



Australian Government

Medical Services Advisory Committee

## Public Summary Document

### ***Application No. 1518 – Endoscopic visual laser ablation of the prostate (VLAP) for benign prostatic hyperplasia***

**Applicant:** Boston Scientific

**Date of MSAC consideration:** MSAC 75<sup>th</sup> Meeting, 28-29 March 2019

Context for decision: MSAC makes its advice in accordance with its Terms of Reference, [visit the MSAC website](#)

#### **1. Purpose of application**

An application examining the evidence to support an increase in the Medicare Benefits Schedule (MBS) fee for endoscopic visual laser ablation of the prostate (VLAP), also known as photoselective vaporisation of the prostate [PVP] for men with benign prostate hyperplasia (BPH) was received from Boston Scientific Pty Ltd by the Department of Health.

#### **2. MSAC's advice to the Minister**

After considering the strength of the available evidence in relation to comparative safety, clinical effectiveness and cost-effectiveness, MSAC supported an increase in the MBS fee for endoscopic visual laser ablation of the prostate (VLAP) for benign prostatic hyperplasia (BPH) to be equivalent to the MBS fee for transurethral resection of the prostate (TURP) procedure.

MSAC accepted that VLAP is clinically non-inferior to TURP. MSAC considered, that due to some uncertainty about costs and uptake, and because any cost-offsets due to the shorter length of stay for VLAP would mostly be accrued by private hospitals, a premium in the fee for VLAP compared with TURP was not justified.

#### **3. Summary of consideration and rationale for MSAC's advice**

MSAC noted that this application requested an increase in the fee for existing VLAP items (MBS item 37207, current fee \$866.45; and MBS item 37208, current fee \$416.05). The application requested that the fee for VLAP be higher than the fee for TURP based on the shorter length of stay and longer procedure time for VLAP (proposed fees: MBS item 37207, \$1152.15; MBS item 37208, current fee \$617.01), or that the fee be at least equivalent to the fee for TURP items (MBS item 37203, current fee \$1042.15; and MBS item 37206, current fee \$558.10). The applicant asserted that the current fee structure preferred TURP over VLAP and at least in part, accounted for the disparity in use of the two procedures. As VLAP is at least non-inferior to TURP then this MBS fee difference cannot be justified.

MSAC accepted that VLAP is at least non-inferior to TURP in terms of safety and clinical effectiveness. Evidence from the GOLIATH study showed no significant differences between VLAP and TURP in overall adverse events, treatment-related outcomes and longer-term complications over 24 months. However, VLAP was associated with significantly shorter length of stay in hospital (mean difference 1.3 days) compared with TURP.

MSAC accepted that, based on the evidence presented, VLAP (performed using GreenLight XPS-180W laser) is non-inferior to TURP with respect to effectiveness for both primary outcome, International Prostate Symptom Score (IPSS), and secondary outcomes, including maximum urinary flow rate, rate of reintervention and quality of life.

MSAC noted that a slow and steady rise in total MBS services for BPH is predicted over the next few years (the applicant predicts an increase of 1.4% over 4 years). MSAC also noted that if the fee for VLAP is increased, the predicted total number of procedures each year will not change, but there is likely to be a slight replacement (predicted by the applicant to be about 5%) of TURP procedures with VLAP (primarily in centres that already have laser systems).

MSAC noted that, using the proposed fee for VLAP (higher than the fee for TURP), the net impact to the MBS would be \$605,774 in Year 1, rising to \$638,829 in Year 5. If the fee for VLAP is increased to equivalence with the fee for TURP, the net impact to the MBS would be \$333,865 in Year 1, rising to \$352,083 in Year 5. However, MSAC acknowledged there is some uncertainty about the level of uptake of VLAP services if the MBS fee is increased. Capital cost calculations in the submission were based on an estimate of 100 procedures per laser system per year. In sensitivity analyses, an estimate of 75 procedures per laser system per year resulted in cost-neutrality for the health system overall. MSAC noted that utilisation is likely to be driven by access to necessary laser equipment, not by the MBS fees.

MSAC noted that although VLAP may have higher costs related to a longer procedure time (10 minutes longer than TURP), these were not sufficient to justify a premium in the fee for VLAP compared with TURP. Device and consumable costs would be borne by the hospital or day surgery facility and hence are not relevant to consideration of the MBS fee. MSAC noted that VLAP and TURP are restricted to in-hospital only and both are described as Type A procedures in Private Health Insurance (Benefit Requirements) Rules 2011. Any cost-offsets due to the shorter length of stay for VLAP would mostly be accrued in the private system, with only a small part of the savings accruing to state/territory health budgets.

MSAC noted that the applicant posits that the current fee structure creates a financial incentive for practitioners to choose TURP, despite evidence available that VLAP is non-inferior. MSAC noted feedback from the Urological Society of Australia and New Zealand (USANZ) that previous lack of uptake of VLAP is not related to funding, but rather to urologists' training and familiarity with the TURP procedure.

MSAC considered that an increase in the MBS fees for VLAP is likely to have minimal impact on patient co-payments although it is possible that for some patients there will be a small benefit. As well, fee parity is unlikely to change surgeons' preference or the uptake of laser systems in the private hospital sector (priced at about \$redacted per system and purchased by the facility). Hence, fee parity is unlikely to see much change in the relative use of VLAP versus TURP. MSAC was happy to accept the applicant's estimate that the market share for VLAP would increase by 5 %.

MSAC considered whether item descriptors should be amended to include patient eligibility criteria for VLAP in terms of level of symptoms, prostate size and use of anticoagulants

(based on clinical trial criteria and National Institute for Health and Care Excellence (NICE) Guidance 2016 for GreenLight XPS for treating BPH 2016). However, MSAC concluded that no changes to the item descriptors are required. In particular, inability to stop anticoagulant use before the procedure should not be a criterion for exclusion. VLAP is associated with less bleeding than TURP and is often performed on patients for whom ceasing anticoagulant therapy is undesirable. MSAC noted that any change to item descriptors for VLAP would require changes to the other items that cover surgical treatment of BPH.

#### **4. Background**

VLAP has been listed on the MBS since 1995 for the treatment of BPH and prior to listing did not undergo any health technology assessment. The MBS fee for this procedure is \$175.70 less than that for transurethral resection of the prostate (TURP), despite the application referencing a shorter length of stay (LoS) (by 1.3 days), longer procedural time (by 10 minutes) and demonstrated clinical non-inferiority to TURP (Thomas *et al.* 2016). It is proposed that the current fee difference may lead to financial disincentive to use VLAP over the higher-reimbursed TURP. The intent of this application is to remove any potential financial incentive that exists in preferential utilisation of BPH interventions listed on the MBS.

#### **5. Prerequisites to implementation of any funding advice**

Items on the Australian Register of Therapeutic Goods (ARTG) that are relevant to this application are shown in Table 1. The Critique included additional devices and components from the ARTG (see below). The Critique noted that none of the devices is specifically listed for prostate surgery (but may be applied to a broad range of tissues), and they are not all 180-watt devices. It was noted that the earlier generation 120-watt GreenLight HPS side-firing laser is also in use in Australia (Ow *et al.* 2018).

**Table 1 GreenLight laser system listed on the ARTG**

ARTG no.	Product no.	Product description	Product category	Sponsor
279817	36150	Surgical frequency-doubled Nd: YAG laser system. A mains electricity (AC-powered) device assembly in which input energy (e.g. flash lamp, diode laser) is used to excite a glass/crystal rod to emit a high-power laser beam, in which the frequency is doubled, intended to precisely cut, excise/vaporize, and coagulate tissues for general surgery, and/or specialized surgical applications (non-dedicated). It includes a light source, delivery/positioning device(s), and controls/foot-switch and may be operated in continuous-wave or pulse mode.	Medical Device Class IIb	Boston Scientific Pty Ltd
284689	36150	Surgical frequency-doubled Nd: YAG laser system. Accessories for use with a mains electricity (AC-powered) device assembly, in which input energy (e.g. flash lamp, diode laser) is used to excite a glass/crystal rod to emit a high-power laser beam.	Medical Device Class I	Boston Scientific Pty Ltd
<i>301215</i>	<i>36150</i>	<i>Surgical frequency-doubled Nd:YAG laser system, intended for the non-invasive, excision, ablation and vaporisation of soft tissue for general surgical procedures</i>	<i>Medical Device Class IIb</i>	<i>Velocity 8 Pty Ltd</i>
<i>308784</i>	<i>60341</i>	<i>Surgical diode laser system, delivers soft light to tissue in contact and non-contact surgical procedures including endoscopic procedures</i>	<i>Medical Device Class IIb</i>	<i>Biolitec Australia Pty Ltd</i>
<i>172515</i>	<i>37202</i>	<i>Laser KTP; to vaporise or coagulate, tissue components or blood during surgical procedures, the laser can be used to cut or resect tissue or tissue components, or to achieve haemostasis and avoid blood loss.</i>	<i>Medical Device Class IIb</i>	<i>MD Solutions Australasia Pty Ltd</i>
<i>169103</i>	<i>47154</i>	<i>LBO crystal laser; intended for the surgical incision/excision, vaporisation, ablation and coagulation of soft tissue</i>	<i>Medical Device Class IIb</i>	<i>Boston Scientific Pty Ltd</i>

Source: Therapeutic Goods Administration, accessed 10/07/18 (<https://www.tga.gov.au/australian-register-therapeutic-goods>)  
*Italics represents provided during Critique*

The Critique noted that the item descriptor is non-specific for the brand or type of device other than it should be a non-contact (side firing) visual spectrum laser.

## 6. Proposal for public funding

The proposed medical service, VLAP using a non-contact (side firing) endoscopic approach, is currently funded by MBS items 37207 (primary service) and 37208 (continuation). PASC

noted there are other laser systems available (1518 Ratified PASC outcomes); however, this application relates to VLAP using the GreenLight XPS 180-watt (W) laser system, given it is the VLAP system most frequently used in clinical practice in Australia for BPH.

The proposed MBS item descriptors (37207 and 37208) of the currently reimbursed VLAP service are provided in Table 2.

**Table 2 Proposed MBS item fees of currently reimbursed VLAP procedures**

<b>Category 3 – THERAPEUTIC PROCEDURES</b>
<p>37207            PROSTATE, endoscopic non-contact (side firing) visual laser ablation, with or without cystoscopy and with or without urethroscopy, and including services to which items 36854, 37201, 37202, 37203, 37206, 37245, 37321 or 37324 applies            Multiple services rule            (Anaes.)            Proposed fee: \$1,152.15 Benefit: 75% = \$864.11            [Current fee: \$866.45 Benefit: 75% = \$649.85]</p>
<p>37208            PROSTATE, endoscopic non-contact (side firing) visual laser ablation, with or without cystoscopy and with or without urethroscopy, and including services to which item 36854, 37303, 37321 or 37324 applies, continuation of, within 10 days of the procedure described by items 37201, 37203, 37207 or 37245 which had to be discontinued for medical reasons            Multiple Services Rule            (Anaes.)            Proposed fee: \$617.01 Benefit: 75% = \$462.76            [Current fee: \$416.05 Benefit: 75% = \$312.05]</p>

## **7. Summary of Public Consultation Feedback/Consumer Issues**

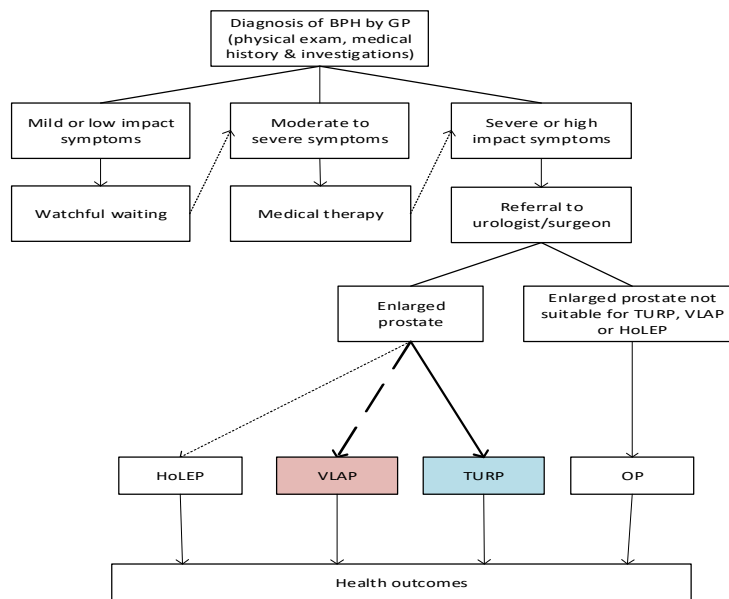
Only targeted consultation was conducted for this application; however, no targeted feedback was received at the PASC stage. A letter of support was provided by the USANZ when the application was submitted to the Department.

## **8. Proposed intervention’s place in clinical management**

BPH is one of the most common diseases of the prostate, characterised by non-cancerous enlargement of the prostate causing the urethra to narrow and place pressure on the base of the bladder. Narrowing of the urethra can cause problems with the passing of urine in several ways. BPH is often associated with lower urinary tract symptoms (LUTS) which may be obstructive (includes symptoms such as delay or straining when starting to pass urine, and slow flow of urine) or irritative (includes symptoms such as urgent or frequent urination during the day and night). While not life-threatening, BPH can be detrimental to a patient’s quality of life. The severity of LUTS is often assessed by the IPSS, which consists of seven questions and is graded as mild (IPSS ≤7), moderate (8-19) or severe (20-35). When symptoms of BPH increase in severity, surgical treatment will be considered. Surgical therapy of the prostate is indicated for patients with severe or high impact symptoms.

Clinical management of patients is not expected to change if this application for increased funding for VLAP is approved, as VLAP is already subsidised and utilised across Australia. However, the application stated that an increased fee for VLAP would be expected to result in a shift of patients undergoing TURP to VLAP. The Critique stated that it is not known if the scheduled fee is actually a disincentive to using VLAP.

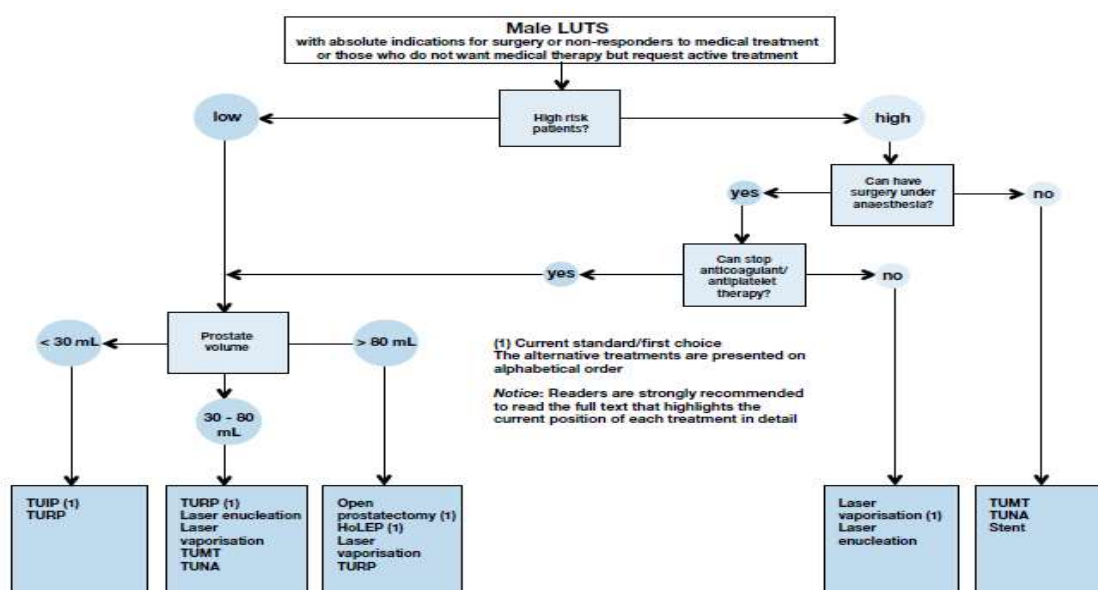
The application's current and proposed clinical management pathway is illustrated in Figure 1. This algorithm was provided by the PICO confirmation that was ratified by PASC on 7 May 2018.



**Figure 1 Current and proposed clinical management pathway for patients with BPH**

BPH = benign prostate hyperplasia; OP = open prostatectomy; HoLEP = holmium: YAG laser enucleation of the prostate; VLAP = visual laser ablation of the prostate

The Critique included an additional algorithm for sub-populations of men with LUTS from BPH such as those stratified by prostate size, or those with comorbidities or those on anti-coagulants. Specifically, the NICE Guidance 2016 for GreenLight XPS for treating BPH 2016 suggests the algorithm presented in Figure 2 (based on an External Assessment Report [EAR] written in response to the Applicant's submission to National Health Service [NHS]). This algorithm might be considered more realistic as it provides different pathways for men with prostates < 30 ml, 30 ml - 80 ml and > 80 ml, and those who need to remain on anticoagulant or antiplatelet therapy.



**Figure 2 Treatment algorithm of bothersome LUTS refractory to conservative/medical treatment or in cases of absolute operation indications.** The flowchart is stratified by the patient's ability to have anaesthesia, cardiovascular risk and prostate size. (Source: provided in Critique)

## 9. Comparator

The comparator for VLAP in this application is TURP. TURP is the most frequently used procedure for reduction of prostate tissue and is used in the same patient population as VLAP. It is considered the gold standard for prostate tissue removal (AUA 2010). The comparative MBS utilisation from 2011 to 2017, indicates that TURP is the most commonly used procedure (79.4%), followed by VLAP (17.3%) and then Holmium: YAG laser enucleation of prostate (HoLEP) (3.3%). The PASC did not feel a comparison of VLAP and HoLEP was required as it is unlikely that the number of claims for HoLEP would change significantly should this application be successful (1518 PICO confirmation p17).

The relevant MBS item for reimbursement of TURP are items 37203 and 37206, both listed on 1 December 1991. TURP is a hospital-based procedure.

## 10. Comparative safety

Consistent with PASC's recommendation, a systematic literature search was not performed for this Application. The GOLIATH trial is provided as pivotal evidence as it is the largest randomised controlled trial (RCT) comparing VLAP, using GreenLight XPS-180 W system, and TURP. Specifically, the GOLIATH study was a prospective, randomised, open-label, non-inferiority trial of 281 patients with BPH comparing VLAP (GreenLight XPS-180) and TURP over 24 months. GOLIATH trial results were published after six months (Bachmann *et al.* 2014), 12 months (Bachmann *et al.* 2015) and 24 months of follow-up (Thomas *et al.* 2016). A meta-analysis (Thangasamy *et al.* 2012) of RCTs comparing VLAP using older-generation GreenLight systems (HPS-120 W or 80 W, claimed to be rarely used in Australian clinical practice) and TURP was provided as supportive evidence.

The Critique presented an additional RCT comparing the GreenLight XPS-180 W device with TURP in 62 men with BPH (Jovanovic *et al.* 2014; included in the EAR published by NICE), a systematic review of VLAP using the Greenlight PVP 180-W device (n=1,640; Brunken *et al.* 2015) and a multicentre case series analysing the effectiveness of VLAP according to prostate size (n=1,196; Hueber *et al.* 2015).

The application stated that the results (from GOLIATH) indicated that VLAP is at least non-inferior to TURP with respect to safety. The mean difference in the proportion of patients who were classified as complication free at 180 days between VLAP (87.3%) and TURP (83.2%) was 4.1% (95% confidence interval [CI]: -4.5, 12.7). Non-inferiority was concluded based on a non-inferiority margin of -5.0 at 180 days. Non-inferiority was maintained at 24 months for the proportion of patients classified as complication-free in the VLAP group (83.6%) compared with the TURP group (78.9%) (risk difference [RD]: 4.7%, 95% CI: -5.0, 14.4) (see **Table 3** below).

There were no statistically significant differences between VLAP and TURP with respect to any of the adverse event (AE) categories reported at 6, 12 or 24 months' follow-up in GOLIATH. Specifically, there were no cases of TURP syndrome reported in the TURP arm, and there were no procedural related deaths in either treatment arm. The total number of bleeding AEs were 16 (11.8%) in the VLAP group and 23 (17.3%) in the TURP group (difference: 5.5%, 95% CI -3.0, 14.0). The number of Grade 3a or 3b bleeding AEs were 4 (2.9%) in the VLAP group and 18 (13.5%) in the TURP group (difference 10.6%, 95% CI 4.1, 17.7). The mean operation time for VLAP was 49.6 ± 21.8 and for TURP, 39.3 ± 18.5 minutes, the mean difference being significant (p<0.0001) and favouring TURP. However, the VLAP procedure was associated with statistically significantly shorter LoS compared

with the TURP procedure (2.7 days vs. 4.0 days; difference 1.3 days;  $p < 0.001$ ). This is an important safety advantage for VLAP over TURP.

There was no statistically significant difference in the number of surgical retreatments for obstructions from patients who received VLAP (10.3%) and TURP (7.5%) at 24 months follow-up in GOLIATH ( $p = 0.7$ ). In addition, there was no significant difference in the Kaplan Meir estimates for reoperation for VLAP (9.0%) and TURP (7.6%) by 24 months ( $p = 0.7$ ).

Jovanovic *et al.* found that there was a significant difference in intraoperative and postoperative complications between the VLAP and TURP groups, favouring VLAP ( $p < 0.001$ ). Of 31 patients in each group, there were no major complications in the VLAP group and 14 in the TURP group. One of the complications was an incidence of TURP syndrome. The mean operation time for VLAP was  $92 \pm 18$  and for TURP,  $82 \pm 13$  minutes, the mean difference being significant ( $p < 0.01$ ) and favouring TURP.

## **11. Comparative effectiveness**

Based on the evidence presented in the GOLIATH trial, the application concluded that VLAP is non-inferior to TURP with respect to effectiveness. The results demonstrated that VLAP is statistically non-inferior to TURP with respect International Prostate Symptom Score (IPSS) maintained over 24 months (6.9 vs. 5.9, respectively). Thus, at 24 months patients were on average considered to have mild symptoms based on IPSS. The upper 95% CI of the mean difference in IPSS scores did not exceed the prespecified non-inferiority margin of 2.5 (mean difference = 1.0, 95% CI: -0.5, 2.5).

The results of all secondary effectiveness endpoints over 24 months, peak flow ( $Q_{max}$ ), rate of reintervention, quality of life (QoL), postvoid residual (PVR) and transrectal ultrasound (TRUS) prostate volume, supported the conclusion of non-inferiority. The lower 95% CI of the difference in  $Q_{max}$ , the key secondary efficacy outcome, did not fall below the prespecified non-inferiority margin of -5 ml/s (mean difference = 1.3 ml/s, 95% CI: -4.0, 1.4) supporting non-inferiority (Table 3).



**Table 3 Balance of clinical benefits and harms of VLAP, relative to TURP, and as measured by the critical patient-relevant outcomes in the key studies**

Outcomes(units, followup)	Participants (studies)	Quality of evidence (GRADE) <sup>a</sup>	Difference (95%[CI])	Comments>
IPSS (24 months)	N=281 (k=1)	⊕⊕⊕⊙	1.0 (-0.5, 2.5)	Results support conclusion of non-inferiority; NIM = 3
Q <sub>max</sub> at 24 months (ml/s)	N=281 (k=1)	⊕⊕⊕⊕	-1.3 (-4.0, 1.4)	Results support conclusion of non-inferiority; NIM = -5ml/s
Complication free: <ul style="list-style-type: none"> <li>at 180 days<sup>a</sup> (%)</li> <li>at 24 months (%)<sup>b</sup></li> </ul>	N=281 (k=1)	⊕⊕⊕⊙	4.1 (-4.5, 12.7) 4.7 (-5.0, 14.4)	Results support conclusion of non-inferiority; NIM = -5.0% <sup>a</sup>
LoS in hospital (days)	N=264 (k=1)	⊕⊕⊕⊕	1.3 (0.68 to 1.94); p<0.001	Result statistically significant in favour of VLAP

NIM=non-inferiority margin; IPSS=International Prostate Symptom Score; LoS=length of stay; Q<sub>max</sub>=peak flow. <sup>a</sup> GRADE Working Group grades of evidence (Guyatt *et al.*, 2013)

⊕⊕⊕⊕ **High quality:** We are very confident that the true effect lies close to that of the estimate of effect.

⊕⊕⊕⊙ **Moderate quality:** We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

⊕⊕⊙⊙ **Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

⊕⊙⊙⊙ **Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

<sup>a</sup> The NIM of -5% refers to freedom from complications at 180 days

<sup>a</sup> Number complication free calculated based on proportion and assuming VLAP N=134 and TURP N=131 as per 6 month data.

The results from the meta-analysis corroborate those from the GOLIATH study and support the claim of non-inferiority of VLAP to TURP. No significant differences were detected in the mean difference in IPSS and Q<sub>max</sub> between VLAP and TURP. The mean difference in IPSS was -0.70 (95% CI: -1.58, 0.17) and the mean difference in Q<sub>max</sub> scores between VLAP and TURP was -1.10 (95% CI: -1.38, 3.59). Applying the non-inferiority margins for IPSS and Q<sub>max</sub> from GOLIATH confirms the conclusion of non-inferiority of VLAP and TURP.

Consistent with the observation in GOLIATH, the meta-analysis reported a statistically significantly shorter length of hospital stay with VLAP compared with TURP although the incremental difference was larger (mean difference: 2.13, 95% CI: 1.78, 2.48).

### Clinical Claim

On the basis of the benefits and harms reported in the evidence base (summarised above), it is suggested that, relative to TURP, VLAP has at least non-inferior safety and non-inferior effectiveness.

## 12. Economic evaluation

Considering the current application seeks the increasing of a current MBS fee as opposed to the listing of a new medical service, a cost comparison was considered the most appropriate

economic evaluation<sup>1</sup>. The cost comparison is intended to identify the cost offsets within the Australian healthcare system associated with the utilisation of VLAP compared to TURP services.

The cost comparison is primarily trial based in that inputs are largely derived from the GOLIATH trial (pivotal evidence). The exception to this is hospital LoS for which Australian specific hospital data is applied in the cost comparison, as requested by PASC (see below).

#### *ACHI/MBS review*

PASC requested the provision of additional Australian specific hospital data to support the LoS benefits reported in the GOLIATH study (European study). A review of Australian Classification of Health Interventions (ACHI) and MBS data between 1 July 2015 to 30 June 2017 was conducted for the collection of Australian hospital LoS data related to VLAP (n=945) and TURP (n=8,445) procedures.

The statistical comparison of LoS associated with VLAP versus TURP was conducted via Brown-Forsythe significance tests. VLAP was associated with a median reduction in LoS of 1 day compared to TURP (1 vs. 2 days respectively, p<0.00001).

**Table 4 Length of stay data for VLAP and TURP in Australian hospitals (ACHI/MBS review)**

	VLAP	TURP	Difference
Private and Public			
N	945	8,445	-
Mean <sup>a</sup>	2.164	3.163	0.999
Median [IQR]	1 [1-2]	2 [2-3]	1

IQR = interquartile range; TURP = transurethral resection of the prostate; VLAP = visual laser ablation of the prostate

<sup>a</sup> Maximum reported LoS: VLAP=42, TURP=257

The application stated whilst mean LoS values from this Australian specific source were lower than those observed in GOLIATH for both VLAP (2.164 days) and TURP (3.163 days), the difference in LoS between the two procedures was similar to that reported in GOLIATH (VLAP was associated with a reduction of 1 day in LoS relative to TURP).

#### *Model summary and results*

Table 5 summarises the key features of the economic evaluation.

**Table 5 Summary of the economic evaluation**

Perspective	Healthcare
Comparator	TURP
Type of economic evaluation	Cost comparison
Sources of evidence	<u>Outcomes:</u> GOLIATH ACHI/MBS review (Attachment 1) <u>Costs:</u> MBS AR-DRG (PHDB)
Outcomes (intraoperative and postoperative)	<ul style="list-style-type: none"> <li>Hospital length of stay (LoS)</li> <li>Administered anaesthesia</li> <li>Procedure duration</li> </ul>

ACHI=Australian Classification of Health Interventions; AR-DRG= Australian refined diagnosis-related groups; TURP= transurethral resection of the prostate; MBS=Medicare Benefits Schedule; LoS= length of stay; PHDB= Private Hospital Data Bureau

<sup>1</sup> Conventionally, in recognition of the clinical claims of non-inferior safety and non-inferior effectiveness, a cost-minimisation analysis would be provided

Disaggregated results of the cost comparison are presented in Table 6. The application stated that, under current market conditions, VLAP is estimated to provide cost savings relative to TURP of **\$redacted** per procedure. Considering an increased MBS VLAP fee (\$1,152.15) under proposed market conditions, VLAP is estimated to **redacted** relative to TURP.

**Table 6 Results of the cost comparison: VLAP versus TURP**

Parameter	VLAP	TURP	Difference
Anaesthesia costs per procedure	\$188.41	\$176.40	\$12.01
Consumable costs per procedure	<b>\$redacted</b>	\$411.65	<b>\$redacted</b>
Hospital (non-procedural) costs per procedure	\$1,016.25	\$2,032.50	-\$1,016.25
Capital costs per procedure	<b>\$redacted</b>	\$0.00	<b>\$redacted</b>
<b>Current market conditions</b>			
Current VLAP/TURP MBS service cost	\$866.45	\$1,042.15	-\$175.70
Total cost per procedure	<b>\$redacted</b>	\$3,662.70	<b>\$redacted</b>
<b>Proposed market conditions</b>			
Proposed VLAP/TURP MBS service cost	\$1,152.15	\$1,042.15	\$110.00
Total cost per procedure	<b>\$redacted</b>	\$3,662.70	<b>\$redacted</b>

MBS = Medicare Benefits Schedule; TURP = transurethral resection of the prostate; VLAP = visual laser ablation of the prostate

The application stated that the proposed fee for VLAP of \$1,152.15, is higher than that for TURP (\$1,042.15) and is supported on the basis of higher procedural resource consumption (a longer procedure duration and higher consumable costs) and the provision of cost offsets to the Australian health care system (shorter duration of hospitalisation) relative to TURP.

### 13. Financial/budgetary impacts

A market share approach was used to estimate the financial implications of increasing the MBS fee for VLAP. The primary assumption applied in estimating financial implications is the estimated impact of a higher VLAP fee on VLAP market share (utilisation). VLAP market share is assumed to increase by 5%, from 16.7% to 21.7%, through the substitution of TURP services. This increased market share is estimated to result mainly from an increase in the utilisation of VLAP in centres with current access to suitable laser systems and to a lesser degree from an overall increase in the purchasing of GreenLight laser systems. In addition, the budget impact analysis assumes that all procedures for BPH are performed in an in-patient setting, as such the 75% MBS benefit is applied for all services.

The net impact to the MBS of increasing the fees associated with VLAP services is estimated to increase from \$605,774 in Year 1 to \$638,829 in Year 5 (Table 7).

**Table 7 Total costs to the MBS associated with increasing the fee for VLAP services**

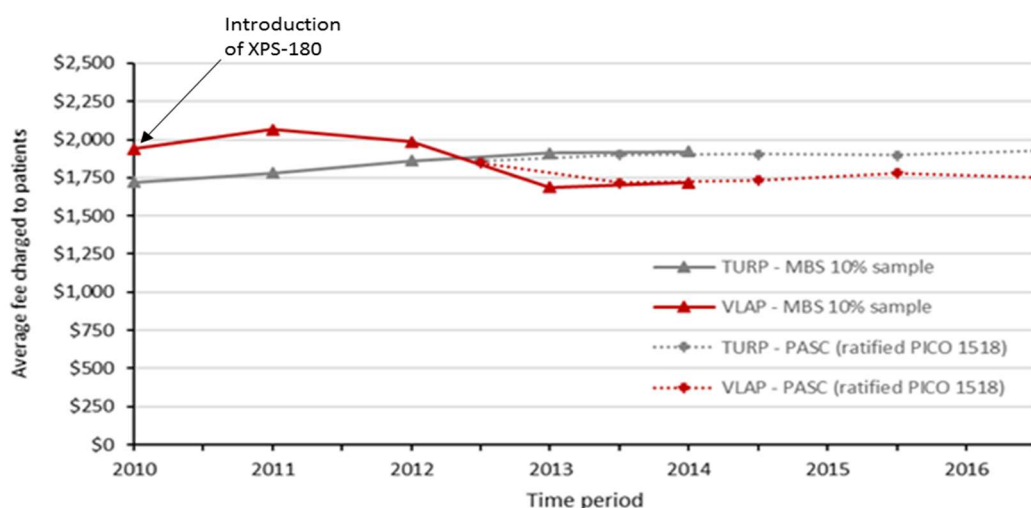
	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5
<b>Additional VLAP (37207) services</b>					
Number of VLAP services	760	770	781	791	801
Cost of VLAP services	\$1,200,027	\$1,216,397	\$1,232,768	\$1,249,138	\$1,265,508
Prop. requiring continuation service	0.041%	0.041%	0.041%	0.041%	0.041%
Number of continuation services	1	1	1	1	1
Cost of continuation services	\$298	\$302	\$306	\$310	\$314
Sub-total cost	\$1,200,325	\$1,216,699	\$1,233,073	\$1,249,448	\$1,265,822
<b>Substitution of TURP services</b>					
Number of TURP services	760	770	781	791	801
Cost of TURP services	\$594,042	\$602,146	\$610,249	\$618,353	\$626,457
Prop. requiring continuation service	0.160%	0.160%	0.160%	0.160%	0.160%
Number of continuation services	1	1	1	1	1
Cost of continuation services	\$508	\$515	\$522	\$529	\$536
Sub-total cost	\$594,550	\$602,661	\$610,772	\$618,882	\$626,993
<b>Net cost to the MBS</b>	<b>\$605,774</b>	<b>\$614,038</b>	<b>\$622,302</b>	<b>\$630,566</b>	<b>\$638,829</b>

MBS = Medicare Benefits Schedule; TURP = transurethral resection of the prostate; VLAP = visual laser ablation of the prostate

### *Patient co-payments*

A review of fees charged (schedule plus co-payment) for TURP and VLAP services between 2010 and 2017 was conducted (Figure 3). From this data it is acknowledged that if increasing VLAP MBS fees were to result in an increase in the retail purchasing of GreenLight lasers, patient co-payments may temporarily increase in these centres. This was previously observed between 2010 and 2012 coinciding with the introduction of the new generation XPS-180 machine. However, the purchasing of GreenLight machines in new centres is expected to be marginal based on the decision impact of a \$285 MBS fee increase (which does not necessarily impact the fee charged) relative to the estimated \$redacted in capital outlay required for the provision of VLAP. Instead, increased utilisation of VLAP is expected to mainly be driven by increased utilisation in centres with current access to a GreenLight laser machine. In these centres it is considered reasonable to expect VLAP co-payments to decrease as a result of the higher MBS fee. That is, centres with access to GreenLight lasers are assumed to currently charge fees they deem as appropriate compensation for the provision of VLAP services, therefore changing the distribution of who pays for the service - through increasing the MBS fee - should not impact the total fee charged to patients. This is proposed to be reasonable as the total fees charged to patients for VLAP and TURP services are significantly above the MBS schedule fees, meaning that centres have discretely determined the value of VLAP and TURP procedures independent of MBS schedule fees.

From this, it is expected that co-payments associated with VLAP services overall will remain stable, or marginally decline, as a result of increasing MBS fees for VLAP.



**Figure 3 Historical fees charged to patients for TURP and VLAP services**

Note: fees charged includes both schedule fee (subsidised by MSAC) and patient co-payments

Sources of data: MBS 10% sample<sup>2</sup> and Ratified PICO 1518

#### 14. Key issues from ESC for MSAC

ESC key issue	ESC advice to MSAC
SBA limited to GL-XPS 180W device	Consider whether to accept the restricted SBA (submission). Other devices are registered on ARTG and used in Australia. PICO included 'VLAP using a non-contact (side firing) endoscopic approach' – no device specified.
Claim of non-inferior safety and effectiveness	Evidence of non-inferiority (safety and effectiveness) is acceptable. ACHI/MBS data support ~1-day reduction in length of stay for VLAP (significant).
Safety and effectiveness data	RCT data are limited to men with prostate volume <100 mL; able to discontinue anticoagulant/antiplatelet use; otherwise fit to have TURP (ASA class I–III). Lower quality data suggest VLAP is safe and effective in men with prostate volume >80 mL and in men taking anticoagulants.
Item descriptor	Consider the need to revise the item descriptor. Currently, 'patient eligibility' does not specify presence (or severity) of lower urinary tract symptoms (LUTS) as indication for VLAP.
Detection rate of incidental prostate cancer from tissue samples	The true frequency (and significance) of incidental detection of prostate cancer is unknown.
Fee 'premium' justification	Justification for the fee premium is based on non-inferiority vs. TURP, longer procedure duration reduced length of stay. (NB: It is unknown whether lower MBS fee is the main or only reason for current preferential use of TURP over VLAP.)

<sup>2</sup> Linkable de-identified 10% sample of Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Schedule (PBS). <http://www.pbs.gov.au/info/news/2016/08/public-release-of-linkable-10-percent-mbs-and-pbs-data>

ESC key issue	ESC advice to MSAC
Likely impact on patient out-of-pocket costs	Out-of-pocket costs <i>may</i> decrease but this is uncertain.
Type of economic evaluation and perspective used	Cost comparison. Most of the benefit is accrued in private hospital bed days saved so is not able to be realised by the public health system. Using equal pricing for VLAP and TURP would reduce overall costs to the health system.
Number of procedures per machine per year may be higher or lower than estimated	This will affect the capital cost used in the economic evaluation.
Additional anaesthetic administration costs were not included in the budget impact	This is not expected to have a large impact on estimates.
Cost of training was included in the capital cost	This is expected to have minimal impact on overall costs.
Item costs are uncertain, particularly consumables	This is not expected to have a large impact on the analysis.

### **ESC Discussion**

ESC noted that the submission requests an increase in the fee for existing MBS items (37207 and 37208) for visual laser ablation of the prostate (VLAP) in men with severe or high impact lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). VLAP is done using a non-contact (side-firing) laser via endoscopic approach, which enables tissue removal (by vaporisation) and coagulation. VLAP has been listed on the MBS since 1995 but was not evaluated by MSAC.

The current MBS fee for VLAP is lower than the fee for its comparator, transurethral resection of the prostate (TURP), which the applicant claims may be leading to underutilisation of VLAP. ESC noted that the proposed increased fee for MBS item 37207 is \$1152.15 (a 33% increase from the current fee of \$866.45), and for MBS item 37208 the proposed fee is \$617.01 (a 48% increase from the current fee of \$416.05). ESC noted that there is very little use of MBS item 37208. The equivalent fees for TURP are \$1042.15 (MBS item 37203) and \$558.10 (MBS item 37206).

ESC noted the Critique's revised clinical management algorithm, which was adapted from the European Association of Urology 2016 guidelines and includes consideration of patients' level of risk (high or low) and safety to undergo anaesthesia, whether patients are able to stop anticoagulant therapy, and prostate size. In these guidelines, VLAP was considered to be the procedure of choice for patients unable to stop anticoagulant therapy. For low-risk patients and those who can stop anticoagulant therapy, choice of procedure was based on prostate size: TURP was the treatment of choice for prostate volume of 30–80 mL (VLAP was a treatment option); for prostate volume >80 mL, both VLAP and TURP were treatment options (open prostatectomy and Holmium:YAG laser enucleation of the prostate [HoLEP] were treatments of choice).

ESC noted utilisation data for the different BPH interventions in Australia. More than 85,000 procedures were performed in the past 5 years. TURP constituted more than 79% of these, VLAP about 17% and HoLEP (MBS 37245) only about 3%. ESC noted that MSAC

recommended MBS listing for HoLEP in 2012. At the time, because of the low expected number of claims for HoLEP, PASC considered a comparison of VLAP and HoLEP to be unnecessary. ESC noted that because of the low utilisation of HoLEP, it was appropriate to use TURP as the comparator in this submission.

ESC noted that most evidence presented is from the GOLIATH multicentre, open-label, non-inferiority randomised controlled trial (RCT) comparing VLAP using the 180-watt GreenLight XPS device (180W GL-XPS) with TURP. Supportive evidence is also available from a meta-analysis comparing older 80W and 120W VLAP devices (made by the same manufacturer) with TURP. ESC noted that the Critique identified additional studies including a single-centre RCT of 180W GL-XPS vs. TURP (Jovanovic *et al.* 2014) and a multicentre case series of 180W GL-XPS (Hueber *et al.* 2015).

ESC noted that inclusion criteria of the GOLIATH study included an International Prostate Symptom Score (IPSS) of  $\geq 12$  and a prostate volume of  $\leq 100$  mL (estimated by transrectal ultrasound). Exclusion criteria included inability to stop anticoagulant/antiplatelet use for 3–5 days before the procedure. However, ESC noted that the descriptor for MBS item 37207 does not specify LUTS as an indication for VLAP or the severity of LUTS (e.g. IPSS); it also has no exclusions based on prostate volume or use of anticoagulants. ESC queried whether a change in the wording of the descriptor may be required, but noted that no change was requested in the submission.

ESC noted that RCT data (GOLIATH and Jovanovic) showed VLAP was favourable for perioperative bleeding complications, the number of complications and length of stay (LoS). VLAP had a significantly longer operation time than TURP. Case series data (Hueber) showed no significant differences in comparative safety outcomes based on prostate size ( $<80$  mL vs.  $\geq 80$  mL), except for rate of conversion to TURP (higher with larger prostates). LoS was similar regardless of prostate size.

ESC noted that additional Australian-specific hospital LoS data, from a review of Australian Classification of Health Interventions (ACHI) and MBS data between 1 July 2015 and 30 June 2017 (requested by PASC), confirmed a 1-day shorter mean and median LoS for VLAP than for TURP.

ESC noted that the GOLIATH and Jovanovic studies showed no significant difference between VLAP and TURP in terms of IPSS scores,  $Q_{\max}$  (maximum urinary flow rate), post-void residual (PVR) volume, prostate volume or quality of life (QoL) scores. ESC also noted there was no significant difference in retreatment rates between VLAP and TURP at 24 months follow-up in the GOLIATH study. ESC noted the conclusion of the NICE (2016) guidance that ‘there is currently insufficient high-quality, comparative evidence to support the routine adoption of GreenLight XPS in high-risk patients’ (defined as those who have an increased risk of bleeding, prostates larger than 100 mL or urinary retention). However, ESC noted there are low-level data that indicate VLAP is safe and effective in men on anticoagulants, as well as case series data that indicate similar LoS and 24-month outcomes for men with prostate volume  $\geq 80$  mL vs.  $<80$  mL.

ESC noted that the PICO patient description does not define ‘severe or high impact’ LUTS. The GOLIATH study used an IPSS of  $\geq 12$  and the Jovanovic study used  $\geq 16$ .

ESC noted that the PICO intervention description does not specify a device. However, the SBA was restricted to the 180W GL-XPS laser system. This is the most commonly used system in Australia, but ESC queried whether the restricted SBA should be accepted. The submission did not address other systems registered on the ARTG and used in Australia.

ESC noted that the outcomes in the PICO include the detection rate of prostate cancer following TURP and the clinical impact of this. Because tissue is vaporised during VLAP and cannot be collected for pathology (as it is during TURP), it is possible a small proportion of prostate cancers are missed. The GOLIATH study found that cancer was detected at a rate of 3.8% at the time of TURP, but results from a 2016 Australian study (Perera *et al.*) showed significant prostate cancer detection rates following TURP (13.4% in patients aged <65 years and 28.7% in patients >65 years). However, the cohort was not limited to men with LUTS and the authors conceded that: “When patients with suspicious rectal examination, high PSA, or previous positive biopsy are excluded, incidental prostate cancer occurs less frequently at 1.8 - 5.5%”. ESC noted that the ‘true’ frequency (and significance) of incidental detection of prostate cancer is therefore unknown.

ESC noted several justifications given in the submission for increasing the fee for VLAP and for a ‘premium’ on the fee compared with TURP:

- higher resource costs – capital, consumables, longer procedure time
- cost offsets to the healthcare system – due to shorter LoS
- analogy with HoLEP – fee range of \$1000–\$1262 (*vs.* TURP \$1002.65 when considered by MSAC in 2012) was considered reasonable and cost-effective based on non-inferior effectiveness and safety, additional time and skill required, reduced LoS, and lower average costs/patient (LoS, adverse events, treatment failure, incontinence).

ESC noted a number of factors that may affect the level of patient impact:

- Centres with access to GreenLight lasers are assumed to currently charge fees they consider appropriate compensation for providing VLAP;
- Total fees charged to patients for VLAP are above the MBS schedule fee (but less than TURP), meaning that centres have determined the value of VLAP independent of the MBS schedule fee;
- Increased utilisation of VLAP is expected to be driven mainly by increased use in centres that already have access to a GreenLight laser machine; the increased fee is unlikely to incentivise many other centres to invest in a machine.

ESC considered it reasonable to suggest that VLAP co-payments may decrease as a result of the higher MBS fee, but this is uncertain.

ESC noted that MBS items 37207 and 37208 provide for a rebate of 75%, which indicates that VLAP is considered to be an in-hospital service only. However, NICE 2016 guidance states that VLAP can be done as a day procedure. It is unknown whether or how often this is done in Australia.

ESC noted that the economic evaluation was referred to as a cost comparison using the higher fee, rather than a cost-minimisation analysis (using equal pricing). ESC noted that the cost inputs for the economic evaluation – anaesthesia, consumables, hospital and capital costs – were generally appropriate.

However, ESC noted that theatre costs were not included, which makes the model incomplete. ESC also noted that the consumables cost for TURP is uncertain because the value used is 5 years old. ESC noted that it should be possible to obtain the current market price given the level of use of TURP in Australia. ESC also noted that the submission did not consider the increased cost of anaesthesia for the longer VLAP procedure. (This was not picked up by the Critique.) However, ESC considered that this would not have a large impact on financial estimates.



ESC considered capital costs to be the most uncertain part of the evaluation. The capital cost calculation assumes only about two procedures per week (average of 100 procedures per year). The Critique argued that fewer procedures may be performed, but ESC considered that the number of procedures could also be more. If a centre has invested in a machine, it is likely to try and maximise its use.

ESC noted that the economic evaluation was claimed to be from the healthcare perspective, but it was difficult to ascertain who exactly will bear what cost or saving. For example, a 100% benefit of the cost saving was applied from the healthcare perspective but, because VLAP is generally done as a booked day hospital procedure, hospital savings will accrue to private health insurance funds. ESC also noted that with a 75% rebate, 25% of the service cost is an out-of-pocket cost for the patient, but this was not clear in the analysis. Further, ESC noted that training was included in the capital cost, and queried whether (although a relatively small cost) training costs should be removed from the cost inputs. ESC noted that training fees were specifically excluded in the MSAC evaluation of HoLEP.

ESC noted that the sensitivity analyses presented in the submission were all one-way analyses and tested limited parameters, with no testing of the requested change in fee. ESC noted that reducing the price to the current cost of TURP halved the cost to the MBS. ESC noted that the submission did not include a literature review. However, ESC identified one article that could have been included. A Canadian cost analysis of 202 patients comparing VLAP and TURP found a CA\$1219 saving for VLAP vs. TURP and a CA\$1156 saving vs. bipolar TURP. The savings were largely driven by reduced hospital costs; 93% of VLAP procedures were day procedures (6% of TURP). VLAP also showed a half-day difference in LoS, and higher supply costs of ~CA\$500. In contrast to the GOLIATH study, this study showed that readmission rates at 30 and 60 days were lower for VLAP.

ESC considered a market share approach for deriving financial impacts to be reasonable since the intervention is not expected to increase the number of BPH patients needing to be treated. Current VLAP usage is 17.7% and ESC considered the estimated 5% substitution from TURP to be reasonable. However, ESC noted that potential cost savings attributed to reduced LoS will accrue in private hospital cost of admissions and hence are not realisable to State or Federal health budgets.

In the current and extrapolated market share data, ESC noted a slight downward trend for VLAP (after a peak in 2013) and a slight upward trend for HoLEP. (TURP market share has been stable at around 75% since about 2013–14.) It is not clear why VLAP has not taken over market share from TURP or why usage has been declining in the past 5 years considering VLAP has some advantages compared with TURP. ESC noted that continued decline in VLAP market share would have an impact on budget estimates.

ESC considered that it has not been established that the lower MBS fee for VLAP is responsible for preferential use of TURP compared with VLAP. It is possible that the longer operation time required for VLAP and the high upfront cost of the machine may also affect providers' decisions about which procedure to use. It is also possible that an increased use of HoLEP is driving a decline in use of VLAP; ESC noted that HoLEP is currently only used in the private sector. ESC noted that clinicians may also prefer procedures that provide tissue for histology to avoid missing prostate cancers. ESC considered that it may be desirable for different BPH techniques to be priced at the same level so that the treatment decision is based on clinical and not economic factors.

ESC noted there may be access issues for patients because the service is limited to centres that have GreenLight machines. However, this 'centre of excellence' model is necessary due

to capital and staffing costs for this technology, and patients would be referred to and would be willing to travel to these centres.

**15. Other significant factors**

Nil

**16. Applicant's comments on MSAC's Public Summary Document**

The Applicant supports MSAC's decision to increase the fee of VLAP on the MBS.

**17. Further information on MSAC**

MSAC Terms of Reference and other information are available on the MSAC Website:

[visit the MSAC website](#)