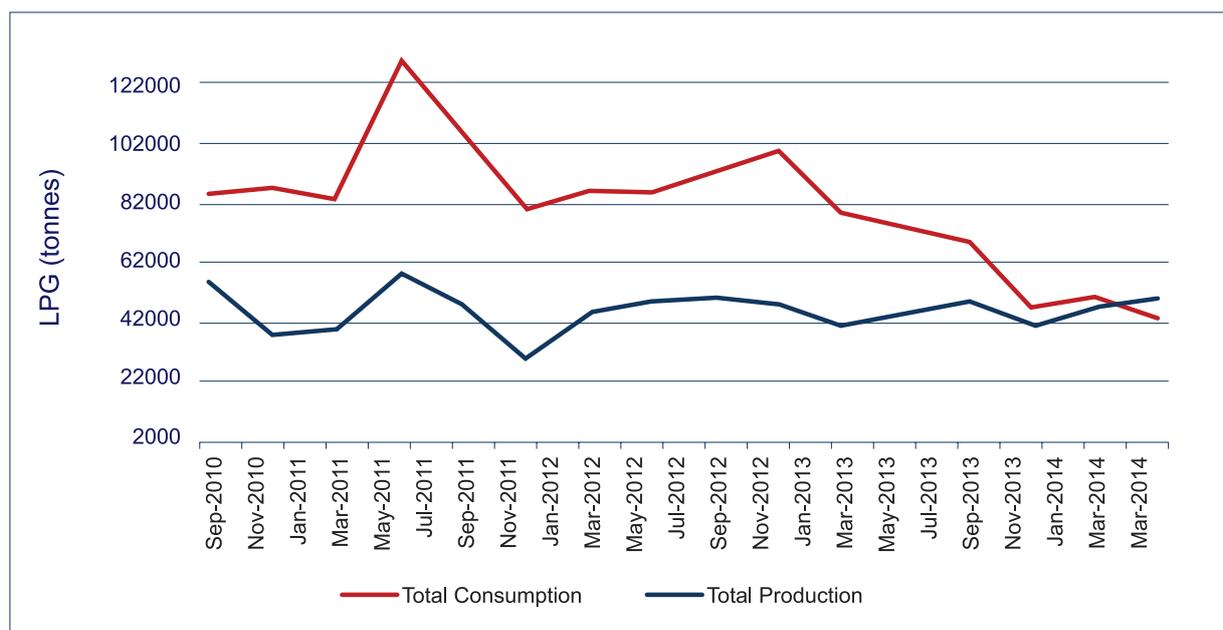


9. Addressing the limited domestic supply of LPG

- 9.1. This section assesses the impact of infrastructure bottlenecks on the supply of LPG in South Africa. This is particularly important given the declining volumes produced at local refineries and increased demand of LPG especially during the winter months.
- 9.2. It is accepted that the domestic production of LPG remains low (Figure 25) and is not likely to grow in the foreseeable future. Local production is unable to meet domestic demand in South Africa, especially during the winter months when demand is higher. This period also coincides with both planned and unplanned shutdowns at the local refineries. The deficit of local production is supplemented by imports and infrastructure facilitating these imports thus becomes critical. Market participants that import or have at some stage, imported LPG include KayaGas, Oryx, Afrox, Easigas and SAPREF.¹²²

Figure 25: Quarterly total local production and consumption (2010-2014)



Source: NERSA (2015)

¹²² Afrox imports through Richards Bay, while Easigas imports through Port Elizabeth. KayaGas through the Cape Town harbour and Oryx through Maputo. The Commission understands that SAPREF has occasionally imported LPG through Durban.

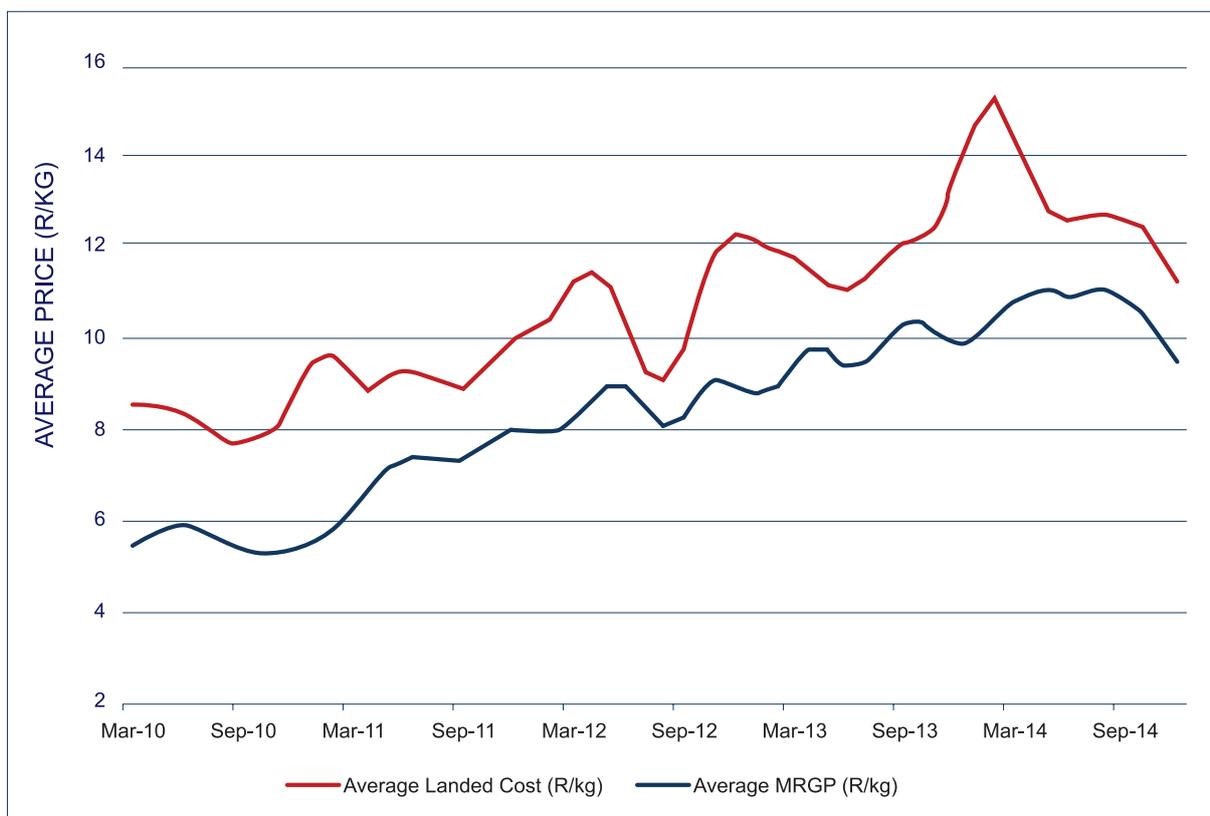
- 9.3. Market participants identified the following factors as contributing to limited domestic supply of LPG:
- 9.3.1. The regulated refinery gate price of LPG, the MRGP, is not reflective of the costs associated with importing LPG. Hence it does not provide a price signal to incentivise future investment; and
 - 9.3.2. The limited capacity at the current import storage facilities constrains the importation of LPG as a commercially viable alternative supply source.
- 9.4. In light of the above, it is suggested the limited import volumes are not only a factor of the price regulations at play but may also be a product of the lack of availability of adequate infrastructure to cater for an increase in imports. It can be deduced the limited levels of imports observed in South Africa are a reflection of two issues, namely the MRGP and the lack of sizable and economic storage facilities in the country.

The cost of importing LPG

Price comparison between MRGP and landed price of LPG

- 9.5. The MRGP is derived from the 93 octane basic fuel price (BFP) minus a discount of R74 per metric ton. The MRGP is an LPG equivalent of the BFP that applies to petrol and diesel (as shown in Section 8). This brings into question the manner in which imported product can be aligned with MRGP from a pricing perspective to allow it to compete with locally produced product, which is regulated at a lower price point.
- 9.6. Figure 26 indicates that the current imported LPG product is not price-competitive compared to locally produced product because of high transport costs. When the freight, clearance and storage facility costs are factored into the Saudi CP, the landed cost of the imported LPG is higher than the MRGP. Market participants indicated that the Saudi CP is generally comparable with or even lower than the MRGP, but the storage and freight costs significantly increase the cost of imported product.

Figure 26: Monthly landed price (R/kg) of LPG vs MRGP (R/kg) for 2010–2014



Source: [redacted]

- 9.7. [redacted] submitted to bring the landed costs of LPG down, market participants need a large storage capacity of approximately 15 000 to 20 000 tonnes so they can import LPG on a sustainable basis. This will assist in bringing down transport costs to approximately \$80 per tonne, thus making imports viable. [redacted] also attested to this, in stating that big vessels require bigger storage facilities than what the country has. It appears the price of imported LPG will reflect the volume of LPG imported.
- 9.8. The three scenarios in Table 12, based on small, medium and very large carriers of imported LPG, demonstrate how the landed costs of LPG vary in relation to different sizes of carriers. It is important to understand the economics of each parcel size as it demonstrates the potential to reduce the cost of LPG.

Table 12: The relative cost of LPG imports for different parcel sizes¹²³

R/USD	13
Propane \$/mt	315
Butane \$/mt	345
Interest cost	9%

Ship size	Small carrier	Med. carrier	Large carrier	Units
Parcel size	1 500	19 208	46 099	Mt
Annual imports	36 000	230 496	553 190	Tpa
Propane content	60%	60%	60%	
Product cost CP	4251	4251	4251	R/mt
<i>Product discount</i>	0%	2%	5%	R/mt
Freight costs	3055	884	624	R/mt
Insurance/Losses	219	151	140	R/mt
Clearing	0,57	0,70	0,80	R/mt
Port fees	145	145	145	R/mt
Product testing	22,0	2,9	1,3	R/mt
Terminal S&H	500	570	542	R/mt
SUB-TOTAL	8 193	5 920	5 491	R/mt
Working capital	20	29	27	R/mt
Terminal gate price	8 213	5 949	5 518	R/mt
Reduction in price	0	28%	33%	
Import/MRGP	110%	80%	74%	
Compared to September 2015 MRGP at R5 446.80				

Source: Commission's calculations

- 9.9. The small LPG carrier is representative of the current vessels delivering LPG to South Africa. This carrier requires a small terminal of approximately 3 750 metric tonnes ("mt") in capacity. Assuming the vessel makes twenty four (24) deliveries a year, it would see only 36 000 tonnes of LPG being imported per year. This would not lead to any reductions in the landed costs. Importers would still experience higher landed costs. If we base this analysis on September 2015 prices, the cost of the small import is estimated to be 50% more expensive than the published MRGP.

123 Note that the pricing of LPG imports is for comparative purposes based on representative vessel time charter costs, fuel oil consumption and costs. The same voyage distance is assumed for each ship size. *Working Capital Assumptions Throughputs per month = 1 for Med-Large and 0,5 for small. Cost of credit = 9% p.a. Applicable value = 50% * parcel size + 15% reserve*

- 9.10. In comparison, a medium-sized carrier would require a terminal with approximately 19 400mt of LPG storage capacity. The annual throughput of the terminal can be doubled to over 460 000 t/pa, which will reduce the terminal storage and handling fees. The import cost is estimated to be 28% cheaper than for the small carrier and at least 10% above the MRGP.
- 9.11. In the case of the large carrier, the largest parcel size can be delivered using very large gas carriers (“VLGC”). Such carriers can deliver to either a single large import terminal or several smaller terminals. The economies of the larger parcel size result in an estimated 33% price reduction compared to the small carrier, which makes it 1.3% cheaper than the MRGP. It can be assumed there would be a small discount on pricing on larger volumes because of the volumes uplifted. Regardless of the discount structure, larger imports will be cheaper than smaller ones. The international benchmark prices of LPG can be expected to be lower from May to September than during the rest of the year, which will filter through to the domestic prices.
- 9.12. In summary, the analysis indicates that the importing of medium to large parcels can reduce the landed cost of LPG by approximately 28% to 33% respectively as compared to the importing of smaller parcels. The analysis demonstrates that imported LPG can have landed prices cheaper than the current MRGP model. Avedia and Sunrise noted that it is possible to obtain greater discounts on large shipments. The opportunity for sovereign deals on LPG may also attract preferential pricing. Sunrise indicated that the preferred mode of operation is to start small and then increase the number of imports, with additional storage capacity being made available at the terminal to enable larger parcel sizes as demand grows. The increase in terminal throughputs will result in a reduced fixed cost component per unit in terms of the storage and handling tariff.

Lack of import storage

Current import storage facilities and problems with access to storage facilities

- 9.13 South Africa has three limited loading facilities available for imported LPG.  These facilities are located in Port Elizabeth, Richards Bay and Durban.¹²⁴ Table 13 lists the LPG loading facilities licenced for operation in South Africa and their estimated total capacity.

124 Discussion document on the Review of the Maximum Refinery Gate Price of Liquid Petroleum Gas. Government Gazette, Notice 886 of 2012. Dated 24 October 2012.

Table 13: LPG loading facilities licensed for operation in South Africa

Licensee	Storage capacity m3	Location
Shell South Africa (Pty) Ltd	4 000	Port Elizabeth
Bidbanks (Pty) Ltd	6 000	Richards Bay
BP and Shell (SAPREF)	1 800	Durban

Source: NERSA (2012)

- 9.14. Afrox and Easigas used to be the only two importers of significant volumes of LPG into South Africa. The two wholesalers lease import storage facilities and have import licences. Afrox leases the import facility in Richards Bay from Bidbanks [formerly IVS Richards Bay (Pty) Ltd]. Easigas imports via the Port Elizabeth terminal through its relationship with Shell. During the market inquiry, the Commission learnt that, Totalgaz, Camel Fuels and Oryx also use the Richards Bay port terminal through Bidbanks to import LPG. It is noteworthy that wholesalers are not operating from their own storage and/or loading facilities but rather are granted access to facilities owned by terminal operators. The existing storage and/or operating facilities are not able to receive VLGC, resulting in higher landed costs.
- 9.15. In addition, it appears that the existing import facilities operate on an exclusive basis. There are no common user terminals or terminals that offer imported product on an “open access” basis. This may pose a challenge for other market participants operating at the wholesale level, as they do not have their own import facilities, nor can they access those of others.
- 9.16. New entrants have highlighted the lack of import facilities as one of the key constraints to growth the LPG market and the promotion of competition. Despite several construction licences issued by NERSA in the past few years to independent merchant operators to construct large import capacities in Richards Bay, Port of Ngqura, many of these licensed projects have not yet materialised. Even if they do, experience to date suggests that the mere fact that the facilities become operational will not automatically ensure access for third party wholesalers wishing to import LPG. The practice in line with global practices is that anchor tenants sign long-term contracts (10-20 years) with the storage facility operator. The operator will then develop the facility and charge a monthly rental for capacity (‘take or pay’ agreements).

- 9.17. The Petroleum Pipelines Act prescribes that a licensee of a petroleum storage facility must provide access to uncommitted capacity in a storage facility on commercially reasonable terms. In practice, uncommitted capacity is interpreted to exclude capacity committed in terms of long-term “take or pay” agreements entered by the storage operators and its customers. Thus, due to being fully committed in terms of the contractual arrangements (no uncommitted capacity in terms of NERSA mandate), the facility could in fact be underutilised or standing empty.¹²⁵
- 9.18. In light of the limited import storage, industry players and regulators have identified areas that would be suitable for constructing additional import storage facilities within the ports of South Africa to increase the imported volumes of LPG.

Storage facilities licensed for construction at Saldanha Bay and Richards Bay

- 9.19. Market players like Avedia confirmed the current limited supply and inadequate import infrastructure have stifled the uptake of LPG. It was suggested the only way to unlock local LPG consumption is to substantially increase imports of LPG through newly constructed import terminals with sufficient storage facilities.
- 9.20. Avedia and Sunrise also indicated that importing large volumes of LPG would significantly reduce freight costs, and increasing the available storage capacity would drive down storage costs.¹²⁵ A large increase in imports of LPG into the domestic market would enhance competitive pricing for local customers, especially seeing that international prices are expected to decline over time.¹²⁶ Market players like Avedia, Sunrise, KayaGas, Vopak Reatile (“Vopak”) and Bidtanks agreed that the only way to solve the local supply bottleneck is by substantially increasing imports, backed by security of supply from additional storage.
- 9.21. Vopak and Bidtanks are licensed to construct an import terminal and loading facilities at Richards Bay, while Avedia and Sunrise are licensed to do the same at Saldanha. KayaGas is licensed to operate a loading facility at Saldanha.¹²⁷ [X], through its loading operating licence, stated that it was able to import eight loads of LPG, amounting to 7 000 tonnes, from the Cape Town harbour.¹²⁸ It indicated that the cost of bringing in LPG from ship to road tanker was approximately R10 400/ton, higher than the prevailing MRGP based on twelve (12) hours to transfer 200 to 300 tonnes per day.

125 Presentation by Sunrise Energy on 01 September 2015; LPG Import Terminal Saldanha Bay, Western Cape, South Africa and meeting with Avedia on 01 September 2015

126 Presentation by Avedia for NERSA public hearing on 28 May 2014

127 NERSA licence applications

128 Meeting with [X] dated 02 September 2015

9.22. The interest in constructing LPG import terminals at Saldanha is because the Western Cape port is strategically located such that it is cheaper to import LPG from various locations, including the Gulf of Guinea, the Gulf of Mexico, the Middle East and East Africa.¹²⁹ Table 14 provides details about each industry player's activities at the import terminals and/or loading facilities at Saldanha Bay and Richards Bay.

Table 14: LPG storage facilities licensed for construction¹³⁰

Licensee	Type of license	Total capacity (metric tonnes)	Location	Date of issue
Sunrise Energy ²¹³	Pipelines, storage & loading	5 500	Saldanha Bay	23 February 2011
Avedia Energy	Storage & loading	8 000	Saldanha Bay	1 July 2014
KayaGas	Loading facility		Saldanha Bay	30 March 2015
Bidvest Terminal	Storage facility	40 000	Richards Bay	2 December 2015
Vopak Reatile	Pipelines, storage & loading	38 300	Richards Bay	5 December 2014

Source: NERSA website (2015)

9.23. At Saldanha, the TNPA awarded an exclusive contract to Sunrise, based on Section 56 of the Ports Act relating to terminal operators, for the funding, construction and operation of an LPG handling and storage facility for 30 years.¹³² The terminal is scheduled for commissioning in April 2017.¹³³

9.24. Since there are no open access import facilities, Sunrise's business model essentially envisages it being an open access import terminal operator in Saldanha, allowing any LPG importer, distributor or downstream customer(s) to access the terminal infrastructure for importing LPG.

9.25. The Sunrise terminal will include a multi-buoy mooring system located in Saldanha for the mooring of LPG vessels. Sunrise will allow LPG traders to import LPG supplied into the multi-buoy mooring system and transferred into Sunrise's terminal storage site through its own pipeline. It will be possible to store the LPG on Sunrise's premises for fourteen days.¹³¹ During a site visit, the Commission observed that the fabrication of the LPG vessels (also known as bullets) intended for storing the imported LPG was underway, as shown in Figure 27.

129 Presentation by Sunrise Energy on 01 September 2015; LPG Import Terminal Saldanha Bay, Western Cape, South Africa

130 All of these licences are acquired from NERSA and are valid for 25 years, and construction is supposed to commence within 36 months. Market players are supposed to submit a tariff application within three months of the date of issue of these construction licences.

131 There was an amended construction licence on 29 April 2013.

132 Case No. RA2014/04/0009

133 <http://www.sunrise-energy.co.za/status.html>

Figure 27: Fabrication of moulded LPG bullets (vessels) on Sunrise site



Source: Sunrise site visit (2015)

- 9.26. The storage facility will comprise five moulded LPG bullets (each 7m ID and 60 m T/T),¹³⁴ similar to the bullet shown in Figure 28.¹³⁵ The LPG will mainly be dispatched via road tankers from Sunrise's three offloading bays.¹³⁶
- 9.27. Sunrise indicated that it would not own or trade in LPG; it will manage the stock throughput. This will include blending commercial propane and commercial butane to fit the SANS 1774:2007 standards and customers' preferences.¹³⁷ As mentioned above, traders will be allowed to store the LPG on Sunrise's premises for [X] days.¹³⁸ The LPG traders will be charged a throughput fee which will range between [X] and [X] per ton which, according to Sunrise, is in line with international throughput charges.¹³⁹ Sunrise plans to increase its annual throughput through constructing additional storage facilities as demand in the market increases.

134 Sunrise Energy submission dated March 2015
135 Commission site visit to Sunrise Energy dated 01 September 2015
136 Sunrise Energy submission dated March 2015
137 Sunrise Energy submission dated March 2015
138 Sunrise Energy submission dated March 2015
139 Sunrise presentation on Project Overview SAPIA dated 12 November 2013

Figure 28: Sunrise's LPG bullets¹⁴⁰



Source: Sunrise site visit (2015)

- 9.28. Sunrise's LPG storage facility at Saldanha will be complemented by the Avedia facility. Avedia indicated it would operate as a wholesaler, meaning it will source LPG from local refineries and through imports.¹⁴¹ Avedia stated it would not only operate the bulk storage facility at Saldanha; it also planned to be involved in bottling facilities, transportation and cylinders. The Commission understands, even though this is not their primary function, Avedia's import storage facility at Saldanha will also be available for third-party users such as the [redacted]. [redacted]. [redacted]. In securing foreign supply of LPG, Avedia has entered a supply agreement with Bonny River Terminal in Nigeria to import [redacted] mt.¹⁴²
- 9.29. Avedia previously operated the Industria bottling plant at Cape Town on behalf of Totalgaz,¹⁴³ and the Commission understands that this arrangement ceased after Totalgaz acquired KayaGas. The bottling plant has a storage capacity of [redacted] mt and a filling capacity of [redacted] bottles per day.¹⁴⁴

140 Commission site visit to Sunrise Energy dated 01 September 2015
141 Presentation by Avedia for NERSA public hearing on 28 May 2014
142 <http://www.avediaenergy.com/index.php/news-room/69-avedia-to-build-sa-lpg-import-terminal>
143 Site visit meeting with the Commission and Avedia on 31 August 2015
144 Avedia meeting on 31 August 2015

- 9.30. Apart from their terminals at the Saldanha port, Bidtanks and Vopak Reatile (“Vopak”) plan to construct additional import storage terminals at Richards Bay.¹⁴⁵ Bidtanks, an existing terminal operator at the Richards Bay port, plans to expand its operations. Bidtanks does not appear to have experienced much delay with the project, and is in the process of appointing an engineering, procurement, and construction management (EPCM) contractor. The other terminal operator, Vopak, will supplement Bidtanks’ offering in Richards Bay. On 23 March 2012, the TNPA awarded land to Vopak under Section 56 of the Ports Act to construct an import terminal facility. It appears that the Vopak LPG project was put on hold, due to insufficient interest from the market.
- 9.31. Despite market players showing increased interest in constructing import terminals, with numerous applicants having been granted construction and operating licenses, the country has not seen any new import terminals come on line. When queried about this, market participants indicated that the misalignment between regulatory bodies has caused a bottleneck in the development of the proposed import terminals. Sunrise stated that the delays in constructing its terminal were due to slow decision-making about approvals by regulators, problems with environmental authorisations in 2014, and the litigation process started by Avedia regarding access to the LPG berth lines, with Avedia alleging that Sunrise would be monopolising the import terminal.¹⁴⁶

NERSA’s tariff methodology for Greenfield developments

- 9.32. Submissions received indicated that the regulations in place were not designed to accommodate green field developments for import facilities.¹⁴⁷ [§] and [§] pointed out that NERSA dealt separately with construction and tariff licences, making it difficult to secure investors and customers, [§]. [§] In addition, using the existing NERSA models would make the start-up tariff very expensive and detract from the viability of the project. [§]

145 <http://www.sahra.org.za/sahris/cases/vopak-reatile-richards-bay-terminal-bulk-liquid-storage-and-handling-facility> on 15.09.2016

146 <http://www.fin24.com/Economy/Row-over-Port-of-Saldanha-Bay-20140316>; <http://sbid.co.za/latest-news/construction-starts-on-r1-3bn-lpg-terminal-saldanha-bay-west-coast/> ; <http://www.news24.com/Archives/City-Press/Gas-import-row-heats-up-20150429>

147 Site visit meeting with the Commission, Sunrise and Avedia on 31 August 2015

- 9.33. NERSA's tariff calculation is based on capital expenditure ("capex") and the expected volumes, so there is a direct and positive relationship between capex and tariffs, but an indirect and converse relationship between volume and tariffs.¹⁴⁸ An increase in capex will lead to an increase in tariffs, but if volume increases, this will lead to a decline in tariffs. Investors are thus reluctant to make decisions; not only can the quoted tariff rate increase, but there may also be unanticipated cost increases due to delays in projects.
- 9.34. The Commission asked NERSA whether their tariff calculation model adequately address the particular needs of Greenfield developments. NERSA submitted that the current tariff methodology does adequately address the concerns listed above. Specifically, NERSA stated that the allowable revenue formula is appropriate to use for Greenfield developments as it accounts for the difficulties faced with these projects. Specific items like the weighted average cost of capital ("WACC") and particularly the project risk premium are said to be adjusted as necessary when calculating the tariffs for Greenfield developments.

Commission's findings

- 9.35. The current inadequate import infrastructure has stifled the uptake of LPG. One way to unlock local LPG consumption is to increase imports of LPG substantially through newly constructed import terminals with sufficient storage facilities operating on open access to all interested third parties. The limited import infrastructure makes importation of small volumes of LPG less competitive as the landed cost is above the MRGP.
- 9.36. Significant obstacles are caused by the overlapping jurisdictions of NERSA and the TNPA in relation to approvals for constructing import and storage facilities at the ports (this aspect was also discussed in Section 7). This overlapping jurisdiction results from TNPA granting concessions to infrastructure developers within port boundaries, while such infrastructure also requires licencing under the Petroleum Pipelines Act, administered by NERSA. Another scenario is that NERSA may issue an import and storage licence with limited consideration of the TNPA's port development plans.
- 9.37. The Commission notes that the limitations in the regulatory framework, referred to above, contribute to the observed misalignment. This requires that a process of alignment be put in place in order to resolve these issues.

Industry feedback

- 9.38. In light of the findings, the Commission considered the following remedies to address the issues identified. Firstly, introduce a joint bidding process between NERSA and the TNPA, whereby potential entrants are able to receive simultaneous approvals from both regulators after winning the bid. Alternatively, introduce a bidding process overseen by an independent body like National Treasury as part of the key strategic infrastructure procurement programme. Secondly, review the regulatory mandates conferred by the Ports Act and the National Energy Regulator Act. In particular, review the National Energy Regulator Act with the aim of removing all port-related activities (licensing in particular) regulated by NERSA. Lastly, require approval by the TNPA of all licences involving execution and implementation at the ports before any other subsequent licence applications are allowed.
- 9.39. Market participants were mainly in agreement with the Commission regarding the bottlenecks caused by the overlapping jurisdictions of NERSA and the TNPA.¹⁴⁹ The majority of market participants¹⁵⁰ also supported the introduction of a bidding process overseen by an independent body like National Treasury. [redacted], [redacted], [redacted] and [redacted] indicated that this recommendation would delay the process even further and ultimately make it more burdensome for potential investors. As NERSA and the TNPA are already familiar with the requirements, the harmonisation of their respective processes is required. Transnet advised that the Commission should refer to the memorandum of understanding (“MOU”) signed between NERSA and Transnet as a sound engagement platform for better interaction.
- 9.40. NERSA and TNPA entered an MOU¹⁴⁹ in terms of addressing concurrent jurisdictions at the port facilities. The MOU was expected to assist in streamlining the work of the TNPA and NERSA.¹⁵⁰ The TNPA indicated that any possible bottlenecks would be identified and approvals would be sequenced as part of the engagement process between the two regulators.¹⁵⁰

149 The MoU was concluded towards the finalisation of the inquiry.
150 *Ibid.*

9.41. A review of the regulatory mandates conferred by the National Ports Act and the National Energy Regulator Act was also supported. [REDACTED] opposed the recommendation that all licences requiring execution and implementation at the ports should be approved by the TNPA before any subsequent licence applications are made. [REDACTED] submitted that Transnet is one of NERSA's licensees; hence, NERSA is not subordinate to the TNPA. NERSA makes its licences subject to permissions/authorisations received from other relevant authorities.

Recommendations

9.42. The Commission recommends the following:

9.42.1. A review of the regulatory frameworks applicable to the construction of LPG import and storage facilities at ports, as outlined in the applicable legislation including the National Ports Act and the Petroleum Pipelines Act.