the underlying fuel in both cases is natural gas.

Natural gas has a wide range of uses, including large-scale electricity generation, small-scale domestic use including home heating and cooking, and as an industrial feedstock in a variety of processes including fertilizer manufacturing. In its LNG form, its uses include domestic uses and to power certain types of vehicles, including larger trucking, and passenger cars in some jurisdictions.

As with combustion engines generally, natural gas-fueled devices including electricity generators and domestic use devices are designed to operate specifically using natural gas, and other fuels cannot ordinarily be substituted without harm to the engine, generator, or device. Accordingly, users of jet fuel are prevented by technical restrictions from substituting to other fuels, and would therefore manifestly not substitute even in the face of an appropriate price rise (a SSNIP). Similar lack of switching is evident in relation to potential bulk uses of natural gas in electricity generation. A significant potential use of natural gas in the Fuel Sector in the Cayman Islands is in electricity generation, as a long-term potential substitute for diesel-fueled generators. However, switching from diesel to natural gas, or from natural gas to diesel or any other generation fuel, would require very significant capital works and refitting of the relevant plants, and therefore switching could not be readily done and would not likely occur merely as the result of a small price rise (a SSNIP); rather, switching would occur as part of a much larger strategic and long-term planning process considering many different strategic and economic factors. Moreover, there has evidently been no switching in fuels in the face of natural gas or other fuel price fluctuations that would be sufficient to constitute a "SSNIP" price change.

As a result, one can conclude that natural gas when introduced will be in a separate market to other fuels at the wholesale/bulk level as well as at the retail level.

4.3.9 Aviation Gas

Aviation gas (also known as "**avgas**") is a petroleum-derived flammable liquid. It is produced in petroleum refineries.

Aviation gas is used as an aviation fuel in certain types of non-turbine internal combustion engines used in aircraft, predominantly propeller-driven aircraft.

Modern gasoline is not substitutable in its uses with aviation gas. Gasoline on sale in most jurisdictions today, including in the Cayman Islands, is unleaded gasoline permitting the use of catalytic converters. In contrast, the most commonly used grades of aviation gas are still leaded, for mechanical engine reasons including to prevent a phenomenon known as "engine knocking". Certain specific aviation gas-fueled aviation engines, including engines in certain ultralight aircraft, are capable of taking gasoline not containing ethanol as a substitute for aviation gas. However, for the majority of non-turbine aviation engines, ordinary motor gasoline cannot be used as a substitute for aviation gas.

Accordingly, one can conclude that aviation gas is in a separate market to gasoline and other petroleum-derived fuels.

4.3.10 Butanes

Butane is a flammable hydrocarbon. Butane is a gas at standard temperatures and pressures but it liquifies relatively readily. It is commonly found dissolved in crude oil.

Butane is commonly used as a blend with or additive to other hydrocarbons including gasoline and LNG, as a feedstock in certain industrial processes, and as a fuel for small-scale uses including in cooking gas cylinders and in cigarette lighters.

As with other fuels, the core test for market definition is whether or not consumers would readily switch to alternatives in the face of a small increase in the price of butanes (a SSNIP). Our understanding is that in most of its uses, other fuels cannot be readily substituted for butanes in existing butane-based equipment. For instance, pure or predominately butane gases and propane-based gas require different equipment (different gas injectors) for use with cooking stoves, as the air-to-gas ratios required for each fuel is quite different; as a result, switching between them would require investment in capital equipment, which sharply reduces the prospect of ready switching.

Accordingly, one can conclude that butane gas including predominately butane gas blends is in a separate market to other fuel gases and other fuels.

4.3.11 Hydrogen for use in Fuel Cells

A fuel cell is an electrochemical cell that converts a fuel and oxygen into electricity through electrochemical reactions inside the fuel cell. Fuel cells require a continuous source of fuel and oxygen to generate electricity continuously. There is a wide variety of designs, fuel sources, and applications of fuel cells. Fuel cells fuelled by hydrogen are under development for use in powering passenger vehicles, and there has been initial small-scale commercial release of several models by large car manufacturers. The fuel used in these vehicle is hydrogen.

Hydrogen is an uncompounded chemical element, and the most abundant chemical substance in the universe. In its natural state it exists as a gas at standard temperature and pressure, but it liquifies at extremely low temperatures. However, the gas is very

rare on Earth, and almost all of the hydrogen existing on Earth exists in compounded form, including in water, all hydrocarbons, and almost infinite other compounds. Its uncompounded form is predominantly produced in a variety of chemical and thermochemical processes and through the electrolysis of water.

It should be noted that there is currently no existing market for hydrogen in the Cayman Islands for use in fuel cells. However, as technology in fuel cell vehicles develops and becomes commercially viable, one may expect that this market would develop in the Cayman Islands. Accordingly, this potential future market is designed here in the Market Definition Report in anticipation of its coming into existence, and is addressed in more detail in the Market Assessment Report concerning future market developments to be taken account in an updated regulatory framework for the Fuel Sector.

Fuel cells are an entirely separate technology from the combustion engines (internal and otherwise) generally under focus in this report. There is simply no possibility at all for the substitution of hydrogen for any petroleum-derived or other such fuel.

Hydrogen is therefore in a separate market from other fuels on a product dimension.

4.3.12 Acetylene

Acetylene is a flammable hydrocarbon. It is most commonly manufactured as a by-product of the combustion of other hydrocarbons. Acetylene is a gas in its untreated form at standard temperatures and pressures, but as it is unstable it is commonly converted into solutions in other liquids and thus handled in liquid, dissolved form.

Acetylene has certain highly specific industrial-type applications. A primary use is in welding, as the fuel used to power oxyacetylene gas welding torches; the welding equipment used does not operate with alternative fuels. Acetylene also is used as the power source in certain specific types of lighting, including LED lighting, although its use for lighting in mining operations has essentially been phased out because of safety concerns. Acetylene also is used as a feedstock in certain chemical processes, although this use is in sharp decline due to environmental considerations.

There is some, limited substitutability between acetylene and propylene (also noted in the following section on propylene). However, in respect of the majority of the uses of acetylene, neither propylene nor any other fuel is technically substitutable for acetylene. One can therefore conclude that there is not sufficient substitutability between acetylene and propylene for these two gases to create a sufficient competitive constraint on one another to justify defining a market that includes both gases (or any other alternative gas).

Acetylene is therefore in a separate market on its product dimension from other gases and fuels.

4.3.13 Methanol

Methanol (also known as methyl alcohol) is a chemical primarily produced by industrial manufacturing processes. It is a flammable liquid at standard temperatures and pressures.

It is predominantly used as a precursor chemical to a wide variety of other industrial chemicals, including formaldehyde, ether, and a wide variety of other specialised chemicals.

Methanol has been proposed as a potential alternative fuel source to petroleum-derived hydrocarbons for internal combustion engines, either blended with gasoline or independently. However, the adoption of methanol as a motor fuel has been extremely limited, currently being confined to certain motor racing sport engines. Methanol is not substitutable for gasoline or diesel in standard commercially-available vehicle engines.

There is currently no existing market for methanol in the Cayman Islands for use as a road or other fuel (although relatively small quantities are used as a feedstock in the local production of biodiesel). Moreover, the prospects of the large-scale commercial adoption of methanol as a fuel (as opposed to certain niche activities such as motor sports) appear unclear. However, should this situation change as technology evolves, and should the use of methanol as a road fuel become commercially viable, then the use of methanol as a fuel would presumably fall under the broader regulatory framework for the Fuel Sector. Accordingly, this potential future market is designed here in the Market Definition Report in anticipation of its coming into existence, and is addressed in more detail in the Market Assessment Report concerning future market developments to be taken account in an updated regulatory framework for the Fuel Sector.

Methanol cannot currently be used as an alternative fuel in any engines designed to be fuelled by other fuels such as gasoline or diesel. Similarly, methanol-fueled engines cannot accept other fuels as substitute fuels. Methanol is therefore in a separate market from other fuels on a product dimension.

4.4 Other Potential Future Fuels

The fuels for which markets are defined in this Report are those currently in use in the Fuel Sector or which may realistically come into use in the foreseeable future. In addition to these fuels, there are other fuels that are not currently in the foreseeable fuels mix for the Cayman Islands. Nevertheless, there may be a sufficient change in markets, consumer demand, and technology which would introduce such new fuels into the potential fuels mix in the Fuel Sector. By way of example, such potential future fuels may include:

- Propylene;
- Ethylene;
- Butylene;
- Butadiene; and
- Fuels for which the technology is not yet available.

Should these or other new fuels be introduced in the future, then there may be a need and justification for markets to be defined by OfReg for such new fuels. Such a market definition process including the product dimension of the market definition would broadly follow the same analytical approaches as are used in this Market Definition

Report and would be based on comparable considerations, which may include a similar public consultation process.

5 GEOGRAPHIC MARKETS

Section 3 outlined the principles adopted for market definition in standard competition analysis and by most modern government competition authorities. In the previous Section 4, the product dimensions of the market definitions of the Fuel Sector were outlined. In this section, the market definition principles are applied to the Fuel Sector in the Cayman Islands to determine the geographic dimensions of the market definitions that we recommend should be applied to the Fuel Sector.

5.1 Geographic markets – consumer behaviour is the main factor

The core principle of geographic market delineation is equivalent to the product dimension – to what extent will consumers (or suppliers in the case of supply-side substitution) readily switch to another location to purchase the same product if the price of the product experiences a slight rise in price (a SSNIP) in their current location? Another way of asking this question is – how far will consumers travel to get a better deal?

This core question is reflected in the approach of most current competition authorities in determining the extent of the geographic market definition in respect of road and other fuels (in addition to many other retail markets involving "bricks and mortar" shopping, such as grocery retail markets). It is common for authorities to consider that, for most private consumers, the demand for road and other fuels from retail stations has strong regional-local aspects, determined by the geographic regions where the consumer lives and works, and by the principal traffic routes that connect these regions: this is the broad approach taken by the United States Federal Trade Commission, the United Kingdom Competition and Markets Authority, the Australian Competition and Consumer Commission, among others, and it is the approach followed in this Market Definition Report.

Following this approach, one can therefore say that competition for retail consumers takes place in local markets; as a result, the price-setting by individual retailers is significantly determined by the conditions of competition in their local markets. Consumers usually have a preference for purchasing fuel within a limited geographic area, normally around their home, work, or along their usual commute. Consumers may have a limited willingness to travel more than a certain distance drive from their usual commute or location in order to purchase fuel from another fuel retailer.

The information used in the assessment of geographic market definitions in this report includes the following, in line with broadly accepted principles of geographic market definition as outlined in Section 3 above:

- Information from market participants to identify and assess the strength of substitution possibilities.
- The costs to consumers of obtaining supply from alternative regions (to the extent available).
- Any limitations on the ability of customers to access sources of supply in alternative regions.

- Evidence of buyers switching to other products in response to price increases in the recent past.
- Relative price levels and price movements of the product compared to potential different geographic sources of supply.
- The portability of the relevant product as determined by its perishability, weight, etc.
- Transportation costs to move the relevant product between regions (particularly the transportation costs as a proportion of total value of the product)
- Any regulatory or other practical constraints on consumers buying from alternative regions.
- Any regulatory or other practical constraints on suppliers selling to alternative regions.
- Records relating to trade flows and the actual movement of customers and/or suppliers between geographic regions, especially related to changes in relative prices across regions in the recent past.
- The extent to which "chains of substitution" brought about by overlapping catchment areas may affect the geographic market definition.

5.2 The Three Islands

The Cayman Islands is comprised of three different islands: Grand Cayman, Cayman Brac, and Little Cayman, each separated by long stretches of water, without bridge connections between any of the islands. This geographic reality means that transport between the islands is realistically limited to barge and other marine vessels transportation for heavy items, or air transport for passengers and light goods.

This seemingly simple observation has powerful and essentially conclusive implications for the geographic market definition. As already outlined, the core test of geographic market definition is whether consumers would (and by implication, whether they *can*) travel to alternative locations to shop if the local price of a product increase slightly by a SSNIP. In the case of the three islands of the Cayman Islands they cannot. Factors to consider in geographic market definition include whether there are any regulatory and other practical constraints on consumers buying from alternative regions, the portability of the product in question, and transportation costs of moving the product between different locations.

In this case, the overwhelming reality is that consumers in Cayman Brac cannot drive to Grand Cayman to refill their cars, or similarly drive between any of the islands. The only realistic way to obtain fuel for a road vehicle from a retail station on another island is to transport one's vehicle to the other island by barge, or to have a tank of fuel brought from the other island on the customer's individual account. It is therefore evident without further analysis that, in the ordinary case, such a process would be prohibitively complex and expensive, relative to the price of fuel and the increased cost to the customer of a small increase (by a SSNIP) in that cost. In terms of the factors to be considered, one can conclude that (1) there are very significant practical constraints on consumers buying their retail fuel from another island, (2) retail fuels are not readily portable between islands from the consumers' perspective, and (3) the transport costs

of doing so would be prohibitively expensive relative to the cost of absorbing a SSNIP in the fuel price in the consumers' relative locations.

Similar considerations would apply in relation to non-vehicle fuels (such as cooking gases) and wholesale/bulk sales of fuels. While the precise calculus of inter-island shipping costs and complications would be slightly different in relation to each different product, and would depend to a material extent on the quantity of the fuel to be shipped between the islands, one can nonetheless conclude that in each case there are significant practical constraints on switching one's supply to a source on another island, consumers buying their retail fuel from another island, fuels are not readily portable between islands from the buyer's perspective, and the transport costs are highly material.

There are two potential exceptions to these island-based geographic markets which may have wider geographic markets: gasoline and other fuels used for marine purposes, and aircraft fuels including both aviation jet fuel (also known as jet fuel or avjet) and aviation gasoline (also known as avgas).

Marine vessels using gasoline are distinguishable from gasoline-fueled road vehicles as they are in principle capable of cost-effective travel to another island to obtain fuel; the same absolute geographic constraints applying to road vehicles therefore do not apply to marine vessels. However, for reasons outlined in Section 4.3.1 above, the special difficulties of marine engines in tolerating ethanol-blended gasoline to not prevent the defined product market for gasoline from including ethanol blends up to the blend wall, because sufficient proportions of other consumers *are* able to switch to ethanol-blended gasoline. By a similar but inverse process of reasoning, we note that, while some gasoline consumers would be readily willing to switch supply location to another island in the face of a SSNIP price rise, the substantial majority of gasoline customers would *not* be able to do so because the majority of gasoline sales in the Cayman Islands are for road vehicle use. This means that the number of customers willing to switch locations would therefore not be enough to "defeat" the SSNIP price rise, meaning that different islands should not be included in the same geographic market. As a result, we conclude that the geographic market for gasoline and all other road fuels is confined to individual islands, notwithstanding any marine use of those fuels.

Jet fuel is currently commercially available principally on Grand Cayman at Owen Roberts International Airport, with smaller volumes also being supplied on Cayman Brac at Sir Captain Charles Kirkconnell International Airport. Aviation gas is currently commercially available only on Grand Cayman at Owen Roberts International Airport. However, there is strong evidence from market participants that a substantial proportion of customers of jet fuel is highly sensitive to price differences between different fueling locations, and routinely do choose among different airport locations for refuelling by partial reference to the price of jet fuel. This price sensitivity and the customers' *ability* to displace themselves to other island locations points in favour of a Cayman Islands-wide geographic market for jet fuel. In respect of aviation gas, while we do not have strong evidence of such routine substitution between airports for refueling by aviation gas customers, they are nevertheless inherently mobile between islands and currently refuel principally on Grand Cayman. That jet fuel is currently principally available on Grand Cayman and to a lesser extent on Cayman Brac, and aviation gas is only available on Grand Cayman, will be considered in the Market Assessment Report;

for the specific purposes of market definition, there appears to be no strong reason to segment the Cayman Islands into the individual islands, and accordingly we conclude that the geographic market for aviation fuels (jet fuel and aviation gas) is the entire Cayman Islands.

One can therefore conclude with confidence that, with the exception of the aviation fuels (jet fuel and aviation gas) for which the geographic market should be defined as Cayman Islands-wide, the three different islands of Grand Cayman, Cayman Brac, and Little Cayman each constitutes a separate geographic market for all fuels under consideration in the Fuel Sector.

5.3 Geographic markets within each island

Having determined that there are clear geographic market boundaries between the three islands, one must then consider whether each of the islands should be further segmented into different geographic locations. As explained above, fuels markets are strongly characterised by regional-local market considerations, as determined by consumers' willingness (or unwillingness) to travel to alternative locations to purchase their fuel needs.

The following geographic market definitions are based on currently observed consumer behaviour and prices and their interaction with the physical geography of the Cayman Islands. However, should the relevant information change in the future as a result of changes in consumer behaviour, material changes in the relevant fuels supply chains, or other significant changes in or affecting the Fuel Sector, then it may be appropriate for the geographic market definition to be re-assessed and potentially changed in light of the changed circumstances.

5.3.1 Grand Cayman

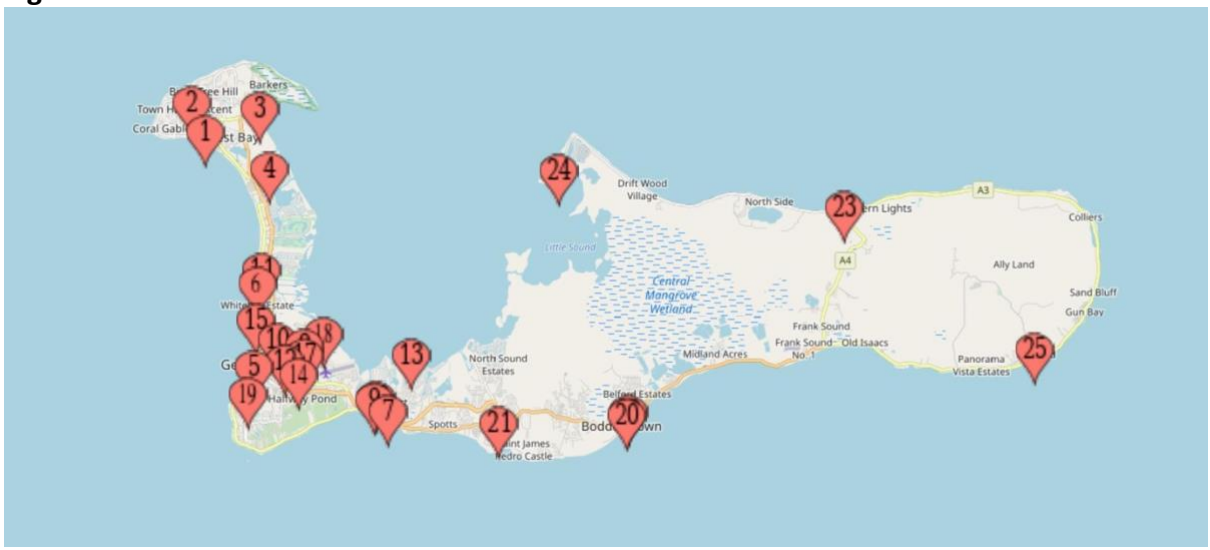
Grand Cayman is approximately 22 Miles (35 kilometers) long, and at its widest point is around 8 Miles (13 kilometers wide). Moreover, driving distances are such that the road distance between the most distant points are even longer: the driving distance from West Bay to Rum Point is around 31 Miles (50 kilometers), and the driving distance from West Bay to East End is around 28 Miles (45 kilometers).

The island is therefore sufficiently large to be capable of constituting several separate geographic markets for retail fuels consumers. For instance, a driving distance of 50 kilometers would generally be considered too long for consumers to readily switch to the alternative location to purchase their fuels, and may justify separate geographic markets.

However, these distances are the distances between the extreme ends of the potential geographic market(s), and there are a large number of retail stations in between the extreme ends. Excluding marinas, there are 20 retail stations spread throughout Grand Cayman, most tightly concentrated in George Town with 13 stations, but also including 2 stations in West Bay, 3 stations in Bodden Town, 1 station in North Side, and 1 station in East End. In addition, there are 5 marinas that also sell road fuels, of which 2 are in

West Bay, 2 are in George Town, and 1 is in North Side. The distribution of the stations across Grand Cayman is shown in Figure 1 below:

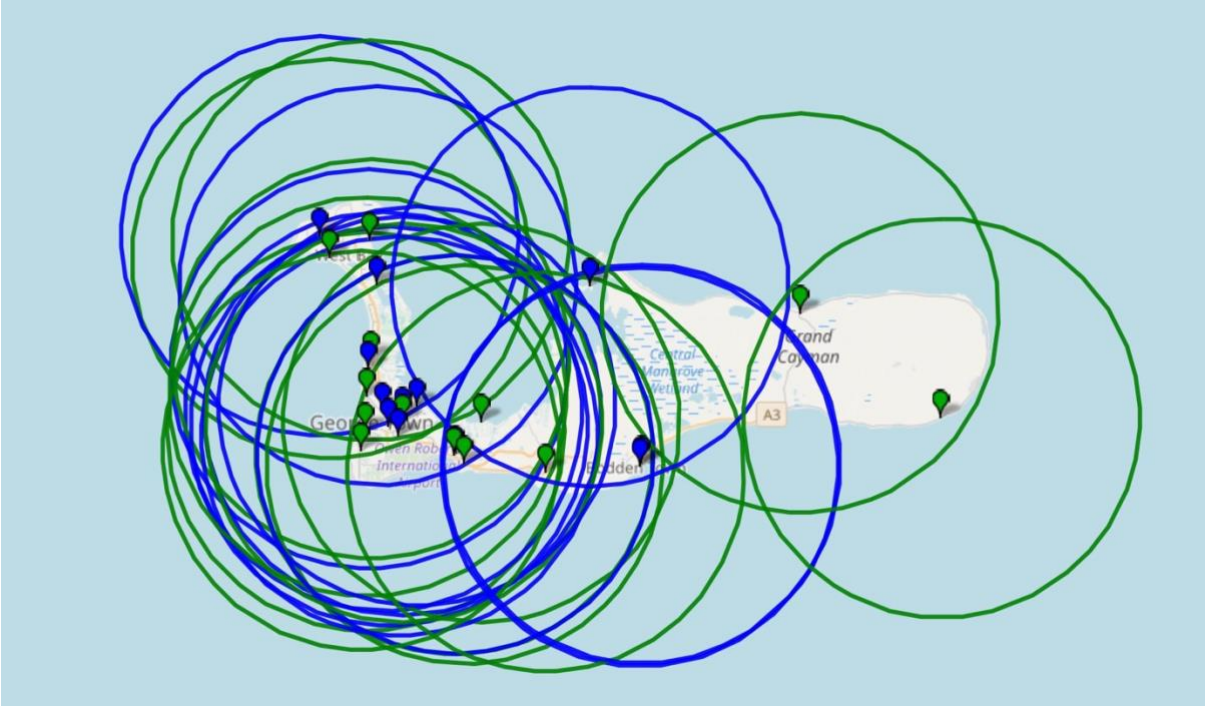
Figure 1:



This map shows the geographic distribution of service across Grand Cayman. As a general principle, the most relevant retail stations to a consumer will (everything else being equal) be the stations geographically closest to that consumer – and for a consumer considering an alternative station because the local price has increased by as SSNIP, the most relevant alternative will often be the next-closest station. It is the closest alternatives, as importantly influenced by the distance of the nearest alternative and taking into account factors relevant to the consumer including traffic, the road network, and other relevant factors, that exercise the closest and tightest competitive constraints on each station's pricing behaviour.

One can take this analysis an important step further by analysing the typical "catchment" areas as regards the customers of each of these stations and how they interact with each other. The Firm sought different types of more granular information on customer movements within Grand Cayman, specifically to establish how far customers will travel on Grand Cayman to purchase their fuel – the information sought included any information on customer work and residential locations relative to station locations, as potentially gleaned from customer accounts, customer loyalty programs, and similar sources of information. Unfortunately, due to the common practices in the Fuel Sector, these types of information were not available. Nevertheless, one can look to experience elsewhere to estimate broadly that, for each station, a large majority of road fuels customers will live or work within 15 kilometers of the station. Figure 2 shows these retail customer catchment areas for the different stations on a map of Grand Cayman. 10 kilometer radiuses shown around each station to provide a highly conservative view of the geographic market definition; with 15 kilometer radiuses, the overlaps are shown to be even stronger and the conclusion regarding geographic market definition even clearer

Figure 2:



This analysis shows that Grand Cayman is essentially covered by a network of station catchment areas that overlap strongly with one another. This creates strong chains of substitution across the whole of Grand Cayman which suggests that competitive conditions in different parts of Grand Cayman are all interrelated to one another and cannot systematically differ from one another across the different parts of Grand Cayman, because of this chain of competitive links across the island. Such a strong chain of substitution across the island would point to competitive conditions being broadly similar across the island. This similarity of competitive conditions in turn would point towards a conclusion that Grand Cayman is one geographic market for retail road fuels.

To illustrate this, consider a station at one end of the network, at the far end of West Bay. This station is likely too far from a station in Rum Point for those stations to competitively constrain each other, and so if these two stations were the only stations, they would not be in the same geographic market. However, the station at the far end of West Bay is constrained by any other station in northern West Bay. It is also constrained by any other stations in southern West Bay; the station in southern West Bay in turn is constrained by stations along West Bay Road; those stations in turn are constrained by stations in George Town; those stations in turn constrain stations in Bodden Town; and so on all the way to Rum Point and East End. If the links along this chain are sufficiently strong and continuous, this chain results in the geographic market being defined as a single market, even if the respective ends of the chain do not directly compete with one another. In this case, the overlaps between the different catchment areas along the chain are strong and continuous, because the stations are close enough to each other and well distributed across the chain. This strongly suggests the conclusion of a single geographic market for retail road fuels.

To test this conclusion, we have employed another market definition technique known as “correlation analysis”. Simply put, one can measure how closely different data series are related to each other by a measure of correlation, where the measure of correlation

is in a range from one (1) to negative (-1). Data series are closely correlated if they have a correlation measure towards one (1); data series that are closely related but in an inverse way have a correlation measure towards negative one (-1); and data series that are not closely related to each other have lower correlation measures towards zero (0). In terms of market definition, one generally expects that if products or locations are in the same market, then the prices of alternative products or locations in that market will be closely correlated, but if they are not in the same market, then their prices would be less closely related. A high correlation measure is therefore evidence of being in the same market, and a low correlation measure is therefore evidence of not being in the same market.

A correlation analysis was conducted on gasoline prices at all the different stations in Grand Cayman, including the marinas selling gasoline. To ensure comparability (so that apples are compared to apples and not to oranges), this correlation analysis was conducted using two separate specific products: (1) the prices of regular gasoline (89 octane) with pump self-service, and (2) the prices of premium gasoline (93 octane) with full pump service.

The detailed results of this correlation analysis are shown in a table in Appendix 1 (below). In summary, these results show that prices of the specific products are closely related to one another across the whole of Grand Cayman. This suggests that the different geographic areas of Grand Cayman are all part of the same geographic market for the purposes of market definition. These results are not conclusive by themselves, and must be caveated by the statement that correlation does not prove causation, and that prices are also likely to be substantially caused by independent factors including critically the world crude oil price. However, in combination with the other factors to be considered, it adds additional weight to the conclusion that there is a single geographic market covering the entirety of Grand Cayman.

We therefore conclude that in respect of the retail sales of road fuels, the entire island of Grand Cayman constitutes one sphere of competition, and therefore one geographic market.

By contrast, the geographic market in relation to the wholesale/bulk sector is relatively straight-forward to define. For bulk fuels, there are effectively only two source points: the bulk entry point by pipeline at Jackson Point, and the container port in George Town for the importation of fuels by way of ISO containers. Similarly, large scale storage facilities are relatively concentrated around the George Town and Jackson Point region. All bulk and wholesale fuels around Grand Cayman ultimately originate from this region of the island. As a result, there is no basis for segmenting the island's wholesale/bulk industry level more finely than being island-wide.

We therefore conclude that in respect of wholesale / bulk sales of fuels on Grand Cayman, the entire island of Grand Cayman constitutes one sphere of competition, and therefore one geographic market.

The geographic markets relating to retail non-vehicle fuels (such as propane and comparable home-use gases) are similarly relatively straightforward to define. For retail home-use fuels, information from market participants suggests that a sufficient number of consumers on the individual islands obtains home-based delivery of products at island-wide rates meaning that the consumers do not distinguish between

different origin locations. Similarly, market suppliers do not classify customers by location other than to distinguish between Grand Cayman and the Sister Islands; nevertheless, for comparable reasons outlined in respect of other fuels, a consumer of home non-vehicle fuels (e.g. propane) based in one of the Sister Islands would be unlikely to travel to the other Sister Island to obtain the same fuel as a result of a SSNIP price rise. The evidence therefore suggests that the geographic market for the retailing of non-vehicle fuels including propane is the entire island of Grand Cayman.

5.3.2 Cayman Brac

Cayman Brac is about 12 miles (19 kilometers) long and on average around 1.2 miles (2 kilometers) wide.

There are two retail stations on Cayman Brac, and similar to Grand Cayman, Cayman Brac has one ship to shore pipeline for bulk fuel and the Port where international tankers and barges can land to also bring various fuel supplies (inclusive of aviation fuel and propane) in smaller quantities. The bulk diesel mainly used for the purposes of electricity generation.

The dimensions of the island and fuels supply characteristics of the island suggest that there is no reason to further segment Cayman Brac into different geographic markets. Moreover, there is no information at hand to suggest that the conditions of competition are materially different on different parts of the island – vehicle owners on all different parts of the island travel to the same retail stations to purchase their fuel.

It is therefore likely that the entire island of Cayman Brac constitutes one sphere of competition, and therefore one geographic market at both retail and bulk wholesale levels.

5.3.3 Little Cayman

Little Cayman is about 10 miles (16 kilometers) long and around 1.2 mile (2 kilometers) wide.

There is one retail station on Little Cayman, more generally one shopping location with one store, and effectively one place where barges can land to bring fuel supplies in smaller quantities.

The dimensions of the island and fuels supply characteristics of the island suggest that there is no reason to further segment Little Cayman into different geographic markets. Moreover, there is no information at hand to suggest that the conditions of competition are materially different on different parts of the island – vehicle owners on all different parts of the island travel to the same retail station to purchase their fuel.

It is therefore likely that the entire island of Little Cayman constitutes one sphere of competition, and therefore one geographic market.

5.4 Other Potential Future Fuels

The fuels for which markets are defined in this Report are those currently in use in the Fuel Sector or which may realistically come into use in the foreseeable future. In addition to these fuels, there are other fuels that are not currently in the foreseeable fuels mix for the Cayman Islands. Nevertheless, there may be a sufficient change in markets, consumer demand, and technology which would introduce such new fuels into the potential fuels mix in the Fuel Sector, as is also outlined in Section 4.4 above in connection with the product market definition. Should these or other new fuels be introduced in the future, then there may be a need and justification for markets to be defined by OfReg for such new fuels. Such a market definition process including the geographic dimension of the product market would broadly follow the same analytical approaches as are used in this Market Definition Report and would be based on comparable considerations, which may include a similar public consultation process.

6 APPENDIX 1: CORRELATION ANALYSIS, GRAND CAYMAN

Table 1: Correlation of retail stations selling self-service regular gasoline

	E1	B2	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G15
E1	1.00															
B2	0.97	1.00														
G1	0.91	0.88	1.00													
G2	0.92	0.90	0.98	1.00												
G3	0.91	0.88	0.99	0.99	1.00											
G4	0.92	0.90	0.99	1.00	0.99	1.00										
G5	0.93	0.90	0.98	0.98	0.98	0.98	1.00									
G6	0.93	0.93	0.94	0.96	0.95	0.96	0.97	1.00								
G7	0.91	0.92	0.94	0.95	0.93	0.95	0.96	0.98	1.00							
G8	0.96	0.96	0.88	0.90	0.88	0.90	0.91	0.93	0.92	1.00						
G9	0.94	0.97	0.94	0.87	0.83	0.87	0.88	0.92	0.91	0.95	1.00					
G10	0.97	0.92	0.86	0.87	0.85	0.87	0.87	0.88	0.86	0.89	0.90	1.00				
G11	0.98	0.97	0.92	0.93	0.91	0.93	0.94	0.94	0.93	0.96	0.96	0.92	1.00			
G12	0.94	0.96	0.83	0.86	0.82	0.86	0.87	0.92	0.91	0.94	0.98	0.88	0.96	1.00		
G13	0.15	0.10	0.02	0.07	-0.06	0.07	0.15	0.07	0.17	0.31	0.24	0.07	0.08	0.28	1.00	
G15	0.81	0.77	0.88	0.88	0.88	0.88	0.87	0.88	0.89	0.79	0.74	0.85	0.83	0.74	0.25	1.00

Legend:

E1 = station in East End offering self-service regular gasoline.

B2 = station in Bodden Town offering self-service regular gasoline.

G1 = station in George Town offering self-service regular gasoline.

G2 = station in George Town offering self-service regular gasoline.

G3 = station in George Town offering self-service regular gasoline.

G4 = station in George Town offering self-service regular gasoline.

G5 = station in George Town offering self-service regular gasoline.

G6 = station in George Town offering self-service regular gasoline.

G7 = station in George Town offering self-service regular gasoline.

G8 = station in George Town offering self-service regular gasoline.

G9 = station in George Town offering self-service regular gasoline.

G10 = station in George Town offering self-service regular gasoline.

G11 = station in George Town offering self-service regular gasoline.

G12 = station in George Town offering self-service regular gasoline.

G13 = station in George Town offering self-service regular gasoline.

G15 = station in George Town offering self-service regular gasoline.

Table 2: Correlation of retail stations selling full-pump premium gasoline

	WB1	WB2	WB3	WB4	BT1	BT2	BT3	NS1	GT1	GT2	GT3	GT4	GT5	GT6
WB1	1.00													
WB2	0.68	1.00												
WB3	0.84	0.82	1.00											
WB4	0.12	0.89	0.54	1.00										
BT1	0.65	0.97	0.78	0.86	1.00									
BT2	0.70	0.93	0.83	0.88	0.92	1.00								
BT3	0.66	0.94	0.80	0.85	0.93	0.96	1.00							
NS1	0.77	0.85	0.82	0.81	0.83	0.86	0.81	1.00						
GT1	0.67	0.98	0.82	0.88	0.98	0.93	0.94	0.84	1.00					
GT2	0.65	0.98	0.81	0.88	0.98	0.93	0.94	0.84	0.99	1.00				
GT3	0.66	0.98	0.81	0.88	0.98	0.93	0.95	0.84	0.99	1.00	1.00			
GT4	0.65	0.98	0.81	0.88	0.98	0.93	0.94	0.84	0.99	1.00	1.00	1.00		
GT5	0.61	0.95	0.81	0.86	0.94	0.89	0.89	0.84	0.94	0.95	0.94	0.95	1.00	
GT6	0.69	0.97	0.80	0.87	0.97	0.93	0.93	0.85	0.97	0.97	0.97	0.97	0.93	1.00
GT7	0.70	0.98	0.83	0.89	0.97	0.95	0.94	0.86	0.97	0.97	0.97	0.97	0.95	0.99
GT8	0.70	0.93	0.82	0.90	0.92	0.96	0.96	0.85	0.93	0.92	0.93	0.92	0.88	0.93
GT9	0.75	0.92	0.85	0.83	0.91	0.96	0.96	0.83	0.93	0.91	0.93	0.91	0.86	0.92
GT10	0.67	0.92	0.80	0.87	0.91	0.99	0.95	0.84	0.91	0.92	0.92	0.92	0.88	0.93
GT11	0.69	0.95	0.83	0.88	0.94	0.99	0.97	0.87	0.95	0.95	0.95	0.95	0.91	0.95
GT12	0.76	0.92	0.86	0.81	0.92	0.95	0.96	0.85	0.4	0.92	0.94	0.92	0.87	0.93
GT13	0.30	0.90	0.47	0.86	0.87	0.98	0.97	0.63	0.91	0.90	0.91	0.90	0.78	0.88
GT14	0.71	0.92	0.84	0.89	0.91	0.95	0.95	0.85	0.92	0.92	0.92	0.92	0.90	0.93
GT15	0.60	0.92	0.75	0.69	0.93	0.91	0.92	0.71	0.93	0.92	0.93	0.92	0.86	0.90

	GT7	GT8	GT9	GT10	GT11	GT12	GT13	GT14	GT15
GT7	1.00								
GT8	0.94	1.00							
GT9	0.93	0.95	1.00						
GT10	0.95	0.96	0.95	1.00					
GT11	0.96	0.97	0.96	0.98	1.00				
GT12	0.94	0.95	0.98	0.94	0.97	1.00			
GT13	0.90	0.99	0.97	0.97	0.98	0.97	1.00		
GT14	0.93	0.95	0.95	0.94	0.96	0.94	0.97	1.00	
GT15	0.91	0.89	0.91	0.90	0.92	0.93	0.88	0.88	1.00

Legend:

WB1 = station in West Bay offering full-pump premium gasoline.

WB2 = station in West Bay offering full-pump premium gasoline.

WB3 = station in West Bay offering full-pump premium gasoline.

WB4 = station in West Bay offering full-pump premium gasoline.

BT1 = station in Bodden Town offering full-pump premium gasoline.

BT2 = station in Bodden Town offering full-pump premium gasoline.

BT3 = station in Bodden Town offering full-pump premium gasoline.

NS1 = station in North Side offering full-pump premium gasoline.

GT1 = station in George Town offering full-pump premium gasoline.

GT2 = station in George Town offering full-pump premium gasoline.

GT3 = station in George Town offering full-pump premium gasoline.

GT4 = station in George Town offering full-pump premium gasoline.

GT5 = station in George Town offering full-pump premium gasoline.

GT6 = station in George Town offering full-pump premium gasoline.

GT7 = station in George Town offering full-pump premium gasoline.

GT8 = station in George Town offering full-pump premium gasoline.

GT9 = station in George Town offering full-pump premium gasoline.

GT10 = station in George Town offering full-pump premium gasoline.

GT11 = station in George Town offering full-pump premium gasoline.

GT12 = station in George Town offering full-pump premium gasoline.

GT13 = station in George Town offering full-pump premium gasoline.

GT14 = station in George Town offering full-pump premium gasoline.

GT15 = station in George Town offering full-pump premium gasoline.