



## **BULKY DOCUMENTS**

(exceeds 300 pages)

**Proceeding/Serial No:** 91162370

**Filed:** 08-13-2007

**Title:** Opposer's Motion for Summary Judgment;  
Affidavit of Denis J. Boule; and Notice of Manual  
Filing

**Part 1 of 2**



TTAB

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August 10, 2007

**Via First Class Mail**

USPTO  
Trademark Trial and Appeal Board  
P.O. Box 1451  
Alexandria, VA 22313-1451



08-13-2007

U.S. Patent & TMO/TMMA Rept. Ct. #11

Re: Trademark Trial and Appeal Board  
*De Boule Diamond & Jewelry, Inc., Opposer, v. De Beers LV Ltd., Applicant*  
Consolidated Opposition No.: 91162370  
Our File No.: 1051.1006

Dear Sir:

In regard to the above-referenced matter, enclosed please find the following items electronically filed on August 9, 2007 with the Trademark Trial and Appeal Board:

- (1) Opposer's Motion for Summary Judgment;
- (2) Affidavit of Denis J. Boule; and
- (3) Notice of Manual Filing.

Please note that this Manual Filing includes all Exhibits to Opposer's Motion for Summary Judgment and Affidavit of Denis J. Boule. Should you have any questions, please do not hesitate to give me a call.

Very truly yours,



Scott T. Griggs

Enclosures

cc (w/enclosures): Darrell Saunders, Esq.  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD**

DE BOULLE DIAMOND & JEWELRY, INC.,

Opposer,

v.

DE BEERS LV LTD.,

Applicant.

Consolidated Opposition No.: 91162370

Opposition No.'s: 91162370

91162469

91164615

91165285

91165465

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**OPPOSER'S MOTION FOR SUMMARY JUDGMENT**

Pursuant to Rule 56 of the Federal Rules of Civil Procedure, and Trademark Trial and Appeal Board Manual of Procedure (TBMP), Section 528.01 (2d ed. rev. 2004), Opposer, De Boule Diamond & Jewelry, Inc. ("Opposer" and/or "De Boule"), hereby files this Motion for Summary Judgment, against Applicant, De Beers LV Ltd.<sup>1</sup> ("Applicant" and/or "De Beers"), and in support of same will respectfully show:

I.

INCORPORATION BY REFERENCE

1. This Motion is made in reliance upon the following Pleading and Affidavits, all of the facts, exhibits, and other evidence contained in which, are incorporated herein by reference as if set forth at length for all purposes (the "Summary Judgment Evidence"):

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<sup>1</sup> Opposer is informed that De Beers LV Ltd. has changed its name to De Beers Diamond Jewellers Limited since the initiation of this Proceeding.

(a) Applicant's U.S. Trademark for the stylized Mark "SO DB", Application Serial No. 79/000,478, rendered as follows (the "SO DB Mark"):

**So DB**

(b) Applicant's application for federal registration of the word Mark "DB STAR", U.S. Trademark Application Serial No. 78/245,795 (the "DB STAR Mark");

(c) Applicant's application for federal registration of the word Mark "DB LOGO", U.S. Trademark Application Serial No. 78/245,219 (the "DB LOGO Mark");

(d) Applicant's application for federal registration of the word Mark "DB SIGNATURE", U.S. Trademark Application Serial No. 78/245,210 (the "DB SIGNATURE Mark");

(e) Applicant's application for federal registration of the word Mark "DB MONOGRAM", U.S. Trademark Application Serial No. 78/245,779 (the "DB MONOGRAM Mark");

(f) Opposer's Opposition to federal registration of the DB LOGO Mark, Opposition No. 91162370, and Applicant's Answer thereto, filed in this Proceeding;

(g) Opposer's Opposition to federal registration of the DB MONOGRAM Mark, Opposition No. 91162469, and Applicant's Answer thereto, filed in this Proceeding;

(h) Opposer's Opposition to federal registration of the DB SIGNATURE Mark, Opposition No. 91164615, and Applicant's Answer thereto, filed in this Proceeding;

(i) Opposer's Opposition to federal registration of the DB STAR Mark, Opposition No. 91165285, and Applicant's Answer thereto, filed in this Proceeding;

(j) Opposer's Opposition to federal registration of the SO DB Mark, Opposition No. 91165465, and Applicant's Answer thereto, filed in this Proceeding;

(k) Opposer's application for federal registration of the Mark "DB", U.S. Trademark Application Serial No. 78/604,056 (the "DB Mark");

(l) Opposer's application for federal registration of the Mark "DE B" and Design, U.S. Trademark Application Serial No. 78/440,907 (the "DE B Mark"), now US Registration No. 3,078,627;

(m) Opposer's application for federal registration of the Mark "DE BOULLE", U.S. Trademark Application Serial No. 78/444,880 (the "DE BOULLE Mark"), now US Registration No. 3,078,625;

(n) The Affidavit of Denis J. Boule in support of Opposer's Motion for Summary Judgment, and attached exhibits, filed simultaneously herewith (the "Boule Affidavit");

(o) The Exhibits attached to and referenced in this Motion;

(p) The authorities cited and referenced in this Motion; and

(q) The record in this Proceeding.

## II.

### REQUESTED RELIEF

2. The undisputed Summary Judgment Evidence establishes as a matter of law that, given the significant similarities in appearance and commercial impression of the respective marks, the overlap of the goods associated with both the De Beers Marks and the prior De Boule Marks, the similarities in the trade channels, and the significant harm to the goodwill of the De Boule Marks that De Boule could experience as a result of confusion in the marketplace, confusion is likely to arise with the co-existence of the De Boule Marks and the De Beers Marks on the register. De Boule therefore prays that the Board enter an Order granting its Oppositions in all respects, and denying registration of each of the De Beers marks.

### III.

#### PROCEDURAL HISTORY

3. De Beers filed four (4) of the five (5) Applications for federal registration of the marks in issue in this Proceeding on the basis of Section 44(e) of the Trademark Act, 15 USC Section 1126(e) ("Section 44(e)"), on the following dates: (i) DB LOGO (Application Serial No. 78/45219), applied May 2, 2003; (ii) DB STAR (Application Serial No. 78/245,795), applied May 5, 2003; (iii) DB SIGNATURE (Application Serial No. 78/245,210), applied May 2, 2003; and (iv) DB MONOGRAM (Application Serial No. 78/245,779), applied November 15, 2002. De Beers filed its Application for federal registration of the SO DB Mark (Reg. No. 2,985,572), based on an extension of protection of an international registration in the United States under Section 66(a) of the Trademark Act, 15 USC Section 1141(f) ("Section 66(a)"), and the Madrid Protocol Implementation Act on August 26, 2003 (the DB LOGO, DB STAR, DB

SIGNATURE, DB MONOGRAM, and SO DB Marks are hereinafter collectively referred to as the "De Beers Marks").

4. De Boule timely filed five (5) separate oppositions against federal registration the De Beers Marks; namely, Opposition No. 91162370 (DB LOGO), Opposition No. 91162469 (DB MONOGRAM), Opposition No. 91164615 (DB SIGNATURE), Opposition No. 91165285 (DB STAR), and Opposition No. 91165465 (SO DB) (collectively the "Opposition").

5. On May 2, 2005, by Order entered on that date, the Board *sua sponte* consolidated Opposition No. 91162370, 91162469, and 91164615, under Opposition No. 91162370. On July 20, 2005, the Board further *sua sponte* consolidated Opposition Nos. 91165285 and 91165465 with the earlier Consolidated Opposition No. 91162370, as Consolidated Opposition No. 91165285 (the "Proceeding").

6. As part of the Trial, Opposer's Testimony Period in this Proceeding is set for the 30-day period closing on September 15, 2007. Applicant's Testimony Period in this Proceeding is set for the 30-day period closing on November 14, 2007. Opposer's rebuttal testimony period is set for the 15-day period closing on December 29, 2007.

#### IV.

#### UNDISPUTED SUMMARY JUDGMENT EVIDENCE

##### (a) History of De Boule

7. De Boule owns and operates a jewelry store in Dallas, Texas under the trade name "De Boule", and has done so since 1984. *Boule Affidavit*, ¶ 5. De Boule has marketed

and sold diamonds, fine jewelry and timepieces to the general public in Dallas, Texas, and elsewhere in the United States in association with the brand De Boule for almost twenty-five (25) years. *Id.* De Boule markets its brand and products to purchasers of engagement and wedding rings, gifts for special occasions, such as birthdays, anniversaries, and the Holidays, and connoisseurs and consumers of luxury products in general. *Id.* Over the years De Boule has grown to become one of the premier independently owned jewelers in the United States. *Id.*; see also Exhibit "A": *All That Glitters*. Dallas Business Journal. July 1997.

8. Through the years, the De Boule brand has developed a reputation in Dallas, Texas, and elsewhere in the United States, for the fine quality of the exclusive jewelry that the De Boule craftsmen custom design and manufacture, as well as the fine quality of its diamonds and other gems. *Boule Affidavit*, ¶ 6. De Boule's marketing activities include advertising and promoting its brand and products in local and national media. *Id.* De Boule further promotes its brand and offers its De Boule Collection and other products for sale to general public throughout the United States on its Web site. *Id.*

(b) History of De Beers

9. De Beers LV is a United Kingdom Company. It is a joint venture between the De Beers Group, the world's premier diamond group, and LVMH Moët Hennessy Louis Vuitton ("LVMH"), the world's leading luxury products group, to develop the global consumer brand potential of the De Beers Name. See Exhibit "B": *De Beers Consolidated Mines Limited/De Beers Centenary AG Joint Media Release*; Exhibit "C": *Technical & Financial Report for the*

*Diamond Interests of De Beers and its Partners: Appendix 2 to the Circular to the holders of De Beers Linked Units, posted 10 April 2001* (Exhibit “C”), ¶¶ 1.4.6, 1.6.1, 2.1, 2.4, 8.1. Pursuant to its agreement with LVMH, the De Beers Group transferred the world-wide rights to use the De Beers brand for luxury goods in consumer markets to De Beers LV, in or about 2001. *Id.* De Beers LV opened its first store in London, United Kingdom in December 2002. *See* Exhibit “D”: *de Beers 2003 Annual Review*, pp 17, 39.

10. The De Beers Group has a long time business presence in South Africa. *See* Exhibit “E”: Debora Spar and Jennifer Burns. *Forever: De Beers and U.S. Antitrust Law*. Harvard Business Review. Feb 1, 2000 (Revised Sept 6, 2002). The De Beers Group was associated with the apartheid-era regimes in South Africa. *Id.* The De Beers Group has also been notorious for its monopolistic practices in controlling the diamonds markets, and has been the target of investigations by the United States Department of Justice, since 1945. *Id.* Various entities in the De Beers Group have been Defendants in a number of class actions in the United States for human rights abuses by victims of South Africa’s apartheid-era regimes. *Id.* The De Beers Group has also been accused of being associated with trade in “conflict” or “blood” diamonds that financed coups and guerrilla warfare in Africa. *See* Exhibit “F”: Lucinda Saunders. *Rich and Rare are the Gems They War: Holding De Beers Accountable for Trading Conflict Diamonds*. 24 *Fordham Int’l L.J.* 1402.

11. During this time, the De Beers Group has “managed its business so as to avoid any undue legal risk arising out of US antitrust laws in the United States since its business

policies have not required systematic contacts with the United States”. Exhibit “C”, ¶¶ 10.2.1.2, 11.4.2. This meant that the De Beers Group intentionally avoided having any business presence in the United States. *See* Exhibit “E”: Debora Spar and Jennifer Burns. *Forever: De Beers and U.S. Antitrust Law*. Harvard Business Review. Feb 1, 2000 (Revised Sept 6, 2002). In July 2004 De Beers pled guilty in the United States to price fixing. *See* Exhibit “G-1”: Indictment in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division; Exhibit “G-2”: Plea Agreement in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division; Exhibit “G-3”: Courtroom Minutes. Guilty Plea and Sentencing Hearing. Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division. Prior to this settlement, De Beers internationally did not conduct business in the United States, and took the position that it was not subject to the jurisdiction of the governmental agencies and courts of the United States. In addition, the De Beers Group settled the remaining Class Actions in November 2005. *See* Exhibit “H”: De Beers Société Anonyme Media Release, dated November 30, 2005. In doing so the De Beers Group recognized the “reputational impact” of its legal troubles in the United States. *Id.*

12. The December 2002 opening of the first De Beers store in London, was accompanied by protest and controversy. *See* Exhibit “I”: Ron Irvin. *Is De Beers forever?* BrandChannel.com. November 22, 2004. De Beers LV opened its first store in the United States in New York in June 2005. *See* Exhibit “J”: *Opposing Words Mark De Beers LV Opening.*

Rapaport News. June 23, 2005. The opening was likewise was accompanied by protest and controversy. *Id.*

(c) The De Boule Marks

13. De Boule filed its application for federal registration of its Marks on the basis of Section 1(a) of the Trademark Act, 15 USC Section 1501(a) ("Section 1(a)"), on the following dates: (i) DB Mark (Application Serial No. 78/604,056), applied April 7, 2005 (the "DB Mark"); (ii) DE BOULLE Mark (Application Serial No. 78/444,880), applied July 1, 2004 (the "DE BOULLE Mark"); and (iii) DE B and Design Mark (Application Serial No. 78/444,907), applied July 1, 2004 (the "DE B Mark") (the DB, DE BOULLE and DE B Marks are hereinafter collectively referred to as the "De Boule Marks"). De Boule has directed its Marks to Classes 14 (jewelry, diamonds, watches) and 35 (retail jewelry stores, catalogue sales, and web based sales) (collectively the "De Boule Goods"). In addition, the DE BOULLE Mark and the DE B Mark are directed to Class 16 (fine art - paintings). On April 11, 2006, De Boule was awarded United States Registration No. 3,078,625 for the DE BOULLE Mark and on United States Registration No. 3,078,627 for the DE B and Design Mark.

14. Customers have come to identify the De Boule Marks with fine jewelry, diamonds, and timepieces, which are of the highest quality. *Boule Affidavit*, ¶ 10. Customers have come to identify the De Boule Marks with fine jewelry, including diamonds, and timepieces which originate from De Boule. *Id.* The De Boule Marks are valuable assets of De Boule. *Id.* The De Boule Marks carry considerable goodwill and customer acceptance of the

fine jewelry, diamonds, and timepieces offered under the De Boule Marks. *Id.* De Boule's customers and potential customers have come to recognize the De Boule Marks as representing the quality of De Boule's fine jewelry, diamonds, and timepieces. *Id.*

(d) The De Beers Marks

15. De Beers desires to register the De Beers Marks in Class 14, for use with an extensive list of enumerated products, that include: precious metals and their alloys and goods; jewelry; gemstones; diamonds; and watches (collectively the "De Beers Goods").

16. Just like De Boule, De Beers markets its products to purchasers of engagement and wedding rings, gifts for special occasions, such as birthdays, anniversaries, and the Holidays, and connoisseurs and consumers of luxury products in general. *Boule Affidavit*, ¶ 12. Diamonds and fine jewelry bearing the De Beers' brand and diamonds, and fine jewelry bearing the De Boule Marks may be sought out and bought by the same consumer. *Id.* Just like De Boule, De Beers LV markets its products under the De Beers brand through public advertising in national luxury goods and lifestyle media and the internet. *Boule Affidavit*, ¶ 13. The De Beers and De Boule marketing and advertising campaigns are likely to reach the same consumer. *Id.*

17. The De Beers LV marketing strategy involves selling its products to the general public through its company-owned stores in New York, Beverly Hills, Las Vegas, and elsewhere, and to offer De Beers branded diamonds and fine jewelry through a select network of reputable jewelry stores (such as de Boule) in parts of the United States, where there are no company-owned stores, such as Texas. *Boule Affidavit*, ¶ 14.

18. Because of the semantic similarity in the two brand names and their abbreviations, whether DB or De B, Potential consumers of diamonds and fine jewelry marketed by De Boule are likely to assume that the De Beers products offered for sale under the De Beers brand are actually the diamonds and fine jewelry offered by De Boule. *Id.*

(e) Respective Priority of the Marks

19. De Boule's applications for registration of the De Boule Marks are all based on actual use of the De Boule Marks in interstate trade and commerce, on the basis of Section 1(a), with the following priority claims: (i) DB Mark (Application Serial No. 78/604,056), in use since December 31, 2000; (ii) the De Boule Mark (Application Serial No. 78/444,880), in use since December 31, 1989; and (iii) DE B Mark (Application Serial No. 78/444,907), in use since June 30, 2001. *Boule Affidavit*, ¶¶ 5, 7, 8, 9.

20. De Beers made its applications for registration of the four (4) De Beers Marks, based on an intent to use, pursuant to Section 44(e) on the following dates: (i) DB LOGO (78/45219), application date May 2, 2003 (the Foreign Filing Date and Foreign Registration Date are listed as November 5, 2002); (ii) DB STAR (Application Serial No. 78/245795), application date May 5, 2003 (the Foreign Filing Date and Foreign Registration Date are listed as November 15, 2002); (iii) DB SIGNATURE (Application Serial No. 78/245210), application date May 2, 2003 (the Foreign Filing Date and Foreign Registration Date are listed as November 5, 2002); and (iv) DB MONOGRAM (Application Serial No. 78/245779), application date May 5, 2003 (the Foreign Filing Date and Foreign Registration Date are listed as November 15, 2002). Only

one affidavit or declaration of use has been filed for any of these Marks pursuant to Sections 1(a) and 1(b) of the Trademark Act, 15 USC Sections 1501(a) & (b).

21. De Beers filed its Application for federal registration of the SO DB Mark (Reg. No. 2,985,572) on the basis of Section 66(a), on August 26, 2003. It claims prior use of the SO DB Mark, under Section 67 of the Trademark Act, 15 USC Section 1567 (“Section 67”), as of August 26, 2003.

22. Prior to June 2004, De Beers internationally did not conduct business in the United States. Although De Beers was formed in 2001, it did not operate in the US until opening its store in New York, in June 2005.

23. The undisputed Summary Judgment Evidence therefore shows that De Boule has used all of the De Boule Marks in interstate trade and commerce prior to the filing of an application for federal registration of any of the De Beers Marks.

(e) Irreparable Harm to De Boule by Any Confusion

24. Any confusion between the De Boule brand and the De Beers brand may cause De Boule irreparable harm. In the market for diamonds and fine jewelry, the De Beers name has long been associated with the apartheid-era regimes in South Africa and its monopolistic practices to control diamond prices and the diamond market. De Boule has devoted more than 20 years in building its brand in the United States. The De Boule brand and the De Boule Marks are valuable assets of De Boule. *Boule Affidavit*, ¶ 15. De Boule would suffer irreparable harm if potential consumers of diamonds and fine jewelry assume that the diamonds

and fine jewelry marketed by De Boule in association with the De Boule Marks are actually products offered by De Beers. *Id.*

V.

ARGUMENT AND AUTHORITIES

(a) Summary Judgment Standard

25. The purpose of summary judgment is to avoid an unnecessary trial where additional evidence would not reasonably be expected to change the outcome. *See Pure Gold, Inc. v. Syntex (U.S.A.) Inc.*, 730 F.2d 624, 222 USPQ 741 (Fed. Cir. 1984); *see also* TBMP section 528.01 (2d ed. rev. 2004) and cases cited therein. Summary judgment is appropriate in cases where the moving party establishes that there is no genuine issue of material fact which requires resolution at trial and that it is entitled to judgment as a matter of law. See Fed. R. Civ. P. 56(c). An issue is material when its resolution would affect the outcome of the proceeding under governing law. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 106 S. Ct. 2505 (1986); *Octocom Systems Inc. v. Houston Computers Services, Inc.*, 918 F.2d 937, 16 USPQ2d 1783, 1786 (Fed. Cir.1990).

26. A fact is genuinely in dispute if the evidence of record is such that a reasonable fact finder could return a verdict in favor of the nonmoving party. *Id* However, a dispute over a fact that would not alter the Board's decision on the legal issue will not prevent entry of summary judgment. *See Kellogg Co. v. Pack 'Em Enterprises Inc.*, 951 F.2d 330, 21 USPQ2d 1142 (Fed. Cir. 1991).

- (b) A review of the Applicant's marks in light of Opposer's marks reveals that no genuine issue of material fact remains that De Boule is entitled to a ruling of a likelihood of confusion as a matter of law.

27. Ultimate conclusions about confusing similarity of two marks is a question of law. *See Sweats Fashion, Inc. v. Pannill Knitting Company, Inc.*, 833 F.2d 1560 (Fed. Cir. 1987);

28. There is no material issue of fact that De Boule is the prior user and senior user having prior use of the De Boule Marks over the De Beers Marks. *See* ¶¶ 19-23, *supra*.

29. An analysis of similarities between the De Beers Marks and the prior De Boule Marks in light of the relevant factors set forth by the U.S. Court of Customs and Patent Appeals in *In re E.I. du Pont de Nemours & Co.*, 476 F.2d 1357 (CCPA 1973), also indicates that there is a likelihood of confusion arising if the marks were permitted to co-exist.

- (i) Similarity of the marks in their entireties as to appearance, sound, connotation, and commercial impression

30. Registration under Trademark Act Section 2(d), 15 U.S.C. Section 1052(d), should be refused when the applicant's mark, when used on or in connection with the identified goods and services, so resembles a pre-existing mark, as to be likely to cause confusion, or to cause mistake, or to deceive. TMEP Section 1207. A similarity in any one of the elements of sound, appearance, meaning or connotation attaching to two marks is sufficient to find a likelihood of confusion. *In re Mack*, 197 USPQ 755 (TTAB 1977; *In re E. I. DuPont de Nemours & Co.*, 476 F.2d 1357, 177 USPQ 563 (CCPA 1973). "DB" of De Boule's DB mark is

identical to the prominent component of all five De Beers marks. In addition, De Boule's DE B Mark is prominently comprised of a "D" and "B" and, similarly, De Boule's DE BOULLE Mark conspicuously includes a strong "DB" sound at the beginning as expressed by the "DE B" prefix as shown in *Comparison of De Boule Marks to De Beers Marks (Table I)*:

**Table I: Comparison of De Boule Marks to De Beers Marks**

Mark	Appearance, Sound, & Connotation
<b>De Boule Diamond &amp; Jewelry, Inc.</b>	
DB	DB
DE B (Stylized)	Prominently comprised of "D" and "B"
DE BOULLE	"DB sound" in "DE B" prefix
<b>De Beers LV Ltd.</b>	
DB LOGO	DB plus word "Logo"
DB MONOGRAM	DB
(no claim is made to the exclusive right to use "MONOGRAM" apart from the mark as shown)	
DB SIGNATURE	DB plus word "Signature"
DB STAR	DB plus word "Star"
<b>So DB</b>	
(Word Mark: SO DB)	DB plus word "So"

“It is often the first part of a mark which is most likely to be impressed upon the mind of a purchaser and remembered.” *Presto Products, Inc. v. Nice-Pak Products, Inc.* 9 USPQ2d 1895 (TTAB 1988) (finding KID-WIPES to be confusingly similar to KID STUFF for baby wipes).

“Although it is not proper to dissect a mark, one feature of a mark may be more significant and it is proper to give greater force and effect to that dominant feature.” McCarthy § 23:44 “If the ‘dominant’ portion of both marks is the same, then confusion may be more likely, notwithstanding peripheral differences.” McCarthy § 23:44.

31. Letter combination marks are typically afforded broader protection: “Arbitrary arrangements of letters have generally been given a wide scope of protection, based on the premise that it is more difficult to remember a series of arbitrarily arranged letters than it is to remember words, figures phrases or syllables. The difficulty of remembering multiple-letter marks makes the likelihood of confusion between such marks, when similar, more probable.” McCarthy § 23:33 “It is a well-established principle of our trademark law that confusion is more likely between arbitrarily arranged letters than between other types of marks.” *Edison Bros. Stores, Inc. v. Brutting E.B. Sport-International GmbH*, 230 USPQ 530 (TTAB 1986); *Hilson Research, Inc. v. Society for Human Resources Management*, 27 U.S.P.Q.2d 1423 (TTAB 1993) (finding two “HR” logos confusingly similar and stating: “The fact that the marks comprise letters adds to the likelihood that the marks will be confused”).

32. The most distinguishable and prominent feature of each of the De Beers Marks is their use of the "DB" letter combination. The non-DB parts of the De Beers Marks are less distinctive. *See Table I.*

33. De Boule has requested registration of its DB Mark in typed or standard character form. Upon registration, this Mark may be displayed in any lettering style. 37 C.F.R. §2.52(a). In addition, the initials "D B" are dominant, visually and phonetically, in the DE B and Design Mark. *See Table I.*

34. Furthermore, the marks De Beers and De Boule, from which the DB brands are derived, are not only not only phonetically alike, but could be difficult to distinguish visually, upon a cursory glance, particularly when used in the same manner of display, in association with any DB or DE B branded jewelry. Moreover, the fact that the abbreviations of the De Beers and De Boule trade names used in their respective brands are identical (DB and/or DE B), increases the likelihood of confusion. *See Table I.*

35. The presentation of the De Beers Marks in special form will therefore not avoid likelihood of confusion with the De Boule Marks. *See In re Melville Corp.*, 18 USPQ2d 1386, 1387-88 (TTAB 1991); *In re Pollio Dairy Prods. Corp.*, 8 USPQ2d 2012, 2015 (TTAB 1988); *Sunnen Prods. Co. v. Sunex Int'l Inc.*, 1 USPQ2d 1744, 1747 (TTAB 1987); *In re Hester Indus., Inc.*, 231 USPQ 881, 882, n.6 (TTAB 1986); *United Rum Merchants, Ltd. v. Fregal, Inc.*, 216 USPQ 217, 220 (TTAB 1982); *Frances Denney, Inc. v. Vive Parfums, Ltd.*, 190 USPQ 302, 303-04 (TTAB 1976); TMEP §1207.01(c)(iii).

(ii) Similarity and nature of the goods or services  
as described in application

36. If the marks of the respective parties are identical or highly similar, the commercial relationship between the goods or services of the respective parties must then be considered carefully, to determine whether there is a likelihood of confusion. *In re Concordia International Forwarding Corp.*, 222 USPQ 355 (TTAB 1983). “As the degree of similarity of the goods of the parties increases, ‘the degree of similarity [of the marks] necessary to support a conclusion of likelihood of confusion declines.’” *Fossil Inc. v. Fossil Group*, 49 USPQ2d 1451 (TTAB 1998). See also *Hard Rock Café International (USA), Inc. v. Elsea*, 56 USPQ2d 1504 (TTAB 2000) (“When marks would appear on virtually identical goods or services, the degree of similarity necessary to support a conclusion of likely confusion declines.”).

37. The De Beers Marks and the prior De Boule Marks are very similar. The goods of the parties need therefore not be identical or directly competitive to find a likelihood of confusion, they need only be related in some manner, or the conditions surrounding their marketing be such, that they could be encountered by the same purchasers under circumstances that could give rise to the mistaken belief that the goods come from a common source. *In re Martin’s Famous Pastry Shoppe, Inc.*, 748 F.2d 1565, 223 USPQ 1289 (Fed. Cir. 1984); *In re Corning Glass Works*, 229 USPQ 65 (TTAB 1985); *In re Rexel Inc.*, 223 USPQ 830 (TTAB 1984); *Guardian Products Co., Inc. v. Scott Paper Co.*, 200 USPQ 738 (TTAB 1978); *In re International Telephone & Telegraph Corp.*, 197 USPQ 910 (TTAB 1978).

38. De Beers Marks are to be used in connection with class 14 jewelry and related items. De Boule marks are used in connection with Class 14 jewelry and related items and Class 36 jewelry retail stores. There is essentially a complete overlap with the associated goods of the De Beers Marks and the De Boule Marks. *See, e.g.*, respective catalogs of De Boule at the domain <deboulle.com> and De Beers at the domain <debeers.com>.<sup>2</sup> Each of the De Beers Marks resides in International Class 014 and is directed to jewelry, diamonds, watches, clocks, chronographs for use as watches, watch bracelets, watch cases, pocket watches, wristwatches, watch movements. Similarly, each of the De Boule Marks resides in International Class 014 and is directed to jewelry, diamonds, watches and related goods and services as shown on *Comparison of Goods and Services of De Boule Marks to De Beers Marks (Table II)*:

**Table II: Comparison of Goods and Services of De Boule Marks to De Beers Marks**

Mark	Description of Goods/Services
<b>De Boule Diamond &amp; Jewelry, Inc.</b>	
DB	<b>IC 014: Jewelry, diamonds, watches and timepieces, all for women.</b>
DE B (Stylized)	<b>IC 014: Jewelry, diamonds, watches and timepieces.</b>
DE BOULLE	<b>IC 014: Jewelry, diamonds, watches and timepieces.</b>
<b>De Beers LV Ltd.</b>	
DB LOGO	<b>IC 014: Precious metals and their alloys and goods in precious</b>

<sup>2</sup> Web site information is appropriate for judicial notice pursuant to Rule 201, Fed. R.Evid. *Renaissance Greeting Cards v. Dollar Tree Stores*, 405 F.Supp.2d 680, 684 n. 9 (E.D. Va. 2005) (citations omitted)

	metals or coated therewith not included in other classes; namely beverage ware and dishes of precious metal, candle snuffers and candlesticks of precious metal, napkin rings of precious metal, vases of precious metal, jewel cases of precious metal, statues of precious metal, rings, necklaces, bracelets, earrings, brooches, diadems made of precious metals or coated therewith, <b>jewelry</b> and imitation <b>jewelry</b> , gemstones; precious stones, semi-precious stones; <b>diamonds; watches, clocks; horological and chronometric instruments</b> , namely, <b>chronometers, chronographs</b> for use as <b>watches, watch</b> bracelets, <b>watch</b> cases, pocket <b>watches, wristwatches, watch</b> movements; replacement parts for all the aforesaid goods.
DB MONOGRAM  (no claim is made to the exclusive right to use "MONOGRAM" apart from the mark as shown)	<b>IC 014:</b> Precious metals and their alloys and goods in precious metals or coated therewith not included in other classes, namely, <b>jewelry</b> and imitation <b>jewelry</b> ; precious stones; semi-precious stones; <b>diamonds; watches; clocks; chronometers and chronoscopes</b> ; replacement parts for all the aforesaid goods.
DB SIGNATURE	<b>IC 014:</b> Precious metals and their alloys, namely, <b>jewelry</b> , imitation <b>jewelry</b> , gemstones; precious stones; semi-precious stones, <b>diamonds, horological and chronometric instruments</b> , namely, <b>watches and clocks</b> and parts thereof for all the aforementioned goods.
DB STAR	<b>IC 014:</b> Precious metals and their alloys and goods in precious metals or coated therewith, namely, beverage glassware and dishes of precious metal, candle snuffers and candlesticks of precious metal, napkin rings of precious metal, vases of precious metal, jewel cases of precious metal, statues of precious metal, rings, necklaces, bracelets, earrings, brooches, diadems made of precious metals or coated therewith, <b>jewelry</b> and imitation <b>jewelry</b> , gemstones, precious stones, semi-precious stones, <b>diamonds, watches, clocks; horological and chronometric instruments</b> , namely, <b>chronometers, chronographs</b> for use as <b>watches, watch</b> bracelets, <b>watch</b> cases, pocket <b>watches, wristwatches, watch</b> movements; replacement parts for all the aforesaid goods.
<b>So DB</b>	<b>IC 014:</b> Precious metals and their alloys and goods in precious metals or coated therewith, namely, beverage glassware and dishes of precious metal, candle snuffers and candlesticks of precious metal, napkin rings of precious metal, vases of precious metal, jewel cases of precious metal, statues of precious metal, rings,

(Word Mark: SO DB)

necklaces, bracelets, earrings, brooches, diadems made of precious metals or coated therewith, **jewelry** and imitation **jewelry**, gemstones, precious stones, semi-precious stones, **diamonds**, **watches**, **clocks**, **horologic** and **chronometric instruments**, namely, **chronometers**, **chronographs** for use as **watches**, **watch bracelets**, **watch cases**, **pocket watches**, **wristwatches**, **watch movements**; replacement parts for all the aforesaid goods.

(iii) Similarity of established, likely-to-continue trade channels

39. De Beers and De Boule both sell their DB branded jewelry at high-end retail stores. De Beers and De Boule both advertise in national luxury goods and lifestyle media and the Internet. In addition, there is essentially complete overlap with the jewelry goods of the De Beers Marks and the De Boule Marks. They pass through the same trade channels. Consumers are therefore likely to be confused by the use of similar marks on or in connection with goods and with services featuring or related to those goods. *See In re Hyper Shoppes (Ohio), Inc.*, 837 F.2d 463, 6 USPQ2d 1025 (Fed. Cir. 1988) (BIGG'S for retail grocery and general merchandise store services held confusingly similar to BIGGS for furniture); *In re U.S. Shoe Corp.*, 229 USPQ 707 (TTAB 1985) (CAREER IMAGE (stylized) for retail women's clothing store services and clothing held likely to be confused with CREST CAREER IMAGES (stylized) for uniforms); *In re United Service Distributors, Inc.*, 229 USPQ 237 (TTAB 1986) (design for distributorship services in the field of health and beauty aids held likely to be confused with design for skin cream); *In re Phillips-Van Heusen Corp.*, 228 USPQ 949 (TTAB 1986) (21 CLUB for various items of men's, boys', girls' and women's clothing held likely to be confused with THE "21" CLUB (stylized) for restaurant services and towels); *Steelcase Inc. v. Steelcare*

*Inc.*, 219 USPQ 433 (TTAB 1983) (STEELCARE INC. for refinishing of furniture, office furniture, and machinery held likely to be confused with STEELCASE for office furniture and accessories); *Mack Trucks, Inc. v. Huskie Freightways, Inc.*, 177 USPQ 32 (TTAB 1972) (use of similar marks for trucking services and on motor trucks and busses is likely to cause confusion).

(iv) Conditions under which and buyers to whom sales are made,  
i.e. "impulse" vs. careful sophisticated purchasing

40. Case law deemphasizes significance of sophistication of consumers when marks and associated goods are highly similar/identical. *Source Serv. Cop. V. Source Telecomputing*, 635 F. Supp. 600, 616 (N.D. Ill. 1986) ("Where marks are identical, of course, sophistication as a factor in determining likelihood of confusion is less significant").

41. Moreover, a trademark violation occurs with initial interest confusion even if sophisticated customers eventually discover that the applicant is not related to the opposer. *Porsche Cars North America, Inc. v. Manny's Porshop, Inc.*, 972 F. Supp. 1128 (N.D. Ill. 1997).

42. The DB branded jewelry is being purchased by customers with concern and knowledge of the value, grade, and quality of the actual goods. To these customers, trust and brand identification is also an important part of the buying decision. *Boulle Affidavit* ¶ 5.

43. Given that trust and brand identification is so important to the purchaser, a likelihood of confusion with regard to the De Beers Marks and the prior De Boulle Marks could be significantly harmful to De Boulle if potential confusion exists as to an affiliation, sponsorship, or relation of the De Boulle Marks to De Beers.

(v) Fame of the prior mark (sales, advertising, length of use)

44. De Boule has marketed and sold diamonds, fine jewelry and timepieces to the general public in Dallas, Texas, and elsewhere in the United States in association with the brand De Boule for almost twenty-five (25) years. Over the years De Boule has grown to become one of the premier independently owned jewelers in the United States.

45. In light of the prior legal troubles of The De Beers Group in the United States, there is a degree of infamy and, in some sectors, significant ill will associated with De Beers and its brand.

46. Accordingly, to the extent confusion were to arise, the confusion would be particularly harmful to De Boule. The significant goodwill associated with De Boule and its marks could be significantly harmed by potential confusion as to an affiliation, sponsorship, or relation to De Beers generated by the De Beers Marks.

(vi) The extent of potential confusion, i.e., whether *de minimis* or substantial.

47. Brand identity is a significant component of the value of expensive, luxury items such as the jewelry items and retail services at issue. Accordingly, to the extent confusion will be created by the marks, it is likely to significantly affect De Boule's ability to continue to generate goodwill in the De Boule Marks. Even if just initial interest confusion arises that can be negated by further research by purchasers, such confusion may be enough to influence consumer decisions about jewelry purchases. *See Porsche Cars North America, Inc. v. Manny's Porshop, Inc.*, 972 F. Supp. 1128 (N.D. Ill. 1997) ("Even if sophisticated consumers eventually

discover that defendant is not related to plaintiffs, a trademark violation can exist simply from the initial confusion.”); *Helfferrich, Schulz, Th. Steinweg Nachf. v. Steinway & Sons*, 365 F. Supp 707 (2d Cir. 1975) (finding initial interest confusion actionable between “GROTRIAN-STEINWEG” and “STEINWAY” marks).

48. Accordingly, the effect of the potential confusion, regardless of how widespread, is likely to be substantial.

(c) Conclusion

49. The foregoing analysis of the undisputed Summary Judgment Evidence establishes as a matter of law that, given the significant similarities in the respective marks’ appearances and commercial impression, the overlap of the goods associated with both the De Beers Marks and the prior De Boule Marks, the similarities in the trade channels, and the significant harm to the goodwill of the De Boule Marks that De Boule could experience as a result of confusion in the marketplace, confusion is likely to arise with the co-existence of the De Boule Marks and the De Beers Marks on the register, under the factors prescribed in *In re E.I. du Pont de Nemours & Co.*

Summary judgment is accordingly appropriate and De Boule’s opposition should be granted.

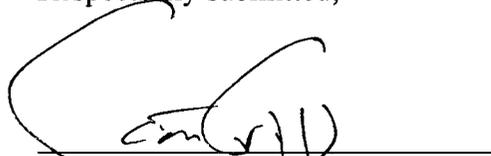
VI.

PRAYER

De Boule Diamond & Jewelry, Inc., Opposer, prays that, upon consideration of the facts and authorities set forth herein, the Board enter an Order granting its Oppositions in all respects, denying registration of each of the De Beers Marks, and granting it such other and further relief at law and in equity to which Opposer may show himself justly entitled

This the 9<sup>th</sup> day of August, 2007.

Respectfully submitted,



Scott T. Griggs  
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Griggs Bergen LLP  
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214-653-2400 – [telephone]  
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Counsel for Opposer

CERTIFICATE OF SERVICE

The undersigned hereby certifies that he has served a copy of the foregoing document upon counsel of record by electronic mail on this the 9<sup>th</sup> day of August, 2007, and by mailing a true copy thereof with the Exhibits referenced herein, through the United States Mail, first class, postage prepaid, on the 10<sup>th</sup> day of August, 2007, and addressed as follows:

"Saunders, Darren W." darren.saunders@klgates.com

"Rao, Vincent P. II" vincent.rao@klgates.com

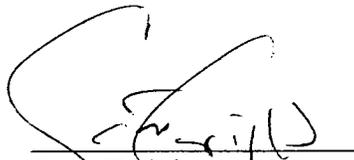
Darrell Saunders, Esq.

Vincent P. Rao, II, Esq.

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599 Lexington Avenue

New York, NY 10022-6030

  
\_\_\_\_\_  
Scott T. Griggs

## Exhibits

- Exhibit "A" All That Glitters. Dallas Business Journal. July 1997
- Exhibit "B" De Beers Consolidated Mines Limited/ De Beers Centenary AG Joint Media Release, dated 16 January 2001
- Exhibit "C" Abstracts from: Technical & Financial Report for the Diamond Interests of De Beers and its Partners: Appendix 2 to the Circular to the holders of De Beers Linked Units, posted 10 April 2001
- Exhibit "D" De Beers 2003 Annual Review.
- Exhibit "E" Debora Spar and Jennifer Burns. Forever: De Beers and U.S. Antitrust Law. Harvard Business Review. Feb 1, 2000 (Revised Sept 6, 2002).
- Exhibit "F" Lucinda Saunders. Rich and Rare are the Gems They War: Holding De Beers Accountable for Trading Conflict Diamonds. 24 Fordham Int'l L.J. 1402.
- Exhibit "G-1" Indictment in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.
- Exhibit "G-2" Plea Agreement in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.
- Exhibit "G-3" Courtroom Minutes. Guilty Plea and Sentencing Hearing. Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.
- Exhibit "H" De Beers Société Anonyme Media Release dated November 30, 2005
- Exhibit "I" Ron Irvin. Is De Beers forever? BrandChannel.com. November 22, 2004.
- Exhibit "J" Opposing Words Mark De Beers LV Opening. Rapaport News. June 23, 2005.
- Exhibit "K" Examples of De Boule National Advertising

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
 BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

<b>Proceeding</b>	91162370
<b>Party</b>	Plaintiff De Boulle Diamond & Jewelry, Inc.
<b>Correspondence Address</b>	SCOTT T. GRIGGS GRIGGS BERGEN LLP 901 MAIN STREET, SUITE 6300, BANK OF AMERICA PLAZA DALLAS, TX 75202 UNITED STATES
<b>Submission</b>	Motion for Summary Judgment
<b>Filer's Name</b>	Scott T. Griggs
<b>Filer's e-mail</b>	scott@griggslaw.com
<b>Signature</b>	/Scott Griggs/
<b>Date</b>	08/09/2007
<b>Attachments</b>	MSJ.pdf ( 27 pages )(355224 bytes )

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

DE BOULLE DIAMOND & JEWELRY, INC.,

Opposer,

v.

DE BEERS LV LTD.,

Applicant.

Consolidated Opposition No.: 91162370

Opposition No.'s: 91162370

91162469

91164615

91165285

91165465

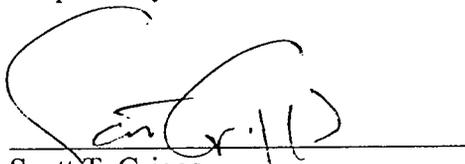
NOTICE OF MANUAL FILING

PLEASE TAKE NOTICE that Opposer, De Boulle Diamond & Jewelry, Inc. has manually filed its Exhibits in support of Opposer's Motion for Summary Judgment filed in this proceeding on August 9, 2007, in accordance with 37 C.F.R. §2.126(a).

It will therefore been manually submitted to the TTAB for filing.

This the 9<sup>th</sup> day of August, 2007.

Respectfully submitted,



Scott T. Griggs

Texas State Bar No. 24032254

Griggs Bergen LLP

Bank of America Plaza

901 Main Street

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Counsel for Opposer

CERTIFICATE OF SERVICE

The undersigned hereby certifies that he has served a copy of the foregoing document upon counsel of record by electronic mail on this the 9<sup>th</sup> day of August, 2007, and by mailing a true copy thereof, through the United States Mail, first class, postage prepaid, on the 10<sup>th</sup> day of August, 2007, and addressed as follows:

"Saunders, Darren W." darren.saunders@klgates.com

"Rao, Vincent P. II" vincent.rao@klgates.com

Darrell Saunders, Esq.  
Vincent P. Rao, II, Esq.  
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Scott T. Griggs

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
 BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

<b>Proceeding</b>	91162370
<b>Party</b>	Plaintiff De Boulle Diamond & Jewelry, Inc.
<b>Correspondence Address</b>	SCOTT T. GRIGGS GRIGGS BERGEN LLP 901 MAIN STREET, SUITE 6300, BANK OF AMERICA PLAZA DALLAS, TX 75202 UNITED STATES
<b>Submission</b>	Motion for Summary Judgment
<b>Filer's Name</b>	Scott T. Griggs
<b>Filer's e-mail</b>	scott@griggslaw.com
<b>Signature</b>	/Scott Griggs/
<b>Date</b>	08/09/2007
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
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Applicant.

Consolidated Opposition No.: 91162370

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91162469

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91165285

91165465

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**AFFIDAVIT OF DENIS J. BOULLE IN SUPPORT OF  
OPPOSER'S MOTION FOR SUMMARY JUDGMENT**

STATE OF TEXAS

§

§

COUNTY OF DALLAS

§

BEFORE ME, the undersigned authority, on this day personally appeared Denis J. Boule, who is personally known to me, and first being duly sworn according to the law upon his oath deposed and said:

1. My name is Denis J. Boule. I am over eighteen years of age, have never been convicted of a crime and am fully competent to make this affidavit. I have personal knowledge of the facts stated herein, all of which are true and correct.

2. I am making this Affidavit in support of the Motion for Summary Judgment filed by De Boule Diamond & Jewelry, Inc. the Opposer in this Proceeding ("De Boule").

3. I am the Chief Executive Officer and Chairman of the Board of De Boule. I previously held the Office of president of De Boule, having functioned in that capacity since its incorporation. I have been in the business of marketing and selling diamonds, fine jewelry and timepieces to the general public in the United States since 1982. I am a Member of Jewelers of America, and the Retail Jewelers Advisory Board of the American Watch Guild (I am also a founding Board Member of the American Watch Guild).

4. De Boule was incorporated by the Secretary of State of Texas on September 26, 1983, as Quadrant Diamond Counsel, Inc. On June 29, 1984, De Boule changed its name to De Boule Diamond & Jewelry Counsel, Inc. On June 13, 1988, De Boule changed its name to De Boule Diamond & Jewelry, Inc.

5. De Boule owns and operates a jewelry store in Dallas, Texas under the service mark "De Boule", and has done so since 1984. As such, De Boule has marketed and sold diamonds, fine jewelry and timepieces to the general public in Dallas, Texas, and elsewhere in the United States in association with the brand De Boule for almost twenty five (25) years. Over the past three (3) years alone, at least thirty-five percent (35%) of De Boule's sales were made to consumers with residences outside the State of Texas. De Boule markets its brand and products to purchasers of engagement and wedding rings, gifts for special occasions, such as birthdays, anniversaries, and the Holidays, and connoisseurs and consumers of luxury products in general. Trust and brand identification are an important part of the buying decision to these customers. Over the years De Boule has grown to become one of the premier independently owned jewelers in the United States.

6. Through the years, the De Boule brand has developed a reputation in

Dallas, Texas, and elsewhere in the United States, for the fine quality of the exclusive jewelry that the De Boule craftsmen custom design and manufacture, as well as the fine quality of its diamonds and other gems. De Boule's marketing activities include advertising and promoting its brand and products in local and national luxury goods and lifestyle media, such as Vanity Fair, the Wall Street Journal, GQ Magazine, Millionaire Magazine, Robb Report, and Town & Country. True and correct copies of examples of national advertising placements by De Boule in this regard, are attached hereto as Exhibit K. De Boule, by way of further example, also markets its brand to the target market of connoisseurs of luxury and lifestyle products nationally, by advertisements on a race car that that competes in events on the Formula Ford Zetec Cooper Tire Championship Series on the East Coast. De Boule further promotes its brand and offers its De Boule Collection and other products for sale to general public throughout the United States on its Web site, [www.deboulle.com](http://www.deboulle.com).

7. The De Boule brand is also contained on in-store displays, local and national advertising, as well as packaging delivered and shipped with De Boule's products to clients in Dallas, Texas, and elsewhere in the United States. True and correct copies of examples of the display of the De Boule brand in association with De Boule's products are contained in the de Boule's Application for federal registration of the Mark "DE BOULLE", U.S. Trademark Application Serial No. 78/444,880 (the "DE BOULLE Mark").

8. In or about December 2000, as part of the design of its Web site, De Boule designed the mark "DB", made the subject of its U.S. Trademark Application Serial No. 78/604,056 (the "DB Mark"). Since that time, De Boule has used the DB Mark in

association with the fine jewelry, diamonds, and timepieces sold to the general public throughout the United States on the Web site. The DB Mark is also contained on packaging delivered and shipped with De Boule's products to clients in Dallas, Texas, and elsewhere in the United States. True and correct copies of examples of the display of the DB mark in association with De Boule's products are contained in de Boule's U.S. Trademark Application Serial No. 78/604,056 for federal registration of the DB Mark.

9. In or about June 2001, as part of the redesign of its corporate identity to coincide with the opening of its new store, De Boule designed the mark "DE B", made the subject of its U.S. Trademark Application Serial No. 78/440,907 (the "DE B Mark"). Since that time, De Boule has also used the DE B Mark on in-store displays, local and national advertising, as well as packaging delivered and shipped with De Boule's products to clients in Dallas, Texas, and elsewhere in the United States. True and correct copies of examples of the display of the DE B brand in association with De Boule's products are contained in de Boule's U.S. Trademark Application Serial No. 78/440,907 for federal registration of the DE B Mark.

10. Customers have come to identify the DB, DE BOULLE and DE B Marks (hereinafter collectively the "De Boule Marks") with fine jewelry, diamonds, and timepieces, which are of the highest quality. Customers have come to identify the De Boule Marks with fine jewelry, including diamonds, and timepieces which originate from De Boule. The De Boule Marks are valuable assets of De Boule. The De Boule Marks carry considerable goodwill and customer acceptance of the fine jewelry, diamonds, and timepieces offered under the De Boule Marks. De Boule's customers and potential customers have come to recognize the De Boule Marks as representing the quality of De

Boulle's fine jewelry, diamonds, and timepieces. Indeed, in 2005, I met with Alyce Alston, the then Chief Executive Officer of De Beers Diamond Jewellers US Inc. ("De Beers"), at the De Boulle store in Dallas, Texas, at her request. At the meeting, De Beers requested that De Boulle consider carrying the De Beers line of products, as a result of the considerable goodwill and customer acceptance nationally of the fine jewelry, diamonds, and timepieces offered under the De Boulle brand.

11. I have reviewed and am familiar with the advertising and marketing campaign conducted by De Beers in the United States. I am also familiar with the products being offered by De Beers, at their new store in New York, New York, in Beverly Hills, California, and Las Vegas, Nevada.

12. Just like De Boulle, De Beers markets its products to purchasers of engagement and wedding rings, gifts for special occasions, such as birthdays, anniversaries, and the Holidays, and connoisseurs and consumers of luxury products in general. Based on my twenty five (25) years' experience marketing and selling diamonds and fine jewelry in to consumers located throughout the United States, I am of the opinion that diamonds and fine jewelry bearing the De Beers' brand and diamonds, and fine jewelry bearing the De Boulle Marks may be sought out and bought by the same consumer. Furthermore, because of the semantic similarity in the two brand names and their abbreviations, DB or De B, potential consumers of diamonds and fine jewelry marketed by De Boulle are likely to assume that De Boulle has expanded diamond and fine jewelry offerings to include the products offered by De Beers.

13. Just like De Boulle, De Beers markets its products under the De Beers brand through public advertising in national luxury goods and lifestyle media, and the

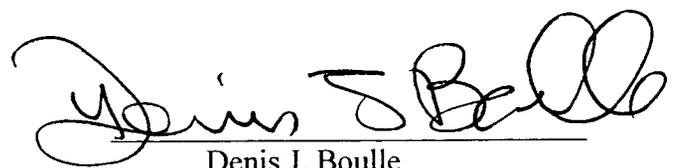
internet. The De Beers and De Boule marketing and advertising campaigns are likely to reach the same consumer. Based on my twenty five (25) years' experience marketing and selling diamonds and fine jewelry in to consumers located throughout the United States, I am of the opinion that, because of the semantic similarity in the two brand names and their abbreviations, whether DB or De B, potential consumers of diamonds and fine jewelry marketed by De Boule are likely to assume that De Boule has expanded diamond and fine jewelry offerings to include the products offered by De Beers.

14. The De Beers marketing strategy involves selling its products to the general public through its company-owned stores in New York, Beverly Hills, Las Vegas, and elsewhere, and to offer De Beers branded diamonds and fine jewelry through a select network of reputable jewelry stores (such as de Boule) in parts of the United States, where there are no company-owned stores, such as Texas. Based on my twenty five (25) years' experience marketing and selling diamonds and fine jewelry in to consumers located throughout the United States, I am of the opinion that, because of the semantic similarity in the two brand names and their abbreviations, whether DB or De B, potential consumers of diamonds and fine jewelry marketed by De Boule are likely to assume that the De Beers products offered for sale under the De Beers brand are actually the diamonds and fine jewelry offered by De Boule.

15. Additionally, any confusion between the De Boule brand and the De Beers brand may cause De Boule irreparable harm. In the market for diamonds and fine jewelry, the De Beers name has long been associated with the apartheid-era regimes in South Africa and its monopolistic practices to control diamond prices and the diamond market. De

Boulle has devoted almost twenty five (25) years in building its brand in the United States. The De Boulle brand and the De Boulle Marks are valuable assets of De Boulle. De Boulle would suffer irreparable harm if potential consumers of diamonds and fine jewelry assume that the diamonds and fine jewelry marketed by De Boulle in association with the De Boulle Marks are actually products offered by De Beers.

FURTHER AFFIANT SAYETH NAUGHT.

  
Denis J. Boulle

SUBSCRIBED AND SWORN TO BEFORE ME this 9<sup>th</sup> day of August, 2007, to certify which witness my hand and official seal.



  
Notary Public, State of Texas

[NOTARY SEAL]

CERTIFICATE OF SERVICE

The undersigned hereby certifies that he has served a copy of the foregoing document upon counsel of record by electronic mail on this the 9<sup>th</sup> day of August, 2007, and by mailing a true copy thereof with the Exhibits referenced herein, through the United States Mail, first class, postage prepaid, on the 10<sup>th</sup> day of August, 2007, and addressed as follows:

"Saunders, Darren W." [darren.saunders@klgates.com](mailto:darren.saunders@klgates.com)

"Rao, Vincent P. II" [vincent.rao@klgates.com](mailto:vincent.rao@klgates.com)

Darrell Saunders, Esq.  
Vincent P. Rao, II, Esq.  
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599 Lexington Avenue  
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\_\_\_\_\_  
Scott T. Griggs

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 BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

<b>Proceeding</b>	91162370
<b>Party</b>	Plaintiff De Boulle Diamond & Jewelry, Inc.
<b>Correspondence Address</b>	SCOTT T. GRIGGS GRIGGS BERGEN LLP 901 MAIN STREET, SUITE 6300, BANK OF AMERICA PLAZA DALLAS, TX 75202 UNITED STATES
<b>Submission</b>	Motion for Summary Judgment
<b>Filer's Name</b>	Scott T. Griggs
<b>Filer's e-mail</b>	scott@griggslaw.com
<b>Signature</b>	/Scott Griggs/
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD**

DE BOULLE DIAMOND & JEWELRY, INC.,

Opposer,

v.

DE BEERS LV LTD.,

Applicant.

Consolidated Opposition No.: 91162370

Opposition No.'s: 91162370

91162469

91164615

91165285

91165465

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**EXHIBITS TO OPPOSER'S MOTION FOR SUMMARY JUDGEMENT**

**Compendium of Summary Judgment Exhibits**

Exhibit "A" All That Glitters. Dallas Business Journal. July 1997

Exhibit "B" De Beers Consolidated Mines Limited/ De Beers Centenary AG Joint Media Release, dated 16 January 2001

Exhibit "C" Abstracts from: Technical & Financial Report for the Diamond Interests of De Beers and its Partners: Appendix 2 to the Circular to the holders of De Beers Linked Units, posted 10 April 2001

Exhibit "D" De Beers 2003 Annual Review.

Exhibit "E" Debora Spar and Jennifer Burns. Forever: De Beers and U.S. Antitrust Law. Harvard Business Review. Feb 1, 2000 (Revised Sept 6, 2002).

Exhibit "F" Lucinda Saunders. Rich and Rare are the Gems They War: Holding De Beers Accountable for Trading Conflict Diamonds. 24 Fordham Int'l L.J. 1402.

Exhibit "G-1" Indictment in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.

Exhibit "G-2" Plea Agreement in Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.

Exhibit "G-3" Courtroom Minutes. Guilty Plea and Sentencing Hearing. Case No. CR -2-94-019, United States District Court for the Southern District of Ohio, Eastern Division.

Exhibit "H" De Beers Société Anonyme Media Release dated November 30, 2005.

Exhibit "I" Ron Irvin. Is De Beers forever? BrandChannel.com. November 22, 2004.

Exhibit "J" Opposing Words Mark De Beers LV Opening. Rapaport News. June 23, 2005.

**Exhibits to Affidavit of Denis J. Boule in Support of Opposer's Motion for Summary Judgment**

Exhibit "K" Examples of De Boule National Advertising.





# Dallas Business Journal

BUSINESS PULSE SURVEY: Are you changing your buying habits because of recent recalls of Chinese-made products?

## All that glitters

**Jeweler thrives by keeping close to his customers**

Dallas Business Journal - July 11, 1997 by Douglas Toussaint Correspondent

**HIGHLAND PARK** -- In the exclusive world of serious jewelry, size is no guarantee that a retailer will survive. Witness the destruction of the vast Zale empire in the early 1990s, or how Tiffany stumbled until its restructuring and expansion began paying off last year.

Instead, survival in the jewelry industry most often belongs to the canny strategist -- the marketer who exposes himself to minimal risk while retaining an aggressive edge. It's particularly true at the industry's upper end, from private jewelers like Harry Winston, Liz Taylor's favorite, to local powerhouse deBoule Diamond & Jewelry Inc. in Highland Park.

While similar firms dropped like flies in the late '80s, deBoule not only survived the decade but actually prospered by buying back expensive jewelry that its customers needed to sell.

The privately held company is run by owner/entrepreneur Denis Boule (pronounced "Bool"), whose family has been involved in the design and trade of luxury goods since the days of Louis XIV in France.

Today his freestanding deBoule (literally, "of Boule") shop sits on Preston Road, just north of Highland Park Village. DeBoule's sales this year are projected to top \$10 million, up 25% over 1996.

French by descent, English by education, Denis Boule first committed himself to Dallas as a diamond trader in 1981 on little more than a "good instinct" about the city and its people.

By 1984, Boule's business had evolved from a "loose diamond" concern -- selling random fine stones, largely to other jewelers -- to a custom jewelry operation. The evolution brought the jeweler in contact with an expanding retail clientele.

Almost as a sideline, Boule also began buying and selling important estate jewelry, a move that would prove to be his hedge against the coming "Dallas bust."

Later that same year, Boule opened his first retail shop in the quiet Snyder Plaza shopping center in University Park. The operation, still largely a one-man affair, immediately prospered.

Even so, Boule recalls, "I was just taking a few thousand dollars out of the store each year, just enough to eke by.

"There was a lot of 'going without,' and we never even thought of getting caught up in the lifestyle of most of the people in this business in those days or, frankly, of our clientele," Boule says. "We began dealing with some enormously wealthy people, but we very much kept our own noses down."

That tack paid off, particularly in Boule's development of personal relationships with a growing number of the city's wealthiest families. The Park Cities are notoriously close-knit, and word-of-mouth soon spread that Boule was a jeweler to be trusted.

Dallas had swung into its heyday by then, experiencing growth it hadn't enjoyed since the early 1950s.

But all business is cyclical, and the markets soon dropped out from under many of Boule's buyers. Many jewelers and other luxury retailers, having leveraged themselves to the hilt during the boom, began closing up shop. International operations like Cartier and Fred Joailier disappeared from Dallas altogether.

Suddenly, clients were calling Boule to sell their pieces, rather than to buy. Shifting with the times in classic entrepreneurial style, Boule took the lemon of recession and made it into lemonade.

And his business thrived.

During the preceding years, Boule had been farsighted enough to build up an extensive network of "partner" stores -- dealers and brokers across the country and abroad specializing in diamonds and the liquidation of estate jewelry.

There had never been enough of a market in Dallas alone to absorb all the estate purchases Boule was making. And times were often better -- and the merchandise "hotter" -- in other markets than they were in Big D, even during the fat years.

Boule began buying back previously sold merchandise from clients who now were eager to sell, happy to unload some of their '80s excesses. His company also stepped up its acquisition of general estate pieces, particularly older work featuring fine gems, stones and watches from better-known houses like Rolex and Patek Philippe.

Having his network of partners in place enabled Boule to swiftly turn over the influx. In a while

local buying, together with networked and consignment selling, became the firm's new stock in trade. Importantly, the close relationship between Boule and his clientele remained intact -- and in fact was strengthened.

As the still-lean early '90s gradually gave way to better times, deBoule continued to do brisk business through the networks. The store had moved during the late '80s to its current location in Highland Park, with Boule taking advantage of the depressed real estate market to snap up the 1,800-square-foot space.

He has spent a great deal of time in the last few years fine-tuning his selling environment, seeking to emphasize the store's "personal" nature.

Entering the deBoule store -- all hardwood floors and cherrywood display cases -- customers are surrounded by an atmosphere of understated elegance. The merchandise itself runs the gamut, from a TAG Heuer Formula I wristwatch (\$375) to a 20-carat, emerald cut diamond (\$500,000). Most of the diamonds, watches and estate-jewelry items in the shop are priced at more than \$1,000.

"I know almost everyone who comes into the shop, at least those who come more than once, and I see this as business as usual," Boule says.

"I want to know who I'm dealing with, and so do the people who shop here. They simply don't have time for 'revolving-door' sales clerks, or for clerks who continually have to work through layers of bureaucracy for (the likes of) prices and (specials) ...

"My staff can speak for me, because I can't be everywhere at once," Boule says. "But my name is on the door, and I understand that people expect me to take a complete interest in what they've come here for. I'd have it no other way."

Today, deBoule's growth is continuing. For example, the store is negotiating with an African diamond-mining operation to become its exclusive U.S. representative.

At the same time, deBoule is gradually expanding its merchandise mix and getting into the burgeoning area of corporate incentives, such as limited-edition watches.

"Once you have the customer base, you can introduce other high-end products they'll use or want," Boule says. "They'll have a realistic expectation that what we offer them will be the best."

Says Jeffrey Bartley, deBoule's vice president: "I think we are well on our way to becoming a regional destination store."

Toussaint is a Dallas-area free-lance writer.

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De Beers Consd/De Beers CentenaryAG  
16 January 2001

De Beers Consolidated Mines Limited ('DBCML')  
Company Registration No. 1888/000007/06  
Incorporated in the Republic of South Africa

De Beers Centenary AG ('DBCAG')  
Incorporated under the laws of Switzerland

(collectively the 'De Beers Group')

JOINT PRESS RELEASE

LVMH MOET HENNESSY LOUIS VUITTON AND THE DE BEERS GROUP TO ESTABLISH A NEW  
COMPANY TO UNLOCK THE VALUE OF THE DE BEERS BRAND

The De Beers Group, the world's premier diamond group, and LVMH Moet Hennessy Louis Vuitton, the world's leading luxury products group, have agreed to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers Name.

- \* The De Beers Group will transfer to the independent company the world-wide rights to use the De Beers brand for luxury goods in consumer markets.
- \* The new company's immediate focus will be on premium diamond jewellery and it is envisaged that it will become a key part of the LVMH luxury goods portfolio.
- \* The investment is expected to create long-term value for both Groups and will become a catalyst for brand competition in the sale of diamond jewellery. The two groups have agreed to invest an equal contribution of capital to establish the new company in which they will share equal ownership.
- \* The new company will benefit from LVMH's extensive experience in both developing luxury brands and rolling out premium retail concepts.
- \* It is intended that Myron Ullman, Group Managing Director of LVMH, will be appointed Chairman of the Board of the new independent company.
- \* The De Beers Group will have no day-to-day operational involvement in the running of the company.
- \* A technical services agreement has been developed for a one-off transfer of technical diamond expertise from the De Beers Group to the independent company.
- \* The new company will work closely with leading polished diamond suppliers world-wide to source diamonds to the exacting standards demanded by the brand. It will not buy rough diamonds or source polished diamonds from the De Beers Group.
- \* The new entity will bring a new customer into the market creating a new source of demand for both Sightholders(1) and non-Sightholders alike.

\* The core business of the De Beers Group remains the mining and marketing of rough diamonds.

#### STRATEGIC RATIONALE

The De Beers Group's core business is the mining and marketing of rough diamonds and its core strategy one of driving demand for rough diamonds. It has been established that the De Beers brand has very strong consumer awareness and credibility. The De Beers Group therefore believes that the De Beers brand has the potential to be one of the leading jewellery brands in a multi-brand environment. The DTC, the sales and marketing arm of the De Beers Group, will increase expenditure on its global generic marketing campaigns to drive overall consumer demand for diamonds and support all of its clients, jewellery manufacturers and retailers around the world. The DTC will invest approximately US\$180 million in consumer marketing campaigns in 2001 using the world famous strapline 'A Diamond is Forever'.

Expanding demand for diamond jewellery and creating this multi-brand environment is a focal point of the 'Supplier of Choice' strategy announced by the De Beers Group in July 2000 and designed to modernise business practices and encourage its Sightholders to innovate and work more closely with their downstream partners to stimulate demand. The establishment of this new company represents a bold and imaginative step in realising this strategy.

LVMH is the world's leading luxury products group and is therefore the ideal partner for developing the consumer potential of the De Beers brand. LVMH brings extensive experience in both developing luxury brands and rolling out premium retail concepts. This combination of LVMH's retail and luxury branding skills with the strong recognition of the De Beers' name among consumers will create an exciting new luxury products brand.

The Watch & Jewellery division of LVMH was created in November 1999 following the acquisitions of complementary brands, comprising Tag Heuer, the leading sports watches company; Ebel, the luxury Swiss watch brand; Zenith, the highly-renowned watch and mechanical movement specialist and Chaumet, the prestigious Place Vendome jeweller. The famous Italian writing instruments company, Omas, which was acquired in May 2000, is also part of this division. LVMH is already active in jewellery through Fred Joaillier, acquired in 1995. The new division forms a coherent entity of strong, differentiated and well-managed brands, benefiting from synergies particularly in controlled product distribution.

#### BUSINESS VISION

The De Beers Group and LVMH have agreed that the De Beers brand will be positioned as a premium brand in the sale of diamond jewellery and associated luxury goods. The development of a specific business plan, including product assortment and channel strategy, will be the responsibility of the management team. It is anticipated that, subject to regulatory approval, the business will commence within the next 12-18 months with a small number of flagship retail stores located in the world's most prestigious cities. These flagships will provide the consumer with the opportunity to experience the De Beers brand in full.

## FINANCIAL IMPACT

For both partners, the financial effects of the transaction on earnings for the year ended 31 December 2001 will not be material. Consistent with the start-up nature of this company, the transaction will be earnings dilutive in the short-term.

## COMMENTING ON THE AGREEMENT:

Nicky Oppenheimer, Chairman of the De Beers Group, said, 'The De Beers Group will continue to focus on the growth and development of our core business - the mining and marketing of rough diamonds. This dynamic initiative is another step in the 21st Century transformation of the De Beers Group. It follows the introduction of our Supplier of Choice strategy in July to modernise business practices and encourage DTC Sightholders to innovate and work more closely with their downstream partners to stimulate demand. The expertise of LVMH will not only help realise the value inherent in the De Beers brand but also create a more competitive market for diamond jewellery.'

Bernard Arnault, Chairman of the LVMH Group, said, 'This initiative with the De Beers Group is a natural extension of our strategy to seek out opportunities to create quality products and harness our world renowned designers and distribution expertise to bring luxury to our customers. The De Beers brand will be at the heart of our growing jewellery activities where LVMH is already famous for creativity and innovation.'

Myron Ullman, Group Managing Director of LVMH said, 'We are delighted to include the world's premier diamond brand in our expanding portfolio. With the creation of the Watch and Jewellery business in 1999, LVMH has clearly shown its determination to play a leading role, on a worldwide basis, in one of the fastest growing segments of the luxury goods industry. By contributing our established strengths in brand management and retail marketing, the De Beers brand has the means to achieve its very strong potential.'

Gary Ralfe, Managing Director of the De Beers Group, said, 'Diamonds are the ultimate luxury product and as the world's leading luxury goods group, LVMH is the ideal partner to develop the great potential of the De Beers name among consumers. Brands are powerful catalysts for growth, and there is an untapped opportunity for all of us in the diamond industry to grow our businesses and match the growth rates enjoyed by the leading companies in the rest of the luxury goods sector. In five years time we envisage an industry with multiple and competitive brands and we expect that the De Beers brand will be one of these.'

(1) Sightholders are those world class cutters, polishers and dealers who purchase rough diamonds from the Diamond Trading Company (DTC), the marketing arm of the De Beers Group. The majority are based in the cutting centres of Antwerp, Johannesburg, Tel Aviv, Mumbai and New York. There are ten Sights held approximately every five weeks in London, Lucerne and Johannesburg when the DTC sells rough diamonds to its Sightholders.

FURTHER INFORMATION

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NOTES TO EDITORS

Further information and a selection of images relating to this announcement can be obtained by visiting

[www.lvmhdebeers.netcoms](http://www.lvmhdebeers.netcoms)

. Images will be available on the site from 14h00 GMT.

#### LVMH

Moët Hennessy Louis Vuitton, is the world's leading luxury products group. In addition to its fashion brands the Group is represented in Wines and Spirits by a portfolio of brands that includes Moët & Chandon, Dom Pérignon, Veuve Clicquot Ponsardin, Krug, Pommery, Château d'Yquem, Chandon, Hennessy and Hine.

LVMH's Fashion and Leather Goods division, includes Louis Vuitton, the world's leading luxury brand, as well as Celine, Loewe, Kenzo, Givenchy, Christian Lacroix, Thomas Pink, Fendi and Pucci.

In addition, LVMH recently announced plans to acquire Donna Karan. LVMH is also present in the Fragrances and Cosmetics sector with Parfums Christian Dior, Guerlain, Givenchy and Kenzo, and has recently acquired six promising cosmetic companies, Bliss, Hard Candy, Benefit Cosmetics, Urban Decay, MAKE UP FOR EVER and Fresh.

LVMH is active in selective retailing through DFS, Sephora and Le Bon Marche and Eluxury. The Group has established a Watches and Jewellery division comprising TAG Heuer, Ebel, Chaumet, Zenith, Fred, as well as Omas, the prestigious Italian writing instruments company.

Phillips, the international fine art auctioneers, which recently announced plans to merge with dePury & Luxembourg Art, is also part of the LVMH Group. Connaissance des Arts and Art & Auction Magazine, two specialised publications, have recently joined the Group.

LVMH shares (LVMH.PA) are listed on the Paris Stock Exchange and NASDAQ in the United States (LVMHY).

The De Beers Group was advised on the transaction by N M Rothschild & Sons.

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## TECHNICAL & FINANCIAL REPORT FOR THE DIAMOND BUSINESS INTERESTS OF DE BEERS AND ITS PARTNERS

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*The Independent Directors*  
*De Beers Consolidated Mines Ltd*  
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### TECHNICAL AND FINANCIAL REPORT

#### 1. Executive Summary

##### 1.1 Introduction

This Technical and Financial Report (“TFR” or “report”) has been prepared by the De Beers Responsible Persons at the request of the Independent Committee of Directors of De Beers and provides relevant technical and financial information on the entire De Beers group of companies. The report has been written in order to assist the independent Linked Unit holders of De Beers in their evaluation of the scheme of arrangement proposed by DBI between DBCM and its shareholders, the resolutions to be considered at an extraordinary general meeting of DBCM, and the resolutions to be considered at the meeting of holders of depositary receipts.

With respect to De Beers’ mining assets, the basis for this report is the De Beers Strategic Business Plans (“SBPs”) prepared in mid-2000. These plans cover the extraction of mineral resources and mineral reserves for the life of each of De Beers’ mining operations.

De Beers’ diamond business includes some operations which are wholly-owned and some operations, principally in Botswana (Debswana) and Namibia (Namdeb), that are jointly owned between De Beers and the respective governments of these countries. The financial analysis and NPV calculations contained in this report reflect the revenues and cash flows attributable to De Beers’ wholly-owned operations and De Beers’ share of these joint ventures.

This report addresses the following issues:

- the mineral resources and mineral reserves to support the projections and NPV calculations contained herein;
- the capacity and equipment to mine and recover diamonds according to the production forecasts;
- the political, social, environmental and legal stability required to conduct De Beers’ business; and
- the marketing of production from its own and contracted partners.

There are many aspects of the diamond business which make it unique. The particulate nature of diamonds affects the processes of exploration, evaluation, mining and metallurgy and especially the way in which diamonds are valued, sorted and marketed. Descriptions of these processes are therefore included in this report. A discussion of each operating mine is also included.

The associated financial projections are presented on a consolidated basis.

##### 1.2 Professional Qualifications and Responsible Persons

This report incorporates elements of a Competent Person’s Report. The report has been prepared and signed off by the delegated heads of the technical, financial and marketing

disciplines within De Beers, all of whom qualify as Responsible Persons. This report contains all materially important technical, legal and financial information to meet the objectives stated above.

This report has been prepared under the direct supervision of Dr W.J. Kleingeld, Group Manager Mineral Resources. Dr Kleingeld has over 25 years experience in the estimation and assessment of mineral resources and mineral reserves in numerous commodities, but specifically diamonds and is a Competent Person with respect to mineral resources and mineral reserves. Dr Kleingeld is a member of the South African Mineral Resource Committee ("SAMREC") and Chairman of the Diamond Sub-Committee of SAMREC. The Responsible Person in respect of Finance is Mr M.L.S. De Sousa-Oliveira, Head of De Beers Corporate Finance and a member of the De Beers Executive Committee. Mr De Sousa-Oliveira is both a Chartered Accountant and a Chartered Management Accountant and has extensive experience in mergers, acquisitions, new company flotations and project financing. He was appointed Head of De Beers' newly established Corporate Finance Department in January 1998. The role of Responsible Person in respect of DTC Sales and Marketing is Mr G.P.H. Penny. Mr Penny was a Rhodes Scholar at Oxford where he obtained an MA in Philosophy, Politics and Economics. He is a 'director' of the DTC and a member of the De Beers Executive Committee, and will assume overall responsibility for De Beers' worldwide sales and marketing activities with effect from July 2001.

Dr Kleingeld, Mr De Sousa-Oliveira and Mr Penny have assumed joint and several responsibility for this report and its contents.

Other contributors to this report were:

Group Manager Exploration	W.F. McKechnie
General Manager Mining	A.P. Guthrie
General Manager Metallurgy	A.C. Rowan
General Manager Engineering	G.D. Scott
Manager Producer Relations and Legal Services	J.G. Hughes
Group Manager Human Resources	L.J. Gatherer
Manager Environmental Services	Dr M. Berry

The professional qualifications of all the contributors are set out in Appendix I.

### 1.3 Terminology and Abbreviations

The specialised nature of the diamond industry has necessitated the creation of a large number of technical terms and abbreviations which are either unique to the business or may have specific application or meaning which differ from their usage elsewhere in the minerals industry. De Beers has established standard terminology for many aspects of its business, which has been used herein. A list of abbreviations and glossary of technical and financial terms is contained in Appendix II. The metric system has been used throughout this report. A particularly important unit of mass is the carat (ct) which is 0.2g in mass. Grade has been expressed as carats per hundred tonnes (cpht) for kimberlite deposits and carats per square metre (cpsm or cts/m<sup>2</sup>) or carats per cubic metre (cpcm) in placer deposits. Currency units used are US dollars (US\$ or \$) or South African Rand (ZAR or R).

### 1.4 Overview of De Beers

#### 1.4.1 Company Profile

Cecil John Rhodes formed DBCM in March 1888 as an amalgamation of diamond mining interests in the Kimberley area of South Africa. Generally, DBCM represents De Beers' South African interests, whilst DBCAG covers De Beers' activities throughout the rest of the world. De Beers is an integrated company whose core business is the mining and marketing of rough diamonds.

Through exploration and acquisitions, De Beers has grown annual production to a total of 36.5 million carats of rough diamonds in 2000. De Beers and its partners conduct mining operations in South Africa, Namibia, Botswana and Tanzania. The DTC is headquartered in London and is responsible for marketing De Beers' and certain other producers' diamonds. In the year 2000, diamond sales by the DTC reached a record US\$5.7 billion. De Beers' own earnings in 2000 were US\$1,289 million.

De Beers and its partners are the largest diamond producers by value in the world. De Beers continuously develops and implements new technology to discover and manage its mineral resources and mineral reserves in a cost-effective manner. It has grown the market for gem diamonds through active marketing and advertising strategies.

Since 1997 when management of De Beers and Anglo American was separated, a number of important changes have taken place. Stakes in investments made jointly with Anglo American were sold to Anglo American in exchange for Anglo American shares prior to their listing on the LSE in 1999, and the policy of joint investments was discontinued. This has helped to simplify the valuation of De Beers from that time. In 1999, the last outstanding minorities were bought out in the diamond trading companies, allowing full control of their operations and cashflow. In 2000, the Venetia royalty was acquired from Anglovaal Mining Limited and Industrial & Commercial Holdings Group Limited in order to acquire a 100% economic interest in that operation. An unsuccessful bid was made for Ashton Mining Limited of Australia, and a successful bid was made for Winspear Diamonds Inc of Canada to acquire a 67% interest in the Snap Lake prospect. The remaining interest in the Snap Lake prospect was purchased from Aber Diamond Corporation in February 2001.

Starting in 1998, a strategic review of De Beers' global diamond business was undertaken with Bain & Company in an attempt to address the inadequate return on capital generated by De Beers' diamond business. This resulted in, amongst other initiatives, the As Is Plus programme which is focused on operational efficiency improvements to lower De Beers' cost base. A Supplier of Choice initiative was launched in mid-2000 with the aim of formalising relationships between the DTC and its sightholders and increasing their respective efforts to grow the diamond jewellery business.

De Beers has played a leading role in proposing and implementing controls to distinguish diamonds as having come from conflict-free areas. In support of this effort and recognising the uncertain origins of diamonds bought in the open market, De Beers ceased open market purchases in late 1999.

World-wide, De Beers and its partners have 23,000 employees. They pursue proactive human resources development programmes and provide equal opportunities to all personnel.

#### **1.4.2 Exploration**

De Beers carries out diamond exploration in 17 countries on five continents for both kimberlite pipe and placer deposits. Extensive research has identified the environments favourable for the deposition of diamonds, and specific technology has been developed to efficiently explore for and sample diamond deposits. Exploration expenditure in 2000 was approximately US\$69 million.

De Beers' exploration division has had notable successes in the past, including the discovery of the Orapa and Jwaneng pipes in Botswana and the Venetia pipes in South Africa. Jwaneng is the most valuable kimberlite diamond occurrence in the world. De Beers is also pioneering the development of deep-sea diamond exploration and mining off the West Coast of Southern Africa.

De Beers is currently fast-tracking the evaluation of the Victor (Attawapiskat) diamond project in Ontario, Canada. This project is currently at the desktop study stage and thus,

for the purposes of this report, is not sufficiently advanced to fulfil the necessary requirements for inclusion in the financial model referred to in this report.

### 1.4.3 Mineral Resources and Mineral Reserves

#### 1.4.3.1 General Overview

The particulate nature of diamonds, their size, shape, quality, colour and value are important factors in the accurate estimation and evaluation of diamond deposits. De Beers has developed specific methodologies that take these factors into account, as well as two other aspects:

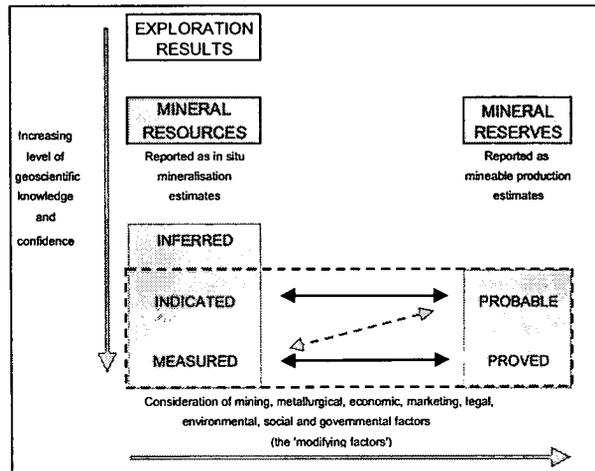
- diamond occurrences in nature are rare and are usually measured in parts per billion, whereas most other mineral commodities are measured in parts per thousand or parts per million; and
- in placer deposits, diamonds may be concentrated in trapsites that are relatively small and difficult to statistically predict and sample.

De Beers' methodologies for sampling and estimation of diamond deposits have been recognised and implemented throughout the world. In 2000, the South African Mineral Resource Committee ("SAMREC") implemented a diamond-specific code based on these methodologies.

#### 1.4.3.2 Estimation Methodologies

De Beers' methodology used in estimating mineral resources and reserves is as follows:

- When a potentially economic deposit is discovered, an in-situ mineralisation resource estimate is developed using appropriate sampling techniques and sampling density. Empirically derived conversion factors are applied to the estimated grades to allow for the bottom or lower diamond size cut-off which might be used in a commercial scale metallurgical plant, also taking into account the difference in the degree of diamond liberation between the sampling and commercial recovery processes.
- The baseline category for resource classification, which requires a minimum level of geological knowledge and confidence, is the inferred mineral resource. Increased sampling of the resource will lead to an improved level of geoscientific knowledge and confidence, and upgrading of the resource to an indicated category and ultimately to a measured status. However, diamond resources rarely achieve this level of classification because of the complex nature of diamond deposits and the large expenditure that would be required to achieve the high level of confidence stipulated in the SAMREC Code.
- Mineral reserves are a modified sub-set of indicated and measured resources where mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors are applied as appropriate to define that part of the resource that is economically mineable.



*Framework for classifying tonnage and grade estimates reflecting different degrees of geoscientific confidence and technical and economic evaluation*

As at 31st December 2000, mineral reserves and mineral resources of De Beers and its partners were as follows:

- *In kimberlite mines and alluvial deposits where measured in tonnes:* probable mineral reserves were 523Mt @ 55cpht containing 290Mcts; indicated mineral resources were 528Mt @ 44cpht containing 234Mcts; and inferred mineral resources were 1,528Mt @ 42cpht containing 634Mcts; and
- *In alluvial, coastal and marine placer mines:* probable mineral reserves were 24 million m<sup>2</sup> at 0.31cpsm containing 7Mcts; indicated mineral resources were 37 million m<sup>2</sup> @ 0.14cpsm containing 5Mcts; and inferred mineral resources were 40 million m<sup>2</sup> @ 0.24cpsm containing 10Mcts.

#### 1.4.4 Operations

The operations forecast forming the basis for the financial evaluation calls for existing mines to produce 38Mcts from 87Mt of ore in 2001. Production is projected to increase to 45Mcts by 2010 with a slight reduction in tonnage to 82Mt.

The operations forecast takes into account the assumed successful completion of the following major capital projects:

- *Kimberley Mine CTP:* The construction of a new combined treatment plant is in progress. The plant is expected to improve recovery efficiencies and turn previously uneconomic resources both on surface and underground into mineable resources.
- *Finsch Mine Block 4:* Work has commenced on the establishment of a block cave to replace tonnage from the current block 3 cave when it is finally depleted.
- *Premier Mine C-cut:* The project will increase the depth of underground operations, and build new and increased plant capacity extending the life of mine by 17 years to 2025.
- *Snap Lake:* The project provides for the establishment of a complete mine and treatment facility initially to treat 3,000 tpd.
- *Debswana Damtshaa Mine (previously known as BK 9):* Construction is underway to provide a new mine and treatment facility east of Orapa in Botswana.

#### 1.4.5 Marketing through the DTC

The companies that form the DTC represent the marketing arm of De Beers. They purchase, sort, value and market rough diamonds mined by De Beers as well as those from contracted third-party sources.

In addition to its sorting, valuation and sales activities, the DTC has for many years made significant investment by way of generic diamond marketing and promotional expertise. This year it will spend approximately US\$180 million promoting diamond jewellery.

The DTC is pursuing several initiatives to increase the sales of its diamonds, notably through its Supplier of Choice initiative. The focus of this programme is to drive growth in consumer demand for diamond jewellery. The DTC will develop business relationships in a manner that will encourage its clients (sightholders) to pursue a more proactive role in promoting diamonds at the retail level. The DTC may offer marketing and technical assistance and expertise to enable sightholders to realise this goal.

The DTC has developed a new trademark, the 'Forevermark' from which it intends sightholders and retail customers to benefit. The 'Forevermark' will symbolise De Beers' commitment to integrity by the promotion of the highest professional and ethical standards throughout the diamond business.

To aid the determination of the sales target for 2001, a proprietary De Beers Supply/Demand model has been used. This model uses as inputs a number of assumptions about the factors that affect the diamond business. For the purposes of this report, three main scenarios have been evaluated:

- 'Consensus' – based on consensus forecasts of GDP growth, and the historic relationship between the economy and demand for diamonds. Consensus economic forecasts currently assume a slowdown, but not outright recession, this year, with some recovery in 2002.
- 'Upside' – based on the same economic forecasts as the consensus scenario but with more optimistic market expansion targets. This scenario also assumes a more optimistic view for contract third-party purchases by the DTC.
- 'Downside' – based on a more negative economic outlook, with recession in the US during 2001/2 and correspondingly lower growth in the rest of the world, with a further cyclical slowdown in 2007/8.

The DTC has set a target of US\$4.8 billion under the 'consensus' scenario for its sale of rough diamonds in 2001. Thereafter, the Supply/Demand model indicates an increase in sales between 2001 and 2010 at a CAGR of 4.5% in nominal terms. However, due to the limits on the availabilities of certain ranges of goods, this indicative percentage growth in DTC sales does not flow into the valuation model in which DTC sales have been capped at levels commensurate with forecast diamond availabilities.

#### 1.4.6 De Beers/LVMH Branding Initiative

One of De Beers' latest initiatives is the establishment of an equally funded new company with LVMH Moët Hennessy Louis Vuitton ("LVMH"). De Beers will (subject to regulatory approvals) transfer to the newly formed independent company the world-wide rights to use the De Beers name for luxury goods in consumer markets.

#### 1.4.7 Debid

Debid (De Beers Industrial Diamonds) was established in 1946 to concentrate on the production, processing and marketing of natural diamonds and subsequently synthetic diamonds for industrial purposes. Debid currently produces and markets synthetic industrial diamonds, and buys and markets natural industrial diamonds.

#### **1.4.8 Other Investments**

De Beers holds investments (other than its investment in Anglo American) in certain JSE listed companies. These are not core assets and could be disposed of should conditions require.

Income from unlisted diamond industry investments has been included in the financial model referred to in this report.

### **1.5 Valuation Methodology**

The methodology used to value the various assets of De Beers is set out below.

#### **1.5.1 General Principles**

De Beers' core diamond business has been valued on a going concern basis, with all the mines in which De Beers has an interest, the DTC and their related capital assets and working capital assets being treated as an integral and non-divisible part of that core business.

The nature of De Beers' core diamond business and factors such as pre-emption rights and marketing rights relating to various parts of the business make it inappropriate to value the business on a break-up basis.

The valuation has been prepared as at 31 December 2000 and, where appropriate, cash flows have been discounted back to this date.

#### **1.5.2 Operating Mines and DTC Sales**

De Beers' operating mines have been valued using discounted cash flow methodology. A financial model has been constructed which incorporates the life of mine cash flows for each mine and extends out to the year 2030. The production rates and costs for the mines have been based on the SBPs, as refined by De Beers' three-year rolling forecasts.

DTC sales, which include sales of diamonds produced from De Beers' and its partners' mines as well as sales of diamonds purchased under third party contracts, and changes in diamond prices have been estimated using the De Beers Supply/Demand forecasting model, capped by forecast limits on the availabilities of certain ranges of goods. Three supply/demand scenarios have been computed; 'upside', 'downside' and 'consensus'. A detailed description of these scenarios is set out in Section 11.

It should be noted that the De Beers Supply/Demand model seeks to forecast DTC sales and changes in diamond prices over a 10-year period but not specifically on a year by year basis. Accordingly, this impacts on the financial projections set out in this report which are not therefore intended to be year by year specific but intended to cover a period of years. The financial projections have been prepared by De Beers on the basis of current assumptions and have not been reported on independently.

#### **1.5.3 Exploration**

A valuation range of between US\$0 and US\$100 million has been placed on De Beers' exploration activities. The range indicated takes account of the three scenarios computed in this report. A maximum value of US\$60 million was assumed for advanced exploration projects and a maximum of US\$40 million for all other assets.

#### **1.5.4 De Beers/LVMH Branding Initiative**

Although a business plan remains to be fully developed (pending regulatory approvals) in respect of the enterprise, it has been valued using discounted cash flow methodology on the basis of initial and preliminary cash flow projections estimated by De Beers.

Given the current conceptual nature of the venture, the cash flow projections have not been incorporated into the financial model and a separate, stand-alone NPV has been estimated.

#### **1.5.5 Debid**

Debid has been valued using discounted cash flow methodology. The estimated future cash flows for Debid have been incorporated into the financial model.

#### **1.5.6 Listed Investments**

De Beers' interest in listed investments (other than its investment in Anglo American) have been valued based on market values as at 31 December 2000.

#### **1.5.7 Other Assets**

With the exception of adjusted net cash, De Beers' working capital, including diamond stocks and cash, has been valued on the basis that it is an integral part of De Beers' gem diamond and industrial diamond businesses and has therefore been incorporated into the financial model. De Beers' current diamond stocks are considered strategic and necessary for the ongoing conduct of its business as is its cash (other than adjusted net cash).

The adjusted net cash has been estimated having regard to the current level of De Beers' working capital and its future needs (and includes cash resulting from the exercise of options).

De Beers' other diamond industry investments have been valued on the basis of future estimated dividend streams and such dividend streams incorporated into the financial model.

#### **1.5.8 Discount Rates**

NPVs have been calculated using real discount rates ranging between 10% and 15% having regard to De Beers' weighted average cost of capital ("WACC") for its diamond business (adjusting for the impact of its shareholding interest in Anglo American), the estimated WACCs of other mining companies, implied discount rates estimated for comparable transactions and academic papers on the estimation of discount rates.

### **1.6 Strengths, Opportunities and Risks**

Strengths, opportunities and risks with respect to De Beers' diamond business are set out below.

#### **1.6.1 Strengths and Opportunities**

*General:* De Beers and its partners are the largest diamond producer by value in the world. The DTC is the world's leading marketer of rough diamonds.

De Beers benefits from a sound operating base, efficient use of assets, good relationships with its major stakeholders, and a management team aimed at growing the diamond business to a value of US\$10 billion by the year 2004, in line with a carefully considered strategy.

As a fully integrated group focused wholly on the diamond business, De Beers believes it possesses the strengths required to maximise the opportunities that present themselves, while being aware of the risks that exist.

*Workforce:* De Beers has a dedicated and loyal workforce which takes great pride in its work, De Beers and De Beers' company values. This workforce is motivated and

capable of growing the company, and has contributed significantly to the increase in profits realised over the last three years and to the strategic transformation of the company. De Beers continues to invest in the development of staff at all levels.

*As Is Plus:* As a result of the strategic review started in 1998, De Beers has implemented a number of initiatives that have reduced unit costs and improved efficiencies. Further progress in this area continues to be made in the Southern African operations. The threat of AIDS and the employment equity issue, and their associated financial costs do, to an extent, limit the potential gains from these initiatives.

*Technical Ability:* De Beers has invested heavily in research and development of new, leading edge technology in many areas of the diamond business. For example, this has led to the successful implementation of deep-water mining of marine placer deposits off the coast of Namibia. De Beers is the only mining company involved in large-scale underground mining of kimberlite pipes and has unrivalled expertise in large, block cave excavations. Ongoing research and development has resulted in cutting edge plant design with a high degree of automation. The newly commissioned Aquarium Plant at Jwaneng contains the Completely Automated Recovery Plant ("CARP") for the recovery of diamonds from x-ray concentrate and the Fully Integrated Sort House ("FISH") where the sorting and acid cleaning processes have been automated.

*Exploration:* De Beers has an extensive exploration programme both on existing mines and in extensive greenfield sites on five continents and is committed to securing new sources of supply through exploration on its own and in joint ventures with others.

*Resource Base:* De Beers and its partners have a large mineral resource base, unrivalled by any other diamond mining company, currently standing at approximately 2.6 billion tonnes amounting to some 1.2 billion carats. The majority of these resources occur in large scale, low cost mines where the current life of mine expectation is in excess of 20 years.

*Supplier of Choice:* In July 2000, De Beers announced the launch of the DTC's Supplier of Choice initiative, a move away from the market perception of the CSO as custodian of the market in its role as supplier of last resort. The focus of the initiative, which will be subject to review by the European Commission, is to drive long-term growth in consumer demand for diamond jewellery by developing the DTC's business relationships with its sightholders. Successful implementation of this long-term strategy will result in a sustainable increase in rough diamond demand. An important component of Supplier of Choice is the subscription of the DTC and its sightholders to a set of best practice principles to promote and encourage high industry, ethical and business standards.

*Client base:* The DTC sells its goods to approximately 120 client companies or sightholders. These companies represent the highest levels of expertise in diamond manufacture and distribution, in addition to proven financial strength. The Supplier of Choice initiative is designed to enable clients to grow their own businesses through successful marketing strategies. Supplier of Choice will also ensure that sightholders subscribe to the highest professional and ethical standards.

*Brand Power:* De Beers recognises the latent power of branding, and is encouraging the development of a competitive multi-brand jewellery consumer market. It believes that this will significantly increase consumer choice and re-invigorate the diamond jewellery category.

In January 2001 De Beers signed an agreement with LVMH Moët Hennessy Louis Vuitton, the world's leading luxury goods company, to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

## 1.6.2 Risks

*Mining Titles:* Currently, De Beers owns or leases from the state all of its South African mineral rights in perpetuity. However, the South African government has publicised its intention to take all mineral rights into state ownership. The resulting uncertain issues of tenure and fiscal regime may have an influence on the viability of present and future operations and new projects. De Beers is actively involved in discussions with the South African government to provide sound minerals legislation and to ensure that the economic viability of its future investments in operations is not jeopardised.

In Botswana and Namibia, the Debswana and Namdeb mining rights are held by way of 25-year mining leases. Upon lease expiry, there is no obligation on these states to renew the existing licenses on similar terms. The Jwaneng mining lease falls due for renewal in 2004.

*Political:* All of De Beers' current producing mines are situated in Southern Africa. Accordingly, De Beers is subject primarily to Southern African political risk and to risk of disruption as a result of localised events. This would also include ongoing differences of opinion and interpretation with various authorities with regard to the valuation and export of De Beers' diamonds from South Africa.

*Dependence on Botswana:* A substantial proportion of De Beers' production and profits is sourced from Debswana's mines located in Botswana, exposing De Beers to any actions which impinge upon Debswana's ability to recover and deliver diamonds to the DTC.

*Legal:* An indictment, issued in 1994 by the United States District Court for the Southern District of Ohio, remains unserved upon DBCAG. Two related private class action lawsuits have been filed in the Southern District of New York. De Beers believes that these suits do not subject it to significant legal risks and, having managed its business so as to avoid undue legal risk arising out of US antitrust laws, is not aware of any other material exposure to its business under US law.

*Investment Portfolio:* In the past, De Beers has raised debt finance to finance stocks and to exploit opportunities at difficult times in the diamond market. The raising of this debt finance has been facilitated by the existence of De Beers' shareholding in Anglo American. Without the portfolio, De Beers' ability to raise capital could be restricted and growth prospects limited.

*Earnings Cyclicity:* Retail demand in the diamond business responds to changes in economic activity. The lag in the diamond pipeline's response to changes in consumer demand has tended to accentuate the cyclical nature of the rough diamond business. The single product nature of De Beers' business and the volatile nature of the rough diamond business has been cushioned to an extent by the investment in Anglo American and the income stream relating thereto.

*Health:* HIV/AIDS is prevalent in Southern Africa. De Beers has developed education and prevention programmes.

*Workforce:* There has been a steady emigration of skilled personnel from Southern Africa in recent years. De Beers has developed innovative programmes to recruit, train and retain personnel. Parts of the diamond industry require advanced technological skills, and De Beers has developed an aggressive development and remuneration strategy, directly tied to individual performance, in order to retain core competencies. The retention of people will be dependent on the financial, economic and political stability of the region.

*Contractual Agreements:* De Beers' diamond purchase agreements with Russia and with BHP (in respect of the Ekati mine in Canada) expire in December 2001 and December 2002 respectively and are therefore subject to negotiated renewal. In

addition, sales agreements with Namdeb and Debswana are subject to five-yearly negotiated renewal.

As is usual in mining industry practice, pre-emption rights and change of control clauses exist between De Beers and its joint venture partners. De Beers' joint venture agreements provide for sharing of expenditure. These agreements tend to limit choices available to De Beers while introducing uncertainty as to the terms of contract renewal.

*Additional Diamond Supply:* As evidenced in 1992 in Angola, additional unexpected supply of diamonds has the capacity to disrupt the industry. Additional diamond supply from African alluvial sources could occur as a result of the exploitation of new deposits and changes in the socio-political climate in certain of these countries.

*Market:* The market for diamonds, a high-fashion luxury product, is sensitive to changes in the global economic climate, affected particularly by the US economy. The US currently accounts for approximately half of world-wide consumer consumption of diamond jewellery in value terms. In 2001 De Beers, through the DTC, plans to spend approximately US\$180 million world-wide on generic diamond advertising.

*Conflict diamonds:* De Beers has taken a strong stance on this issue to ensure that the diamonds it markets are conflict-free. It has adopted a code of practice that also requires its sightholders to adopt the same policy. In the future, the DTC Forevermark may be used to distinguish diamonds as being sourced from conflict-free areas.

*Cuttable Synthetic Diamonds:* Synthetic diamonds, particularly industrial grit products, have been produced since the late 1950s. The technology to manufacture synthetic diamonds of sufficient size and quality for cutting and polishing has existed since 1970. However, production costs are high and it is only in the last few years that cuttable synthetics have been produced in commercial quantities albeit small: a few thousand carats (cf 30 Mcts per annum of polished natural gem diamonds). Nevertheless, any suggestion of synthetic diamonds being fraudulently sold as natural diamonds could have a disproportionate effect on consumer confidence. For this reason the DTC has an on-going research programme investigating the characteristic features of synthetic diamonds that can be used for identification and communicating this information to leading gem grading laboratories.

*Exchange Controls:* De Beers' operations in South Africa and Namibia fall within the Common Monetary Area ("CMA"). Although the South African government has committed to easing exchange controls, restrictions remain in force and any movement of funds outside the CMA remains subject to South African Reserve Bank approval. As a result, surplus cash flows from the South African and Namibian operations are not freely available for use in growing the business internationally.

*Taxation:* For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing.

## 1.7 Economic Evaluation

### 1.7.1 Diamond Business

The NPVs, at real discount rates of 10%, 12.5% and 15% of the estimated future cash flows generated by De Beers' core diamond business, industrial diamond business and other assets incorporated into the financial model are set out in the table below. The NPVs have been prepared on the basis of the 'consensus', 'upside' and 'downside' supply/demand scenarios and appropriately factored inferred mineral resources.

REAL DISCOUNT RATES	10%		12.5%		15%	
	US\$M	RM	US\$M	RM	US\$M	RM
Description of scenario						
'Consensus' scenario	7,159	55,352	6,117	47,296	5,329	41,204
'Downside' scenario	4,967	38,403	4,246	32,829	3,699	28,598
'Upside' scenario	8,736	67,547	7,355	56,869	6,321	48,877

#### 1.7.2 Other Assets

With respect to assets not incorporated into the financial model and valued separately, the estimated value of these assets is as follows:

Assets	US\$M
Exploration Properties	0-100
De Beers/LVMH Branding Initiative	200-500
Listed Investments	300
Adjusted Net Cash	750
<b>TOTAL</b>	<b>1,250-1,650</b>

#### 1.7.3 Aggregate Asset Evaluation

The aggregate values of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American on the basis of the various scenarios are as follows:

Scenario	Value Range	
	US\$M	RM
'Upside' scenario at 10%-15% real discount rate range	7,971-10,386	61,912-80,582
'Consensus' scenario at 10%-15% real discount rate range	6,779-8,609	52,659-66,807
'Downside' scenario at 10%-15% real discount rate range	4,949-6,217	38,473-48,278

On the basis of a real discount rate of 10.5% to 11.5% which N M Rothschild & Sons Limited ("Rothschild"), independent financial adviser to the Independent Committee, has advised is an appropriate basis on which to value the gem and industrial diamond businesses, the value of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American is as follows:

	US\$M	RM
Gem and Industrial Diamond Businesses	6,498-6,925	50,239-53,545
Other Assets	1,450-1,450	11,455-11,455
<b>TOTAL</b>	<b>7,948-8,375</b>	<b>61,694-65,000</b>

#### 1.7.4 Sensitivity Analysis

The NPVs stated in Section 1.7.1 above are not particularly sensitive to variations in mine operating costs, capital expenditure and exchange rates. Sensitivity of the NPVs to diamond pricing, diamond production and demand is reflected in the scenarios in the table in Section 1.7.1.

On the basis of the 'consensus' scenario comprising only probable mineral reserves and indicated mineral resources, the NPV at a 10% to 15% real discount rate range

amounts to US\$4,460 million to US\$5,638 million (or ZAR34,483 million to ZAR43,597 million).

**1.8 Conclusion**

A copy of this report has been provided to the committee of independent directors of De Beers and the committee's independent financial advisors, Rothschild. A copy of the financial model together with supporting working papers and relevant documentation has also been provided to Rothschild, which has used this report and the financial model as part of the basis of preparation of its fair and reasonable opinion prepared in relation to the offer by DBI for De Beers.

Signed .....  
Dr W.J. Kleingeld

Signed .....  
Mr M.L.S. De Sousa-Oliveira

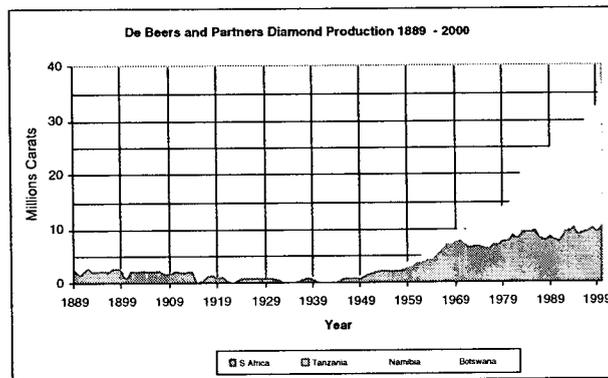
Signed .....  
Mr G.P.H. Penny

## 2. Corporate Profile

### 2.1 History

Two prominent diamond mining companies emerged from the diamond rush in and around Kimberley in the late 19th century: Barney Barnato's Kimberley Central Company and Cecil John Rhodes' De Beers Company, named after the De Beer brothers, on whose farm its mine was established. Following a protracted battle for overall control, Barnato agreed to a merger and DBCM was formed on 12 March 1888, with Rhodes as the founding Chairman. De Beers was granted an official listing on the JSE in August 1893.

South African and Namibian production was cyclical until about 1950 with interruptions resulting from influenza (1915-1916), the economic crises of the 1930s and the Second World War. Thereafter production increased with the operation of both kimberlite and placer mines. Namibian production expanded until 1980, as placer deposits and subsequently marine deposits



were brought on stream. The Williamson pipe in Tanzania was a significant contributor in the 1960s and early 1970s. However, production has declined since then and today the mine is a minor contributor. Production from Botswana has grown spectacularly since 1970 with the opening of kimberlite mines at Orapa (1971), Letlhakane (1977) and Jwaneng (1982).

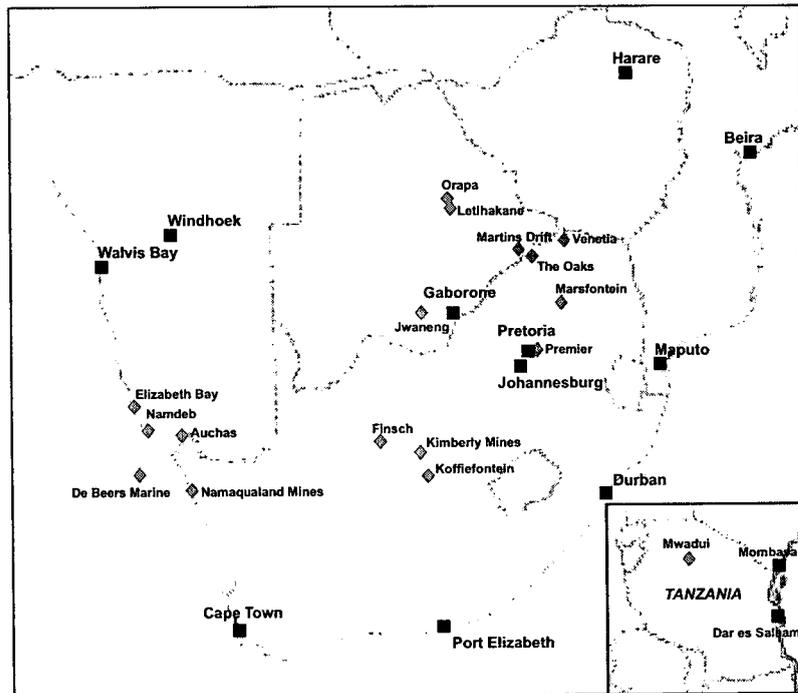
In February 1890, De Beers signed a sales contract with the newly formed London Diamond

Syndicate, which agreed to purchase the entire production from all the De Beers mines. This syndicate was the model on which Ernest Oppenheimer was to establish the Diamond Corporation in 1930, which, in turn, formed the basis of the Central Selling Organisation, the single channel marketing structure. Today, the DTC is De Beers' marketing arm which sells rough diamonds, achieving distribution efficiencies to meet modern market conditions.

In 1990 to lend visibility and coherence to the international assets owned by the company, DBCAG was registered in Switzerland to hold all of De Beers' non-South African assets. Thus was born the 'De Beers Linked Unit', which secures the rights and interests of shareholders simultaneously in the two De Beers companies: DBCM and DBCAG.

Broadly speaking, the history of De Beers falls into three stages. In its early years, the company produced over 90% of the world's diamonds. Then, in the early 1930s (when the diamond industry was close to collapse as a result of the Great Depression following the Wall Street collapse in 1929), the Central Selling Organisation ("CSO") was established to market rough diamonds produced by De Beers, diamonds bought from third party producers on a contractual basis and those purchased on the open market. Whilst the CSO was highly successful when it was first established, market conditions have now changed significantly (including the emergence of many new sources of rough diamonds, the increasing importance of diamonds sold outside traditional channels of distribution and strong competition from other luxury goods.) In response to these changes, De Beers introduced strategic and innovative programmes including its Supplier of Choice initiative (announced on 12 July 2000) in order to drive growth in consumer demand for diamond jewellery.

Today, De Beers and its partners are the largest diamond mining group in the world, producing over 40% by value of the world's gem diamonds from its mines in Southern Africa and through its partnerships with the governments of Botswana (Debswana – 50%), Namibia (Namdeb – 50%) and Tanzania (Williamson Diamonds Limited – 75%).



*De Beers and its partners' operations in Southern Africa*

The 'Diamond Pipeline' is a term that refers to the system by which diamonds are discovered, extracted, marketed, cut, polished and sold to the consumer. De Beers' gem mining operations span every category of diamond mining – open-pit, underground, alluvial, coastal and deep-sea – while its exploration programme extends across five continents.

Based in London, the DTC sorts, values and currently sells about two-thirds of the world's annual supply of rough diamonds, which it sources from the mines of De Beers and its partners and from the sales agreements De Beers has in place with other producers. Over the last 60 years, De Beers has also undertaken the generic advertising and promotion of diamond jewellery around the world.

De Beers has always operated in ways appropriate to the times, and has responded to the ever-changing and now increasingly competitive business environment.

In the late 1990's De Beers recognised that it needed to transform the way it conducted business in order to benefit from the opportunity to grow the diamond business and to match the growth rates enjoyed by the leading companies in the luxury goods sector.

From this was born the Supplier of Choice initiative, which is ultimately about the DTC working more closely with its clients and equipping them to service their downstream partners to drive consumer demand and to put the industry in a more robust position to face the challenges of the 21st century.

Whilst the core business of De Beers remains the mining and marketing of rough diamonds and its core strategy one of driving demand for rough diamonds, the De Beers name has very strong consumer awareness and credibility. The creation of a multi-brand environment remains a focal point of the Supplier of Choice strategy, and consistent with this, the company believes that the De Beers name has the potential to become one of the leading jewellery brands. It was for this reason that De Beers and LVMH agreed to establish an independently managed and operated company to unlock the value of the De Beers name as a premier consumer brand.

## 2.2 Debid

De Beers Industrial Diamonds ("Debid") is part of the De Beers group of companies and is the world's leading supplier of high quality super abrasives and industrial diamond materials, including synthetic and industrial-grade natural diamonds used in industry for their unique and extreme properties.

In 1946, former De Beers Chairman, the late Sir Ernest Oppenheimer, spearheaded De Beers' interests in industrial diamonds. Shortly thereafter, the Diamond Research Laboratory ("DRL") was established in South Africa to support the use of diamonds in industry.

Debid has been central to the evolution from conventional abrasives to more cost-effective diamond solutions, and provides the basis for continual developments in diamond technology.

## 2.3 Benefits to countries in which De Beers operates

Contracted producers marketing their rough diamonds through the DTC benefit from guaranteed regular payments that bring financial stability and confidence to invest in long-term development projects. Revenue from diamonds has helped to provide schools, hospitals, civic amenities, roads and railways, building a stronger infrastructure and more prosperous society.

One must recognise the important role of 'Development' diamonds in countries such as South Africa, Botswana and Namibia. A strong and secure diamond industry creates jobs, generates tax revenue and foreign exchange earnings, and promotes economic growth in the Southern African countries in which De Beers and its partners operate.



### 2.3.1 South Africa

South Africa was the birthplace of the modern diamond industry, following the discovery of the first diamond in the Kimberley area in 1866, which very soon thereafter contributed to the industrialisation of the country. The sound management of South Africa's diamond resources has meant that whilst South Africa was the leading diamond producing country in Africa until Botswana came on stream in the 1970s, De Beers, a company with its roots firmly in South Africa and still responsible for just under 90% of South Africa's diamond production by value, nevertheless remains the leading institution in the world's diamond industry. This is a source of pride for the company and a source of international empowerment for South Africa itself.

De Beers has committed itself to the mining industry in South Africa, evidenced through its prospective investment in the order of R11 billion (US\$1.3 billion) in its South African operations over the next five to ten years, in projects which aim to extend the life of older operations and perhaps even revive others.

De Beers is also committed to a number of job creation and economic empowerment projects which seek to include those previously excluded from the industry.

Diamond is the most beneficiated mineral in South Africa. Last year, the equivalent of more than half of De Beers' South African production, by value, was sold to the South African cutting and polishing industry. The industry contributes significantly to the

training of young diamond workers in South Africa, and skilled artisans are given the opportunity to become fully-fledged entrepreneurs through the Velani Hive, an initiative which provides affordable working space to experienced diamond workers on contract.

### 2.3.2 Botswana

Botswana was amongst the world's poorest countries when it became independent in 1966. Today, Botswana has the highest international credit rating in Africa, and the capital city of Gaborone is a flourishing city. Prudent management of the country's diamond resources within a stable democratic environment has allowed Botswana to become one of the world's economic success stories.

Diamonds contribute 75% of foreign exchange earnings, 45% of government revenue and 33% of GDP in Botswana. Diamond wealth has been distributed throughout the country, providing the major source of funding for schools, hospitals and other infrastructure. Debswana is the largest employer after the government, and 96% of its employees are Botswana citizens. Significant investment in education by the company has improved skills and productivity in the country.

### 2.3.3 Namibia

Diamonds play a vital role in the economy of Namibia. Diamond revenue (the largest portion of it contributed by Namdeb) contributes approximately 35% of Namibia's foreign exchange earnings, and Namdeb is second in size only to the government as an employer.

Revenue from diamonds funded the construction and initial development of the University of Namibia, a maternity clinic in the north of the country, and the Namibian Institute for Educational Development, an institution that is making a valuable contribution to the future of Namibia and young Namibians.

## 2.4 Important developments in the last five years

- Announcement at the end of 1997 that De Beers was separating its management ties from Anglo American.
- Nicky Oppenheimer was appointed as Chairman and Gary Ralfe appointed as Managing Director of De Beers from 1 January 1998.
- The company moved to its new corporate headquarters in Crown Mines (South Africa) in June 1998.
- At the end of 1998 De Beers announced a strategic review of its business, motivated by the under-performance of the company, measured by financial returns, investment ratios, and as reflected in De Beers' share price history.

From the strategic review four focus areas emerged which formed a new strategic plan:

- ***As Is Plus:*** Ensuring the business runs more efficiently and more economically.
- ***Becoming the preferred supplier for our customers:*** Moving away from the seller of last resort to becoming the supplier of choice to our clients.
- ***Growing demand by at least 5% per year:*** De Beers must work with its clients and the whole diamond industry to generate real incremental demand for diamond jewellery.
- ***Exploiting the value of the De Beers brand:*** Although the core business of De Beers remains the mining, sorting and selling of rough gem diamonds, additional value could be generated by the De Beers brand.

- De Beers renewed its sales agreement with Alrosa, the Russian state diamond company, for a further three-year period from December 1998. This was partly responsible for the increase in industry optimism at the end of 1998.
- In March 1998 De Beers signed a three-year agreement with BHP (which came into effect during 1999) to purchase 35% of the run-of-mine production of the Ekati mine in Canada's Northwest Territories.
- Two important projects were completed in Debswana:
  - The Orapa 2000 project was opened in May 2000, which at a cost of US\$300 million doubled the production at Orapa from six million carats to 12 million carats per annum from the year 2000; and
  - The US\$50 million Aquarium project – a new high-tech, high-security recovery and sort-house facility – was completed at Jwaneng Mine.
- De Beers reached agreement in 1999 to acquire Anglovaal Mining's 87.5% interest and Industrial and Commercial Holdings' 12.5% in the Saturn partnership, which had a right to a 50% royalty of pre-tax profits earned by the Venetia Mine in South Africa.
- In 1999 the last outstanding minorities in the diamond trading companies were bought out, allowing De Beers full control of the operation and cashflow of the companies.
- De Beers announced in October 1999 that it would close down its buying operations in Angola and would be reviewing other buying operations in Central and West Africa. Since the end of that year, the DTC has ceased buying diamonds on the open market. From March 2000, De Beers issued a guarantee to its clients on all invoices stating, *inter alia*, that diamonds purchased from the company do not originate from areas of conflict.
- Following on from the strategic plan, De Beers announced its Supplier of Choice programme in London on 12 July 2000, which effectively addresses focus areas two and three of the strategic plan. The initiative is designed to stimulate long-term change in the diamond industry and to modernise business practices so as to encourage shareholders to innovate and work more closely with their downstream partners to stimulate demand for diamond jewellery. Part of the Supplier of Choice programme is the introduction of a set of Best Practice Principles to which both the company and its customers are expected to commit and adhere. The Best Practice Principles address, amongst other things, the issue of dealing in diamonds from conflict areas and have been adopted to ensure that the industry is run in an ethical and professional way.
- In November 2000, the DTC renewed its sales agreements with Debswana and Namdeb for a further five years.
- De Beers acquired a 67.76% interest in the Snap Lake project in Canada's Northwest Territories through a take-over bid for Winspear Diamonds Inc in July 2000, and the remaining interest in Snap Lake from Aber Diamond Corporation in February 2001. The project may be De Beers' first Canadian diamond mine.
- On 16 January 2001, De Beers and LVMH Moët Hennessy Louis Vuitton, the world's leading luxury products group, announced an agreement to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

## 8. De Beers/LVMH Branding Initiative

### 8.1 Overview

On 16 January 2001, the De Beers Group signed an agreement with LVMH Moët Hennessy Louis Vuitton ("LVMH"), the world's leading luxury products group company to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

The new independent company will have the global rights to use the De Beers name in consumer markets and will position itself as a premium jewellery and associated luxury goods brand. The immediate focus will be on premium diamond jewellery and it is anticipated that, subject to regulatory approval, the business will commence within the next 12-18 months with a small number of flagship retail stores located in the world's most prestigious cities.

De Beers and LVMH will invest equal amounts of capital to establish the independent company, that they will own equally.

The expertise of LVMH both in developing luxury brands and rolling out premium retail concepts, combined with technical diamond expertise from a one-off transfer from the De Beers Group will help realise the value inherent in the De Beers brand and is expected to act as a catalyst for brand competition in the sale of jewellery products.

### 8.2 Evaluation

Although De Beers/LVMH has not yet fully developed the business plan, De Beers has prepared initial and preliminary estimates for the venture which may or may not correspond to the finally agreed upon business plan. The net present value range of the initial and preliminary estimates of the future cash flows is approximately US\$200 million to US\$500 million for De Beers' 50% interest in the company, and is based on the following assumptions and factors:

- The total global retail market for diamond jewellery (i.e. jewellery pieces containing at least one diamond) is currently estimated at approximately US\$56 billion and is estimated to grow over the next 10 years at an average annual rate of 2.5% in real terms. Of this total market, approximately two-thirds is represented by the United States and Japan.
- It will take the new company up to 10 years to achieve a share of 1.4% of the global retail market for diamond jewellery.
- Its principal markets will be in the United States and Japan and diamond jewellery sold by the joint venture will command a premium of 25% to 30% over diamond jewellery sold by unbranded, high-end independent diamond jewellery retailers.
- A probability factor has been applied to the preliminary estimate of future cash flows to reflect the fact that regulatory approvals has not been obtained, a business plan has not yet been fully developed and, at this stage, the new enterprise represents a concept yet to be launched as opposed to an ongoing business.
- A real discount rate of approximately 9% has been used reflecting the weighted average cost of capital of luxury goods companies.

### **10.2.1.2 Legal Risk**

De Beers has managed its business so as to avoid any undue legal risk arising out of US antitrust laws in the United States since its business policies have not required systematic contacts with the United States. De Beers is therefore not aware of any material exposure to its business under the laws of the United States. However, in 1994 the United States District Court for the Southern District of Ohio issued an indictment alleging that DBCAG and the General Electric Company conspired to fix the prices of industrial diamonds for a nine month period between 1991 and 1992. While the indictment has never been served upon DBCAG, the case against General Electric was dismissed. There have also been two private class action lawsuits filed in the US District Court for the Southern District of New York relating to the same claims. De Beers believes that with respect to both the indictment and the private suits that the US courts lack jurisdiction over the company and that therefore these suits do not subject De Beers to significant legal risks. Except as referred to De Beers is not aware of any material litigation or material pending litigation.

### **10.2.1.3 Taxation**

For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing. De Beers has answered all questions promptly and has responded to and supplied all requests for information, and has no reason to believe that any material exposure exists in this regard.

## **10.2.2 Environmental**

### **10.2.2.1 Introduction**

In caring for the environment and the communities in which it operates, De Beers requires all of its mines to attempt to meet the ISO 14001 Environmental Corporate Governance Management System. This covers the legal obligation to have a governmental approved environmental management programme (EMP) that covers construction, operating and closure phases of the mine. The issuing of a South African mining authorisation is subject to an approved EMP report (EMPR).

The EMP includes the bio-physical and social environments and would include land disturbance, water management, mining waste (waste rock, tailings and slimes), industrial and domestic waste disposal, infrastructure and associated (access, power supply) impacts.

### **10.2.2.2 Environmental risk and liability**

The approval of the EMPR (RSA mines) and issuing of a Mining Authorisation are subject also to the ability to undertake rehabilitation of surface disturbances, and the financial provision for the rehabilitation of such disturbances after closure of the mine. Chapter 6 of the EMPR requires that a closure plan be formulated, costed and that a financial guarantee for this amount be lodged with the DME.

The requirements for closure and pecuniary provisions for all South African mines are reviewed and updated annually and the provision adjusted accordingly. In addition, environmental management and rehabilitation are being addressed continually under annual operating and capital budgets. This covers staffing, consultants, pollution control, water and energy management, waste management and rehabilitation.

Closure provision is not a legal requirement in Namibia or Botswana. However, estimates for closure have been determined for Namdeb operations and are being prepared for Debswana operations.

### 10.2.2.3 Rehabilitation

The goals for closure are to leave a safe, stable and self-sustaining post-mining environment ("zero aftercare") and restore the land to a productive land use. The major challenges are making safe the open-pits and rehabilitating and revegetating mining residues and disturbances.

Towards these goals at every mine a number of initiatives are in progress. For example:

- At Kimberley Mines redundant treatment plant has been removed; concrete structures have been demolished; and the slopes of the slimes dam wall are being flattened, topdressed and vegetated. Most of the old kimberlite tailings dumps will be removed, retreated in the CTP and the residues deposited in the open pits. This will reduce considerably the environmental liability and risk.
- At Koffiefontein, the Eskom dump has been regraded and topsoiled. The slopes of the waste rock dump are being flattened, topsoiled and revegetated.
- At Finsch Mine redundant treatment plant has been removed. Special attention has been given to improving industrial waste management. The slopes of the waste rock dump are being regraded, and the entire dump will be topsoiled and revegetated.
- At The Oaks Mine, innovative dump development makes use of waste rock to establish paddocks into which the processed kimberlite is deposited. This method enables a stable pollution-free slope to be constructed which is easily revegetated and allows for rehabilitation and revegetation concurrent with mining operations, reducing the closure cost and liability.
- At Premier Mine the focus has been on formulating an emergency response strategy in the unlikely event of a failure of No. 7 dam. The stability of the dam is carefully monitored and subject to independent external audit. The probability of such a failure is extremely low.
- At Venetia, special attention has been given to topsoil requirements for life of mine. Topsoil is pre-stripped within the footprint of future waste and tailings dumps and stockpiled for later use. Water is a precious resource, and storage of flood water from the Limpopo River ensures the sensitive Limpopo riparian system is not damaged during periods of no surface flow in the river.

occur in large scale, low cost mines where the current life of mine expectation is in excess of 20 years.

*Supplier of Choice:* In July 2000, De Beers announced the launch of the DTC's Supplier of Choice initiative, a move away from the market perception of the CSO as custodian of the market in its role as supplier of last resort. The focus of the initiative, which will be subject to review by the European Commission, is to drive long-term growth in consumer demand for diamond jewellery by developing the DTC's business relationships with its sightholders. Successful implementation of this long-term strategy will result in a sustainable increase in rough diamond demand. An important component of Supplier of Choice is the subscription of the DTC and its sightholders to a set of best practice principles to promote and encourage high industry, ethical and business standards.

*Client base:* The DTC sells its goods to approximately 120 client companies or sightholders. These companies represent the highest levels of expertise in diamond manufacture and distribution, in addition to proven financial strength. The Supplier of Choice initiative is designed to enable clients to grow their own businesses through successful marketing strategies. Supplier of Choice will also ensure that sightholders subscribe to the highest professional and ethical standards.

*Brand Power:* De Beers recognises the latent power of branding, and is encouraging the development of a competitive multi-brand jewellery consumer market. It believes that this will significantly increase consumer choice and re-invigorate the diamond jewellery category.

In January 2001 De Beers signed an agreement with LVMH Moët Hennessy Louis Vuitton, the world's leading luxury goods company, to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

#### 11.4.2 Risks

*Mining Titles:* Currently, De Beers owns or leases from the state all of its South African mineral rights in perpetuity. However, the South African government has publicised its intention to take all mineral rights into state ownership. The resulting uncertain issues of tenure and fiscal regime may have an influence on the viability of present and future operations and new projects. De Beers is actively involved in discussions with the South African government to provide sound minerals legislation and to ensure that the economic viability of its future investments in operations is not jeopardised.

In Botswana and Namibia, the Debswana and Namdeb mining rights are held by way of 25-year mining leases. Upon lease expiry, there is no obligation on these states to renew the existing licenses on similar terms. The Jwaneng mining lease falls due for renewal in 2004.

*Political:* All of De Beers' current producing mines are situated in Southern Africa. Accordingly, De Beers is subject primarily to Southern African political risk and to risk of disruption as a result of localised events. This would also include ongoing differences of opinion and interpretation with various authorities with regard to the valuation and export of De Beers' diamonds from South Africa.

*Dependence on Botswana:* A substantial proportion of De Beers' production and profits is sourced from Debswana's mines located in Botswana, exposing De Beers to any actions which impinge upon Debswana's ability to recover and deliver diamonds to the DTC.

*Legal:* An indictment, issued in 1994 by the United States District Court for the Southern District of Ohio, remains unserved upon DBCAG. Two related private class action lawsuits have been filed in the Southern District of New York. De Beers believes

that these suits do not subject it to significant legal risks and, having managed its business so as to avoid undue legal risk arising out of US antitrust laws, is not aware of any other material exposure to its business under US law.

*Investment Portfolio:* In the past, De Beers has raised debt finance to finance stocks and to exploit opportunities at difficult times in the diamond market. The raising of this debt finance has been facilitated by the existence of De Beers' shareholding in Anglo American. Without the portfolio, De Beers' ability to raise capital could be restricted and growth prospects limited.

*Earnings Cyclicity:* Retail demand in the diamond business responds to changes in economic activity. The lag in the diamond pipeline's response to changes in consumer demand has tended to accentuate the cyclical nature of the rough diamond business. The single product nature of De Beers' business and the volatile nature of the rough diamond business has been cushioned to an extent by the investment in Anglo American and the income stream relating thereto.

*Health:* HIV/AIDS is prevalent in Southern Africa. De Beers has developed education and prevention programmes.

*Workforce:* There has been a steady emigration of skilled personnel from Southern Africa in recent years. De Beers has developed innovative programmes to recruit, train and retain personnel. Parts of the diamond industry require advanced technological skills, and De Beers has developed an aggressive development and remuneration strategy, directly tied to individual performance, in order to retain core competencies. The retention of people will be dependent on the financial, economic and political stability of the region.

*Contractual Agreements:* De Beers' diamond purchase agreements with Russia and with BHP (in respect of the Ekati mine in Canada) expire in December 2001 and December 2002 respectively and are therefore subject to negotiated renewal. In addition, sales agreements with Namdeb and Debswana are subject to five-yearly negotiated renewal.

As is usual in mining industry practice, pre-emption rights and change of control clauses exist between De Beers and its joint venture partners. De Beers' joint venture agreements provide for sharing of expenditure. These agreements tend to limit choices available to De Beers while introducing uncertainty as to the terms of contract renewal.

*Additional Diamond Supply:* As evidenced in 1992 in Angola, additional unexpected supply of diamonds has the capacity to disrupt the industry. Additional diamond supply from African alluvial sources could occur as a result of the exploitation of new deposits and changes in the socio-political climate in certain of these countries.

*Market:* The market for diamonds, a high-fashion luxury product, is sensitive to changes in the global economic climate, affected particularly by the US economy. The US currently accounts for approximately half of world-wide consumer consumption of diamond jewellery in value terms. In 2001 De Beers, through the DTC, plans to spend approximately US\$180 million world-wide on generic diamond advertising.

*Conflict diamonds:* De Beers has taken a strong stance on this issue to ensure that the diamonds it markets are conflict-free. It has adopted a code of practice that also requires its shareholders to adopt the same policy. In the future, the DTC Forevermark may be used to distinguish diamonds as being sourced from conflict-free areas.

*Cuttable Synthetic Diamonds:* Synthetic diamonds, particularly industrial grit products, have been produced since the late 1950s. The technology to manufacture synthetic diamonds of sufficient size and quality for cutting and polishing has existed since 1970. However, production costs are high and it is only in the last few years that cuttable synthetics have been produced in commercial quantities albeit small: a few

thousand carats (cf 30Mcts per annum of polished natural gem diamonds). Nevertheless, any suggestion of synthetic diamonds being fraudulently sold as natural diamonds could have a disproportionate effect on consumer confidence. For this reason the DTC has an on-going research programme investigating the characteristic features of synthetic diamonds that can be used for identification and communicating this information to leading gem grading laboratories.

*Exchange Controls:* De Beers' operations in South Africa and Namibia fall within the Common Monetary Area ("CMA"). Although the South African government has committed to easing exchange controls, restrictions remain in force and any movement of funds outside the CMA remains subject to South African Reserve Bank approval. As a result, surplus cash flows from the South African and Namibian operations are not freely available for use in growing the business internationally.

*Taxation:* For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing.

## **11.5 Discount Rates**

### **11.5.1 Weighted average cost of capital**

De Beers has calculated its weighted average cost of capital ("WACC") for its diamond business adjusted to reflect the impact of its investment in Anglo American. As the level of gearing in the business is currently low, this calculation is heavily weighted by the cost of equity. The calculation utilises the Capital Asset Pricing Model ("CAPM") and assumes a global equity market risk premium of 6%.

De Beers' level of risk (beta) when compared to the market as a whole is statistically derived for the listed De Beers Linked Unit. However, as De Beers' investment in Anglo American makes up a substantial proportion of De Beers' market capitalisation, a 'diamond beta' must therefore be derived in order to remove the impact of the Anglo American investment in the De Beers beta. On this basis, De Beers estimates that its 'diamond beta' ranges between 1.3 and 1.5.

### **11.5.2 Mining company discount rates**

The recommended real discount rate for an operating base metal mine mid-life is 8% in an environment deemed to have little or no country risk (L. D. Smith: 'Discounted cash flow analysis methodology and discount rates'; CIM - PDAC Mining Millennium, 2000). It is felt that where discount rates are concerned, a base metal mine can be used as a proxy for a diamond operation.

### **11.5.3 Country risk premium**

Country risk can be assessed in a number of ways, such as through the analysis of bank forfaiting rates, and through surveys of persons involved in international mineral economics and project assessment. L. D. Smith conducted such a survey of Canadian Institute of Mining and Metallurgy Mineral Economics Society members for his 2000 paper. He found consensus for a 6% country risk premium for South Africa, and a 10% country risk premium for Africa in general.

A country risk premium should be added to discount rates used for investments in environments considered to have little or no country risk. Assuming the correct country risk premium for a mining company with most of its producing assets in Southern Africa is 6%, and adding the accepted discount rate for mid-life mining operations of 8%, a discount rate of 14% is derived.

**Appendix 2**  
**TECHNICAL & FINANCIAL REPORT**

## Technical and Financial Report

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## TECHNICAL & FINANCIAL REPORT FOR THE DIAMOND BUSINESS INTERESTS OF DE BEERS AND ITS PARTNERS

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### TECHNICAL AND FINANCIAL REPORT

#### 1. Executive Summary

##### 1.1 Introduction

This Technical and Financial Report (“TFR” or “report”) has been prepared by the De Beers Responsible Persons at the request of the Independent Committee of Directors of De Beers and provides relevant technical and financial information on the entire De Beers group of companies. The report has been written in order to assist the independent Linked Unit holders of De Beers in their evaluation of the scheme of arrangement proposed by DBI between DBCM and its shareholders, the resolutions to be considered at an extraordinary general meeting of DBCM, and the resolutions to be considered at the meeting of holders of depositary receipts.

With respect to De Beers’ mining assets, the basis for this report is the De Beers Strategic Business Plans (“SBPs”) prepared in mid-2000. These plans cover the extraction of mineral resources and mineral reserves for the life of each of De Beers’ mining operations.

De Beers’ diamond business includes some operations which are wholly-owned and some operations, principally in Botswana (Debswana) and Namibia (Namdeb), that are jointly owned between De Beers and the respective governments of these countries. The financial analysis and NPV calculations contained in this report reflect the revenues and cash flows attributable to De Beers’ wholly-owned operations and De Beers’ share of these joint ventures.

This report addresses the following issues:

- the mineral resources and mineral reserves to support the projections and NPV calculations contained herein;
- the capacity and equipment to mine and recover diamonds according to the production forecasts;
- the political, social, environmental and legal stability required to conduct De Beers’ business; and
- the marketing of production from its own and contracted partners.

There are many aspects of the diamond business which make it unique. The particulate nature of diamonds affects the processes of exploration, evaluation, mining and metallurgy and especially the way in which diamonds are valued, sorted and marketed. Descriptions of these processes are therefore included in this report. A discussion of each operating mine is also included.

The associated financial projections are presented on a consolidated basis.

##### 1.2 Professional Qualifications and Responsible Persons

This report incorporates elements of a Competent Person’s Report. The report has been prepared and signed off by the delegated heads of the technical, financial and marketing

disciplines within De Beers, all of whom qualify as Responsible Persons. This report contains all materially important technical, legal and financial information to meet the objectives stated above.

This report has been prepared under the direct supervision of Dr W.J. Kleingeld, Group Manager Mineral Resources. Dr Kleingeld has over 25 years experience in the estimation and assessment of mineral resources and mineral reserves in numerous commodities, but specifically diamonds and is a Competent Person with respect to mineral resources and mineral reserves. Dr Kleingeld is a member of the South African Mineral Resource Committee ("SAMREC") and Chairman of the Diamond Sub-Committee of SAMREC. The Responsible Person in respect of Finance is Mr M.L.S. De Sousa-Oliveira, Head of De Beers Corporate Finance and a member of the De Beers Executive Committee. Mr De Sousa-Oliveira is both a Chartered Accountant and a Chartered Management Accountant and has extensive experience in mergers, acquisitions, new company flotations and project financing. He was appointed Head of De Beers' newly established Corporate Finance Department in January 1998. The role of Responsible Person in respect of DTC Sales and Marketing is Mr G.P.H. Penny. Mr Penny was a Rhodes Scholar at Oxford where he obtained an MA in Philosophy, Politics and Economics. He is a 'director' of the DTC and a member of the De Beers Executive Committee, and will assume overall responsibility for De Beers' worldwide sales and marketing activities with effect from July 2001.

Dr Kleingeld, Mr De Sousa-Oliveira and Mr Penny have assumed joint and several responsibility for this report and its contents.

Other contributors to this report were:

Group Manager Exploration	W.F. McKechnie
General Manager Mining	A.P. Guthrie
General Manager Metallurgy	A.C. Rowan
General Manager Engineering	G.D. Scott
Manager Producer Relations and Legal Services	J.G. Hughes
Group Manager Human Resources	L.J. Gatherer
Manager Environmental Services	Dr M. Berry

The professional qualifications of all the contributors are set out in Appendix I.

### 1.3 Terminology and Abbreviations

The specialised nature of the diamond industry has necessitated the creation of a large number of technical terms and abbreviations which are either unique to the business or may have specific application or meaning which differ from their usage elsewhere in the minerals industry. De Beers has established standard terminology for many aspects of its business, which has been used herein. A list of abbreviations and glossary of technical and financial terms is contained in Appendix II. The metric system has been used throughout this report. A particularly important unit of mass is the carat (ct) which is 0.2g in mass. Grade has been expressed as carats per hundred tonnes (cpht) for kimberlite deposits and carats per square metre (cpsm or cts/m<sup>2</sup>) or carats per cubic metre (cpcm) in placer deposits. Currency units used are US dollars (US\$ or \$) or South African Rand (ZAR or R).

### 1.4 Overview of De Beers

#### 1.4.1 Company Profile

Cecil John Rhodes formed DBCM in March 1888 as an amalgamation of diamond mining interests in the Kimberley area of South Africa. Generally, DBCM represents De Beers' South African interests, whilst DBCAG covers De Beers' activities throughout the rest of the world. De Beers is an integrated company whose core business is the mining and marketing of rough diamonds.

Through exploration and acquisitions, De Beers has grown annual production to a total of 36.5 million carats of rough diamonds in 2000. De Beers and its partners conduct mining operations in South Africa, Namibia, Botswana and Tanzania. The DTC is headquartered in London and is responsible for marketing De Beers' and certain other producers' diamonds. In the year 2000, diamond sales by the DTC reached a record US\$5.7 billion. De Beers' own earnings in 2000 were US\$1,289 million.

De Beers and its partners are the largest diamond producers by value in the world. De Beers continuously develops and implements new technology to discover and manage its mineral resources and mineral reserves in a cost-effective manner. It has grown the market for gem diamonds through active marketing and advertising strategies.

Since 1997 when management of De Beers and Anglo American was separated, a number of important changes have taken place. Stakes in investments made jointly with Anglo American were sold to Anglo American in exchange for Anglo American shares prior to their listing on the LSE in 1999, and the policy of joint investments was discontinued. This has helped to simplify the valuation of De Beers from that time. In 1999, the last outstanding minorities were bought out in the diamond trading companies, allowing full control of their operations and cashflow. In 2000, the Venetia royalty was acquired from Anglovaal Mining Limited and Industrial & Commercial Holdings Group Limited in order to acquire a 100% economic interest in that operation. An unsuccessful bid was made for Ashton Mining Limited of Australia, and a successful bid was made for Winspear Diamonds Inc of Canada to acquire a 67% interest in the Snap Lake prospect. The remaining interest in the Snap Lake prospect was purchased from Aber Diamond Corporation in February 2001.

Starting in 1998, a strategic review of De Beers' global diamond business was undertaken with Bain & Company in an attempt to address the inadequate return on capital generated by De Beers' diamond business. This resulted in, amongst other initiatives, the As Is Plus programme which is focused on operational efficiency improvements to lower De Beers' cost base. A Supplier of Choice initiative was launched in mid-2000 with the aim of formalising relationships between the DTC and its sightholders and increasing their respective efforts to grow the diamond jewellery business.

De Beers has played a leading role in proposing and implementing controls to distinguish diamonds as having come from conflict-free areas. In support of this effort and recognising the uncertain origins of diamonds bought in the open market, De Beers ceased open market purchases in late 1999.

World-wide, De Beers and its partners have 23,000 employees. They pursue proactive human resources development programmes and provide equal opportunities to all personnel.

#### **1.4.2 Exploration**

De Beers carries out diamond exploration in 17 countries on five continents for both kimberlite pipe and placer deposits. Extensive research has identified the environments favourable for the deposition of diamonds, and specific technology has been developed to efficiently explore for and sample diamond deposits. Exploration expenditure in 2000 was approximately US\$69 million.

De Beers' exploration division has had notable successes in the past, including the discovery of the Orapa and Jwaneng pipes in Botswana and the Venetia pipes in South Africa. Jwaneng is the most valuable kimberlite diamond occurrence in the world. De Beers is also pioneering the development of deep-sea diamond exploration and mining off the West Coast of Southern Africa.

De Beers is currently fast-tracking the evaluation of the Victor (Attawapiskat) diamond project in Ontario, Canada. This project is currently at the desktop study stage and thus,

for the purposes of this report, is not sufficiently advanced to fulfil the necessary requirements for inclusion in the financial model referred to in this report.

### **1.4.3 Mineral Resources and Mineral Reserves**

#### **1.4.3.1 General Overview**

The particulate nature of diamonds, their size, shape, quality, colour and value are important factors in the accurate estimation and evaluation of diamond deposits. De Beers has developed specific methodologies that take these factors into account, as well as two other aspects:

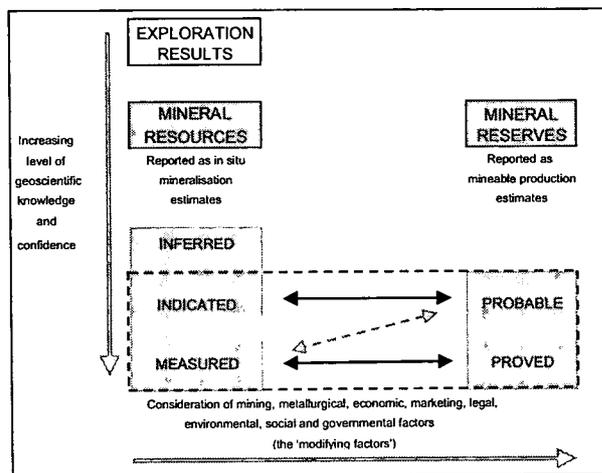
- diamond occurrences in nature are rare and are usually measured in parts per billion, whereas most other mineral commodities are measured in parts per thousand or parts per million; and
- in placer deposits, diamonds may be concentrated in trapsites that are relatively small and difficult to statistically predict and sample.

De Beers' methodologies for sampling and estimation of diamond deposits have been recognised and implemented throughout the world. In 2000, the South African Mineral Resource Committee ("SAMREC") implemented a diamond-specific code based on these methodologies.

#### **1.4.3.2 Estimation Methodologies**

De Beers' methodology used in estimating mineral resources and reserves is as follows:

- When a potentially economic deposit is discovered, an in-situ mineralisation resource estimate is developed using appropriate sampling techniques and sampling density. Empirically derived conversion factors are applied to the estimated grades to allow for the bottom or lower diamond size cut-off which might be used in a commercial scale metallurgical plant, also taking into account the difference in the degree of diamond liberation between the sampling and commercial recovery processes.
- The baseline category for resource classification, which requires a minimum level of geological knowledge and confidence, is the inferred mineral resource. Increased sampling of the resource will lead to an improved level of geoscientific knowledge and confidence, and upgrading of the resource to an indicated category and ultimately to a measured status. However, diamond resources rarely achieve this level of classification because of the complex nature of diamond deposits and the large expenditure that would be required to achieve the high level of confidence stipulated in the SAMREC Code.
- Mineral reserves are a modified sub-set of indicated and measured resources where mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors are applied as appropriate to define that part of the resource that is economically mineable.



*Framework for classifying tonnage and grade estimates reflecting different degrees of geoscientific confidence and technical and economic evaluation*

As at 31st December 2000, mineral reserves and mineral resources of De Beers and its partners were as follows:

- *In kimberlite mines and alluvial deposits where measured in tonnes:* probable mineral reserves were 523Mt @ 55cpht containing 290Mcts; indicated mineral resources were 528Mt @ 44cpht containing 234Mcts; and inferred mineral resources were 1,528Mt @ 42cpht containing 634Mcts; and
- *In alluvial, coastal and marine placer mines:* probable mineral reserves were 24 million m<sup>2</sup> at 0.31cpsh containing 7Mcts; indicated mineral resources were 37 million m<sup>2</sup> @ 0.14cpsh containing 5Mcts; and inferred mineral resources were 40 million m<sup>2</sup> @ 0.24cpsh containing 10Mcts.

#### 1.4.4 Operations

The operations forecast forming the basis for the financial evaluation calls for existing mines to produce 38Mcts from 87Mt of ore in 2001. Production is projected to increase to 45Mcts by 2010 with a slight reduction in tonnage to 82Mt.

The operations forecast takes into account the assumed successful completion of the following major capital projects:

- *Kimberley Mine CTP:* The construction of a new combined treatment plant is in progress. The plant is expected to improve recovery efficiencies and turn previously uneconomic resources both on surface and underground into mineable resources.
- *Finsch Mine Block 4:* Work has commenced on the establishment of a block cave to replace tonnage from the current block 3 cave when it is finally depleted.
- *Premier Mine C-cut:* The project will increase the depth of underground operations, and build new and increased plant capacity extending the life of mine by 17 years to 2025.
- *Snap Lake:* The project provides for the establishment of a complete mine and treatment facility initially to treat 3,000 tpd.
- *Debswana Damtshaa Mine (previously known as BK 9):* Construction is underway to provide a new mine and treatment facility east of Orapa in Botswana.

#### 1.4.5 Marketing through the DTC

The companies that form the DTC represent the marketing arm of De Beers. They purchase, sort, value and market rough diamonds mined by De Beers as well as those from contracted third-party sources.

In addition to its sorting, valuation and sales activities, the DTC has for many years made significant investment by way of generic diamond marketing and promotional expertise. This year it will spend approximately US\$180 million promoting diamond jewellery.

The DTC is pursuing several initiatives to increase the sales of its diamonds, notably through its Supplier of Choice initiative. The focus of this programme is to drive growth in consumer demand for diamond jewellery. The DTC will develop business relationships in a manner that will encourage its clients (sightholders) to pursue a more proactive role in promoting diamonds at the retail level. The DTC may offer marketing and technical assistance and expertise to enable sightholders to realise this goal.

The DTC has developed a new trademark, the 'Forevermark' from which it intends sightholders and retail customers to benefit. The 'Forevermark' will symbolise De Beers' commitment to integrity by the promotion of the highest professional and ethical standards throughout the diamond business.

To aid the determination of the sales target for 2001, a proprietary De Beers Supply/Demand model has been used. This model uses as inputs a number of assumptions about the factors that affect the diamond business. For the purposes of this report, three main scenarios have been evaluated:

- 'Consensus' – based on consensus forecasts of GDP growth, and the historic relationship between the economy and demand for diamonds. Consensus economic forecasts currently assume a slowdown, but not outright recession, this year, with some recovery in 2002.
- 'Upside' – based on the same economic forecasts as the consensus scenario but with more optimistic market expansion targets. This scenario also assumes a more optimistic view for contract third-party purchases by the DTC.
- 'Downside' – based on a more negative economic outlook, with recession in the US during 2001/2 and correspondingly lower growth in the rest of the world, with a further cyclical slowdown in 2007/8.

The DTC has set a target of US\$4.8 billion under the 'consensus' scenario for its sale of rough diamonds in 2001. Thereafter, the Supply/Demand model indicates an increase in sales between 2001 and 2010 at a CAGR of 4.5% in nominal terms. However, due to the limits on the availabilities of certain ranges of goods, this indicative percentage growth in DTC sales does not flow into the valuation model in which DTC sales have been capped at levels commensurate with forecast diamond availabilities.

#### 1.4.6 De Beers/LVMH Branding Initiative

One of De Beers' latest initiatives is the establishment of an equally funded new company with LVMH Moët Hennessy Louis Vuitton ("LVMH"). De Beers will (subject to regulatory approvals) transfer to the newly formed independent company the world-wide rights to use the De Beers name for luxury goods in consumer markets.

#### 1.4.7 Debid

Debid (De Beers Industrial Diamonds) was established in 1946 to concentrate on the production, processing and marketing of natural diamonds and subsequently synthetic diamonds for industrial purposes. Debid currently produces and markets synthetic industrial diamonds, and buys and markets natural industrial diamonds.

#### **1.4.8 Other Investments**

De Beers holds investments (other than its investment in Anglo American) in certain JSE listed companies. These are not core assets and could be disposed of should conditions require.

Income from unlisted diamond industry investments has been included in the financial model referred to in this report.

### **1.5 Valuation Methodology**

The methodology used to value the various assets of De Beers is set out below.

#### **1.5.1 General Principles**

De Beers' core diamond business has been valued on a going concern basis, with all the mines in which De Beers has an interest, the DTC and their related capital assets and working capital assets being treated as an integral and non-divisible part of that core business.

The nature of De Beers' core diamond business and factors such as pre-emption rights and marketing rights relating to various parts of the business make it inappropriate to value the business on a break-up basis.

The valuation has been prepared as at 31 December 2000 and, where appropriate, cash flows have been discounted back to this date.

#### **1.5.2 Operating Mines and DTC Sales**

De Beers' operating mines have been valued using discounted cash flow methodology. A financial model has been constructed which incorporates the life of mine cash flows for each mine and extends out to the year 2030. The production rates and costs for the mines have been based on the SBPs, as refined by De Beers' three-year rolling forecasts.

DTC sales, which include sales of diamonds produced from De Beers' and its partners' mines as well as sales of diamonds purchased under third party contracts, and changes in diamond prices have been estimated using the De Beers Supply/Demand forecasting model, capped by forecast limits on the availabilities of certain ranges of goods. Three supply/demand scenarios have been computed; 'upside', 'downside' and 'consensus'. A detailed description of these scenarios is set out in Section 11.

It should be noted that the De Beers Supply/Demand model seeks to forecast DTC sales and changes in diamond prices over a 10-year period but not specifically on a year by year basis. Accordingly, this impacts on the financial projections set out in this report which are not therefore intended to be year by year specific but intended to cover a period of years. The financial projections have been prepared by De Beers on the basis of current assumptions and have not been reported on independently.

#### **1.5.3 Exploration**

A valuation range of between US\$0 and US\$100 million has been placed on De Beers' exploration activities. The range indicated takes account of the three scenarios computed in this report. A maximum value of US\$60 million was assumed for advanced exploration projects and a maximum of US\$40 million for all other assets.

#### **1.5.4 De Beers/LVMH Branding Initiative**

Although a business plan remains to be fully developed (pending regulatory approvals) in respect of the enterprise, it has been valued using discounted cash flow methodology on the basis of initial and preliminary cash flow projections estimated by De Beers.

Given the current conceptual nature of the venture, the cash flow projections have not been incorporated into the financial model and a separate, stand-alone NPV has been estimated.

#### **1.5.5 Debid**

Debid has been valued using discounted cash flow methodology. The estimated future cash flows for Debid have been incorporated into the financial model.

#### **1.5.6 Listed Investments**

De Beers' interest in listed investments (other than its investment in Anglo American) have been valued based on market values as at 31 December 2000.

#### **1.5.7 Other Assets**

With the exception of adjusted net cash, De Beers' working capital, including diamond stocks and cash, has been valued on the basis that it is an integral part of De Beers' gem diamond and industrial diamond businesses and has therefore been incorporated into the financial model. De Beers' current diamond stocks are considered strategic and necessary for the ongoing conduct of its business as is its cash (other than adjusted net cash).

The adjusted net cash has been estimated having regard to the current level of De Beers' working capital and its future needs (and includes cash resulting from the exercise of options).

De Beers' other diamond industry investments have been valued on the basis of future estimated dividend streams and such dividend streams incorporated into the financial model.

#### **1.5.8 Discount Rates**

NPVs have been calculated using real discount rates ranging between 10% and 15% having regard to De Beers' weighted average cost of capital ("WACC") for its diamond business (adjusting for the impact of its shareholding interest in Anglo American), the estimated WACCs of other mining companies, implied discount rates estimated for comparable transactions and academic papers on the estimation of discount rates.

### **1.6 Strengths, Opportunities and Risks**

Strengths, opportunities and risks with respect to De Beers' diamond business are set out below.

#### **1.6.1 Strengths and Opportunities**

*General:* De Beers and its partners are the largest diamond producer by value in the world. The DTC is the world's leading marketer of rough diamonds.

De Beers benefits from a sound operating base, efficient use of assets, good relationships with its major stakeholders, and a management team aimed at growing the diamond business to a value of US\$10 billion by the year 2004, in line with a carefully considered strategy.

As a fully integrated group focused wholly on the diamond business, De Beers believes it possesses the strengths required to maximise the opportunities that present themselves, while being aware of the risks that exist.

*Workforce:* De Beers has a dedicated and loyal workforce which takes great pride in its work, De Beers and De Beers' company values. This workforce is motivated and

capable of growing the company, and has contributed significantly to the increase in profits realised over the last three years and to the strategic transformation of the company. De Beers continues to invest in the development of staff at all levels.

*As Is Plus:* As a result of the strategic review started in 1998, De Beers has implemented a number of initiatives that have reduced unit costs and improved efficiencies. Further progress in this area continues to be made in the Southern African operations. The threat of AIDS and the employment equity issue, and their associated financial costs do, to an extent, limit the potential gains from these initiatives.

*Technical Ability:* De Beers has invested heavily in research and development of new, leading edge technology in many areas of the diamond business. For example, this has led to the successful implementation of deep-water mining of marine placer deposits off the coast of Namibia. De Beers is the only mining company involved in large-scale underground mining of kimberlite pipes and has unrivalled expertise in large, block cave excavations. Ongoing research and development has resulted in cutting edge plant design with a high degree of automation. The newly commissioned Aquarium Plant at Jwaneng contains the Completely Automated Recovery Plant ("CARP") for the recovery of diamonds from x-ray concentrate and the Fully Integrated Sort House ("FISH") where the sorting and acid cleaning processes have been automated.

*Exploration:* De Beers has an extensive exploration programme both on existing mines and in extensive greenfield sites on five continents and is committed to securing new sources of supply through exploration on its own and in joint ventures with others.

*Resource Base:* De Beers and its partners have a large mineral resource base, unrivalled by any other diamond mining company, currently standing at approximately 2.6 billion tonnes amounting to some 1.2 billion carats. The majority of these resources occur in large scale, low cost mines where the current life of mine expectation is in excess of 20 years.

*Supplier of Choice:* In July 2000, De Beers announced the launch of the DTC's Supplier of Choice initiative, a move away from the market perception of the CSO as custodian of the market in its role as supplier of last resort. The focus of the initiative, which will be subject to review by the European Commission, is to drive long-term growth in consumer demand for diamond jewellery by developing the DTC's business relationships with its sightholders. Successful implementation of this long-term strategy will result in a sustainable increase in rough diamond demand. An important component of Supplier of Choice is the subscription of the DTC and its sightholders to a set of best practice principles to promote and encourage high industry, ethical and business standards.

*Client base:* The DTC sells its goods to approximately 120 client companies or sightholders. These companies represent the highest levels of expertise in diamond manufacture and distribution, in addition to proven financial strength. The Supplier of Choice initiative is designed to enable clients to grow their own businesses through successful marketing strategies. Supplier of Choice will also ensure that sightholders subscribe to the highest professional and ethical standards.

*Brand Power:* De Beers recognises the latent power of branding, and is encouraging the development of a competitive multi-brand jewellery consumer market. It believes that this will significantly increase consumer choice and re-invigorate the diamond jewellery category.

In January 2001 De Beers signed an agreement with LVMH Moët Hennessy Louis Vuitton, the world's leading luxury goods company, to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

## 1.6.2 Risks

*Mining Titles:* Currently, De Beers owns or leases from the state all of its South African mineral rights in perpetuity. However, the South African government has publicised its intention to take all mineral rights into state ownership. The resulting uncertain issues of tenure and fiscal regime may have an influence on the viability of present and future operations and new projects. De Beers is actively involved in discussions with the South African government to provide sound minerals legislation and to ensure that the economic viability of its future investments in operations is not jeopardised.

In Botswana and Namibia, the Debswana and Namdeb mining rights are held by way of 25-year mining leases. Upon lease expiry, there is no obligation on these states to renew the existing licenses on similar terms. The Jwaneng mining lease falls due for renewal in 2004.

*Political:* All of De Beers' current producing mines are situated in Southern Africa. Accordingly, De Beers is subject primarily to Southern African political risk and to risk of disruption as a result of localised events. This would also include ongoing differences of opinion and interpretation with various authorities with regard to the valuation and export of De Beers' diamonds from South Africa.

*Dependence on Botswana:* A substantial proportion of De Beers' production and profits is sourced from Debswana's mines located in Botswana, exposing De Beers to any actions which impinge upon Debswana's ability to recover and deliver diamonds to the DTC.

*Legal:* An indictment, issued in 1994 by the United States District Court for the Southern District of Ohio, remains unserved upon DBCAG. Two related private class action lawsuits have been filed in the Southern District of New York. De Beers believes that these suits do not subject it to significant legal risks and, having managed its business so as to avoid undue legal risk arising out of US antitrust laws, is not aware of any other material exposure to its business under US law.

*Investment Portfolio:* In the past, De Beers has raised debt finance to finance stocks and to exploit opportunities at difficult times in the diamond market. The raising of this debt finance has been facilitated by the existence of De Beers' shareholding in Anglo American. Without the portfolio, De Beers' ability to raise capital could be restricted and growth prospects limited.

*Earnings Cyclicity:* Retail demand in the diamond business responds to changes in economic activity. The lag in the diamond pipeline's response to changes in consumer demand has tended to accentuate the cyclical nature of the rough diamond business. The single product nature of De Beers' business and the volatile nature of the rough diamond business has been cushioned to an extent by the investment in Anglo American and the income stream relating thereto.

*Health:* HIV/AIDS is prevalent in Southern Africa. De Beers has developed education and prevention programmes.

*Workforce:* There has been a steady emigration of skilled personnel from Southern Africa in recent years. De Beers has developed innovative programmes to recruit, train and retain personnel. Parts of the diamond industry require advanced technological skills, and De Beers has developed an aggressive development and remuneration strategy, directly tied to individual performance, in order to retain core competencies. The retention of people will be dependent on the financial, economic and political stability of the region.

*Contractual Agreements:* De Beers' diamond purchase agreements with Russia and with BHP (in respect of the Ekati mine in Canada) expire in December 2001 and December 2002 respectively and are therefore subject to negotiated renewal. In

addition, sales agreements with Namdeb and Debswana are subject to five-yearly negotiated renewal.

As is usual in mining industry practice, pre-emption rights and change of control clauses exist between De Beers and its joint venture partners. De Beers' joint venture agreements provide for sharing of expenditure. These agreements tend to limit choices available to De Beers while introducing uncertainty as to the terms of contract renewal.

*Additional Diamond Supply:* As evidenced in 1992 in Angola, additional unexpected supply of diamonds has the capacity to disrupt the industry. Additional diamond supply from African alluvial sources could occur as a result of the exploitation of new deposits and changes in the socio-political climate in certain of these countries.

*Market:* The market for diamonds, a high-fashion luxury product, is sensitive to changes in the global economic climate, affected particularly by the US economy. The US currently accounts for approximately half of world-wide consumer consumption of diamond jewellery in value terms. In 2001 De Beers, through the DTC, plans to spend approximately US\$180 million world-wide on generic diamond advertising.

*Conflict diamonds:* De Beers has taken a strong stance on this issue to ensure that the diamonds it markets are conflict-free. It has adopted a code of practice that also requires its sightholders to adopt the same policy. In the future, the DTC Forevermark may be used to distinguish diamonds as being sourced from conflict-free areas.

*Cuttable Synthetic Diamonds:* Synthetic diamonds, particularly industrial grit products, have been produced since the late 1950s. The technology to manufacture synthetic diamonds of sufficient size and quality for cutting and polishing has existed since 1970. However, production costs are high and it is only in the last few years that cuttable synthetics have been produced in commercial quantities albeit small: a few thousand carats (cf 30 Mcts per annum of polished natural gem diamonds). Nevertheless, any suggestion of synthetic diamonds being fraudulently sold as natural diamonds could have a disproportionate effect on consumer confidence. For this reason the DTC has an on-going research programme investigating the characteristic features of synthetic diamonds that can be used for identification and communicating this information to leading gem grading laboratories.

*Exchange Controls:* De Beers' operations in South Africa and Namibia fall within the Common Monetary Area ("CMA"). Although the South African government has committed to easing exchange controls, restrictions remain in force and any movement of funds outside the CMA remains subject to South African Reserve Bank approval. As a result, surplus cash flows from the South African and Namibian operations are not freely available for use in growing the business internationally.

*Taxation:* For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing.

## 1.7 Economic Evaluation

### 1.7.1 Diamond Business

The NPVs, at real discount rates of 10%, 12.5% and 15% of the estimated future cash flows generated by De Beers' core diamond business, industrial diamond business and other assets incorporated into the financial model are set out in the table below. The NPVs have been prepared on the basis of the 'consensus', 'upside' and 'downside' supply/demand scenarios and appropriately factored inferred mineral resources.

**REAL DISCOUNT RATES**

Description of scenario	10%		12.5%		15%	
	US\$M	RM	US\$M	RM	US\$M	RM
'Consensus' scenario	7,159	55,352	6,117	47,296	5,329	41,204
'Downside' scenario	4,967	38,403	4,246	32,829	3,699	28,598
'Upside' scenario	8,736	67,547	7,355	56,869	6,321	48,877

**1.7.2 Other Assets**

With respect to assets not incorporated into the financial model and valued separately, the estimated value of these assets is as follows:

Assets	US\$M
Exploration Properties	0-100
De Beers/LVMH Branding Initiative	200-500
Listed Investments	300
Adjusted Net Cash	750
<b>TOTAL</b>	<b>1,250-1,650</b>

**1.7.3 Aggregate Asset Evaluation**

The aggregate values of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American on the basis of the various scenarios are as follows:

Scenario	Value Range	
	US\$M	RM
'Upside' scenario at 10%-15% real discount rate range	7,971-10,386	61,912-80,582
'Consensus' scenario at 10%-15% real discount rate range	6,779-8,609	52,659-66,807
'Downside' scenario at 10%-15% real discount rate range	4,949-6,217	38,473-48,278

On the basis of a real discount rate of 10.5% to 11.5% which N M Rothschild & Sons Limited ("Rothschild"), independent financial adviser to the Independent Committee, has advised is an appropriate basis on which to value the gem and industrial diamond businesses, the value of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American is as follows:

	US\$M	RM
Gem and Industrial Diamond Businesses	6,498-6,925	50,239-53,545
Other Assets	1,450-1,450	11,455-11,455
<b>TOTAL</b>	<b>7,948-8,375</b>	<b>61,694-65,000</b>

**1.7.4 Sensitivity Analysis**

The NPVs stated in Section 1.7.1 above are not particularly sensitive to variations in mine operating costs, capital expenditure and exchange rates. Sensitivity of the NPVs to diamond pricing, diamond production and demand is reflected in the scenarios in the table in Section 1.7.1.

On the basis of the 'consensus' scenario comprising only probable mineral reserves and indicated mineral resources, the NPV at a 10% to 15% real discount rate range

amounts to US\$4,460 million to US\$5,638 million (or ZAR34,483 million to ZAR43,597 million).

**1.8 Conclusion**

A copy of this report has been provided to the committee of independent directors of De Beers and the committee's independent financial advisors, Rothschild. A copy of the financial model together with supporting working papers and relevant documentation has also been provided to Rothschild, which has used this report and the financial model as part of the basis of preparation of its fair and reasonable opinion prepared in relation to the offer by DBI for De Beers.

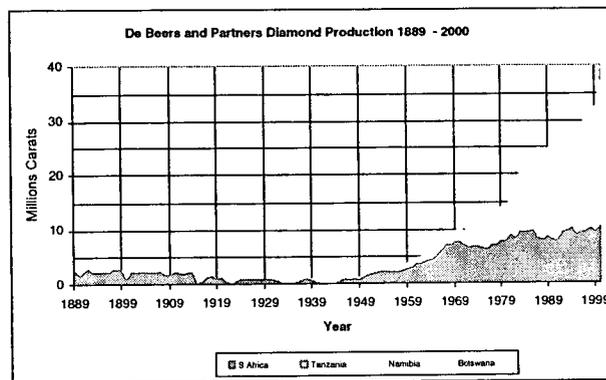
Signed .....	Signed .....	Signed .....
Dr W.J. Kleingeld	Mr M.L.S. De Sousa-Oliveira	Mr G.P.H. Penny

## 2. Corporate Profile

### 2.1 History

Two prominent diamond mining companies emerged from the diamond rush in and around Kimberley in the late 19th century: Barney Barnato's Kimberley Central Company and Cecil John Rhodes' De Beers Company, named after the De Beer brothers, on whose farm its mine was established. Following a protracted battle for overall control, Barnato agreed to a merger and DBCM was formed on 12 March 1888, with Rhodes as the founding Chairman. De Beers was granted an official listing on the JSE in August 1893.

South African and Namibian production was cyclical until about 1950 with interruptions resulting from influenza (1915-1916), the economic crises of the 1930s and the Second World War. Thereafter production increased with the operation of both kimberlite and placer mines. Namibian production expanded until 1980, as placer deposits and subsequently marine deposits



were brought on stream. The Williamson pipe in Tanzania was a significant contributor in the 1960s and early 1970s. However, production has declined since then and today the mine is a minor contributor. Production from Botswana has grown spectacularly since 1970 with the opening of kimberlite mines at Orapa (1971), Letlhakane (1977) and Jwaneng (1982).

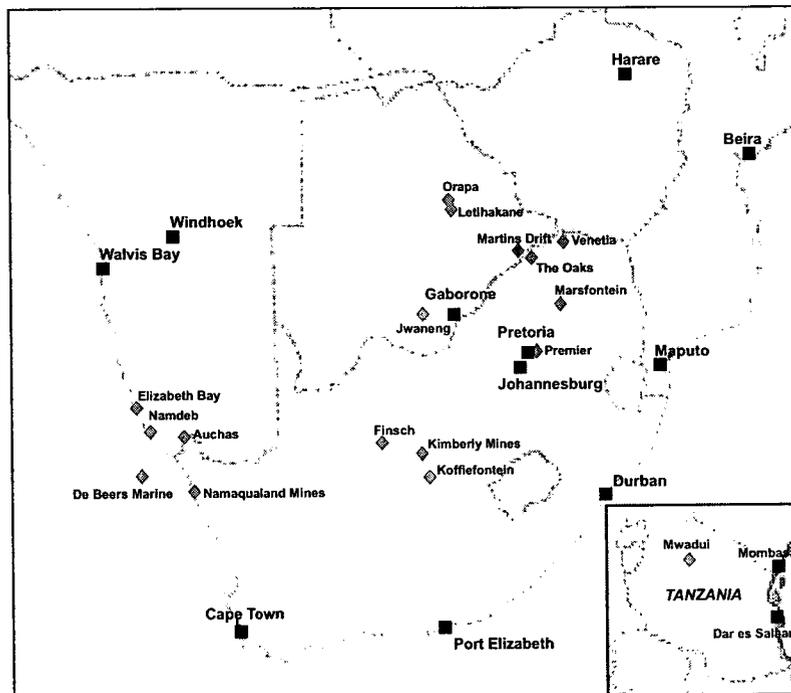
In February 1890, De Beers signed a sales contract with the newly formed London Diamond

Syndicate, which agreed to purchase the entire production from all the De Beers mines. This syndicate was the model on which Ernest Oppenheimer was to establish the Diamond Corporation in 1930, which, in turn, formed the basis of the Central Selling Organisation, the single channel marketing structure. Today, the DTC is De Beers' marketing arm which sells rough diamonds, achieving distribution efficiencies to meet modern market conditions.

In 1990 to lend visibility and coherence to the international assets owned by the company, DBCAG was registered in Switzerland to hold all of De Beers' non-South African assets. Thus was born the 'De Beers Linked Unit', which secures the rights and interests of shareholders simultaneously in the two De Beers companies: DBCM and DBCAG.

Broadly speaking, the history of De Beers falls into three stages. In its early years, the company produced over 90% of the world's diamonds. Then, in the early 1930s (when the diamond industry was close to collapse as a result of the Great Depression following the Wall Street collapse in 1929), the Central Selling Organisation ("CSO") was established to market rough diamonds produced by De Beers, diamonds bought from third party producers on a contractual basis and those purchased on the open market. Whilst the CSO was highly successful when it was first established, market conditions have now changed significantly (including the emergence of many new sources of rough diamonds, the increasing importance of diamonds sold outside traditional channels of distribution and strong competition from other luxury goods.) In response to these changes, De Beers introduced strategic and innovative programmes including its Supplier of Choice initiative (announced on 12 July 2000) in order to drive growth in consumer demand for diamond jewellery.

Today, De Beers and its partners are the largest diamond mining group in the world, producing over 40% by value of the world's gem diamonds from its mines in Southern Africa and through its partnerships with the governments of Botswana (Debswana – 50%), Namibia (Namdeb - 50%) and Tanzania (Williamson Diamonds Limited - 75%).



*De Beers and its partners' operations in Southern Africa*

The 'Diamond Pipeline' is a term that refers

to the system by which diamonds are discovered, extracted, marketed, cut, polished and sold to the consumer. De Beers' gem mining operations span every category of diamond mining – open-pit, underground, alluvial, coastal and deep-sea – while its exploration programme extends across five continents.

Based in London, the DTC sorts, values and currently sells about two-thirds of the world's annual supply of rough diamonds, which it sources from the mines of De Beers and its partners and from the sales agreements De Beers has in place with other producers. Over the last 60 years, De Beers has also undertaken the generic advertising and promotion of diamond jewellery around the world.

De Beers has always operated in ways appropriate to the times, and has responded to the ever-changing and now increasingly competitive business environment.

In the late 1990's De Beers recognised that it needed to transform the way it conducted business in order to benefit from the opportunity to grow the diamond business and to match the growth rates enjoyed by the leading companies in the luxury goods sector.

From this was born the Supplier of Choice initiative, which is ultimately about the DTC working more closely with its clients and equipping them to service their downstream partners to drive consumer demand and to put the industry in a more robust position to face the challenges of the 21st century.

Whilst the core business of De Beers remains the mining and marketing of rough diamonds and its core strategy one of driving demand for rough diamonds, the De Beers name has very strong consumer awareness and credibility. The creation of a multi-brand environment remains a focal point of the Supplier of Choice strategy, and consistent with this, the company believes that the De Beers name has the potential to become one of the leading jewellery brands. It was for this reason that De Beers and LVMH agreed to establish an independently managed and operated company to unlock the value of the De Beers name as a premier consumer brand.

## 2.2 Debid

De Beers Industrial Diamonds ("Debid") is part of the De Beers group of companies and is the world's leading supplier of high quality super abrasives and industrial diamond materials, including synthetic and industrial-grade natural diamonds used in industry for their unique and extreme properties.

In 1946, former De Beers Chairman, the late Sir Ernest Oppenheimer, spearheaded De Beers' interests in industrial diamonds. Shortly thereafter, the Diamond Research Laboratory ("DRL") was established in South Africa to support the use of diamonds in industry.

Debid has been central to the evolution from conventional abrasives to more cost-effective diamond solutions, and provides the basis for continual developments in diamond technology.

## 2.3 Benefits to countries in which De Beers operates

Contracted producers marketing their rough diamonds through the DTC benefit from guaranteed regular payments that bring financial stability and confidence to invest in long-term development projects. Revenue from diamonds has helped to provide schools, hospitals, civic amenities, roads and railways, building a stronger infrastructure and more prosperous society.

One must recognise the important role of 'Development' diamonds in countries such as South Africa, Botswana and Namibia. A strong and secure diamond industry creates jobs, generates tax revenue and foreign exchange earnings, and promotes economic growth in the Southern African countries in which De Beers and its partners operate.



### 2.3.1 South Africa

South Africa was the birthplace of the modern diamond industry, following the discovery of the first diamond in the Kimberley area in 1866, which very soon thereafter contributed to the industrialisation of the country. The sound management of South Africa's diamond resources has meant that whilst South Africa was the leading diamond producing country in Africa until Botswana came on stream in the 1970s, De Beers, a company with its roots firmly in South Africa and still responsible for just under 90% of South Africa's diamond production by value, nevertheless remains the leading institution in the world's diamond industry. This is a source of pride for the company and a source of international empowerment for South Africa itself.

De Beers has committed itself to the mining industry in South Africa, evidenced through its prospective investment in the order of R11 billion (US\$1.3 billion) in its South African operations over the next five to ten years, in projects which aim to extend the life of older operations and perhaps even revive others.

De Beers is also committed to a number of job creation and economic empowerment projects which seek to include those previously excluded from the industry.

Diamond is the most beneficiated mineral in South Africa. Last year, the equivalent of more than half of De Beers' South African production, by value, was sold to the South African cutting and polishing industry. The industry contributes significantly to the

training of young diamond workers in South Africa, and skilled artisans are given the opportunity to become fully-fledged entrepreneurs through the Velani Hive, an initiative which provides affordable working space to experienced diamond workers on contract.

### 2.3.2 Botswana

Botswana was amongst the world's poorest countries when it became independent in 1966. Today, Botswana has the highest international credit rating in Africa, and the capital city of Gaborone is a flourishing city. Prudent management of the country's diamond resources within a stable democratic environment has allowed Botswana to become one of the world's economic success stories.

Diamonds contribute 75% of foreign exchange earnings, 45% of government revenue and 33% of GDP in Botswana. Diamond wealth has been distributed throughout the country, providing the major source of funding for schools, hospitals and other infrastructure. Debswana is the largest employer after the government, and 96% of its employees are Botswana citizens. Significant investment in education by the company has improved skills and productivity in the country.

### 2.3.3 Namibia

Diamonds play a vital role in the economy of Namibia. Diamond revenue (the largest portion of it contributed by Namdeb) contributes approximately 35% of Namibia's foreign exchange earnings, and Namdeb is second in size only to the government as an employer.

Revenue from diamonds funded the construction and initial development of the University of Namibia, a maternity clinic in the north of the country, and the Namibian Institute for Educational Development, an institution that is making a valuable contribution to the future of Namibia and young Namibians.

## 2.4 Important developments in the last five years

- Announcement at the end of 1997 that De Beers was separating its management ties from Anglo American.
- Nicky Oppenheimer was appointed as Chairman and Gary Ralfe appointed as Managing Director of De Beers from 1 January 1998.
- The company moved to its new corporate headquarters in Crown Mines (South Africa) in June 1998.
- At the end of 1998 De Beers announced a strategic review of its business, motivated by the under-performance of the company, measured by financial returns, investment ratios, and as reflected in De Beers' share price history.

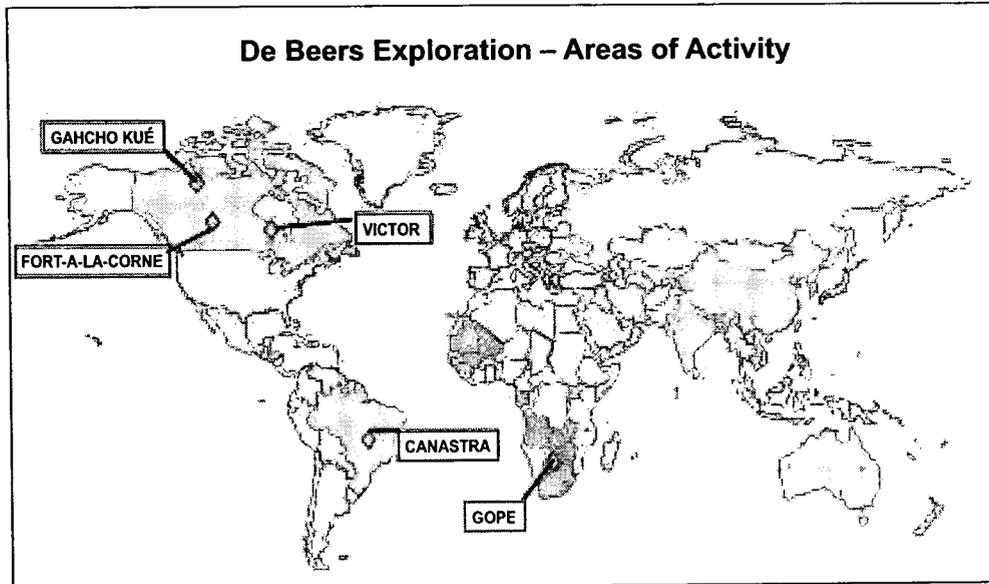
From the strategic review four focus areas emerged which formed a new strategic plan:

- ***As Is Plus:*** Ensuring the business runs more efficiently and more economically.
- ***Becoming the preferred supplier for our customers:*** Moving away from the seller of last resort to becoming the supplier of choice to our clients.
- ***Growing demand by at least 5% per year:*** De Beers must work with its clients and the whole diamond industry to generate real incremental demand for diamond jewellery.
- ***Exploiting the value of the De Beers brand:*** Although the core business of De Beers remains the mining, sorting and selling of rough gem diamonds, additional value could be generated by the De Beers brand.

- De Beers renewed its sales agreement with Alrosa, the Russian state diamond company, for a further three-year period from December 1998. This was partly responsible for the increase in industry optimism at the end of 1998.
- In March 1998 De Beers signed a three-year agreement with BHP (which came into effect during 1999) to purchase 35% of the run-of-mine production of the Ekati mine in Canada's Northwest Territories.
- Two important projects were completed in Debswana:
  - The Orapa 2000 project was opened in May 2000, which at a cost of US\$300 million doubled the production at Orapa from six million carats to 12 million carats per annum from the year 2000; and
  - The US\$50 million Aquarium project – a new high-tech, high-security recovery and sort-house facility – was completed at Jwaneng Mine.
- De Beers reached agreement in 1999 to acquire Anglovaal Mining's 87.5% interest and Industrial and Commercial Holdings' 12.5% in the Saturn partnership, which had a right to a 50% royalty of pre-tax profits earned by the Venetia Mine in South Africa.
- In 1999 the last outstanding minorities in the diamond trading companies were bought out, allowing De Beers full control of the operation and cashflow of the companies.
- De Beers announced in October 1999 that it would close down its buying operations in Angola and would be reviewing other buying operations in Central and West Africa. Since the end of that year, the DTC has ceased buying diamonds on the open market. From March 2000, De Beers issued a guarantee to its clients on all invoices stating, *inter alia*, that diamonds purchased from the company do not originate from areas of conflict.
- Following on from the strategic plan, De Beers announced its Supplier of Choice programme in London on 12 July 2000, which effectively addresses focus areas two and three of the strategic plan. The initiative is designed to stimulate long-term change in the diamond industry and to modernise business practices so as to encourage sightholders to innovate and work more closely with their downstream partners to stimulate demand for diamond jewellery. Part of the Supplier of Choice programme is the introduction of a set of Best Practice Principles to which both the company and its customers are expected to commit and adhere. The Best Practice Principles address, amongst other things, the issue of dealing in diamonds from conflict areas and have been adopted to ensure that the industry is run in an ethical and professional way.
- In November 2000, the DTC renewed its sales agreements with Debswana and Namdeb for a further five years.
- De Beers acquired a 67.76% interest in the Snap Lake project in Canada's Northwest Territories through a take-over bid for Winspear Diamonds Inc in July 2000, and the remaining interest in Snap Lake from Aber Diamond Corporation in February 2001. The project may be De Beers' first Canadian diamond mine.
- On 16 January 2001, De Beers and LVMH Moët Hennessy Louis Vuitton, the world's leading luxury products group, announced an agreement to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

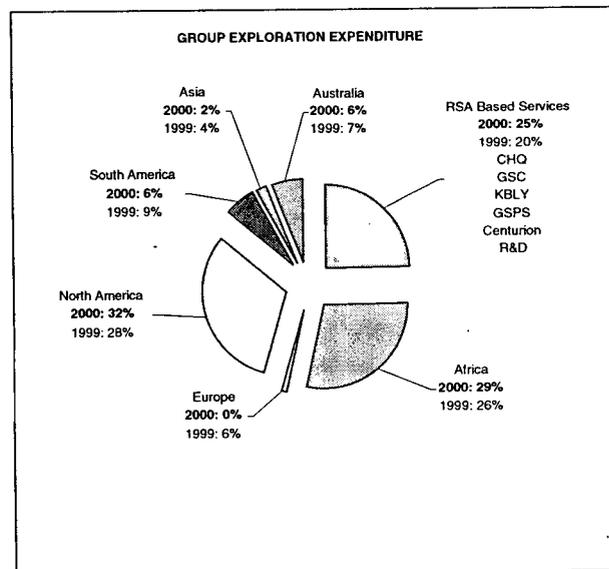
### 3. Exploration

#### 3.1 Introduction



De Beers carries out diamond exploration in 17 countries on five continents, and exploration efforts are firmly aligned with the wider strategy of creating sustainable shareholder wealth by adding profitable resources to its portfolio and extending the geographic diversity of its mining operations.

Current and future focus is on the highest priority areas and projects, assessed against country and business risk criteria. To this end, a considerable proportion of the 2000 and 2001 budgets is directed towards prospecting for new discoveries in Canada, Southern Africa and increasingly India; regions with the best potential to yield profitable new diamond mines. World-wide exploration expenditure for year 2000 was approximately US\$69 million.



During the next two to three years, De Beers hopes to fast-track advanced exploration projects, such as Victor (Attawapiskat) and Gahcho Kué in Canada, through to feasibility study.

Longer-term growth will flow from well-directed and successful early-stage exploration to locate new diamond bearing deposits (primarily, but not exclusively, kimberlites), and then to move these quickly through the project pipeline to the advanced stage. The current portfolio of early-stage projects has a well-balanced risk profile and has excellent potential to contribute to De Beers' future growth in the long term.

De Beers' current suite of projects covers the full exploration 'pipeline':

- desktop appraisal of potentially prospective areas;
- grassroots reconnaissance work to discover new kimberlite provinces; and
- advanced exploration projects to evaluate the economic viability of diamondiferous kimberlites.

Acquisitions and joint ventures, where appropriate, complement De Beers' own exploration efforts and provide opportunities for downstream entry into the exploration pipeline.

World-wide diamond exploration is managed from De Beers' corporate headquarters ("CHQ") in Johannesburg, South Africa and subsidiary regional exploration offices are situated in Centurion near Pretoria in South Africa, Toronto in Canada and Perth in Western Australia.

The De Beers exploration laboratories in Kimberley and Johannesburg and other regional centres support De Beers' prospecting operations. Each laboratory is a world-class facility in terms of staff quality and experience, volume of work handled, quality of service provided, and the utilisation of leading edge technology and knowledge.

### 3.2 Pre-Feasibility Exploration Projects

#### 3.2.1 Gahcho Kué, Northwest Territories of Canada

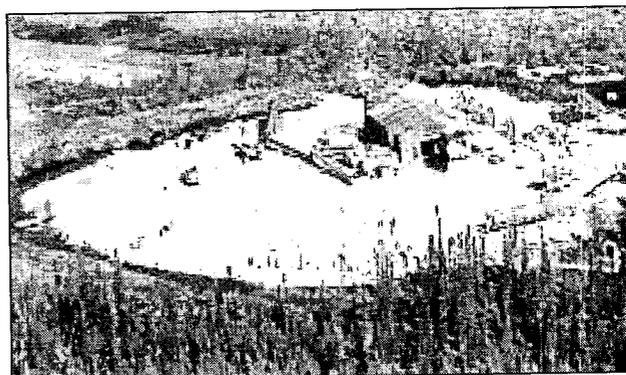
De Beers Canada Exploration Inc is the operator of the Gahcho Kué project situated to the north east of Yellowknife in the Northwest Territories of Canada. De Beers holds a 51% shareholding in the project, with the balance owned by Mountain Province Diamonds Inc and Glenmore Highlands.

The joint venture holds rights to the AK claim block on which four diamondiferous kimberlite pipes have been discovered; 5034, Hearne, Tuzo and Tesla. The pipes have been evaluated by bulk sampling using large diameter drilling, and mineral resources have been identified. Approximately 3,000 carats of diamonds have been recovered to date.

The project is revenue sensitive, and further bulk sampling is to be carried out in early 2001 to obtain an additional parcel of 2,500 carats of diamonds from Hearne and 5034 to improve confidence in the diamond revenue estimates made from earlier sampling.

#### 3.2.2 Victor project, Attawapiskat

De Beers Canada Exploration Inc holds claims in northern Ontario where 16 kimberlites have been discovered so far, within the Attawapiskat project area. One of these, the Victor pipe, is currently the subject of a bulk sampling evaluation exercise that commenced in 2000. The programme includes delineation core drilling, large diameter sampling as well as geotechnical drilling in order to establish a global resource. Several other kimberlites in the project area will be sampled for macro- and micro-diamonds during 2001.



*The Victor Camp – Attawapiskat*

### 3.2.3 Fort á la Corne

De Beers Canada Exploration Inc is the operator of the Fort á la Corne project in Saskatchewan. The project is a joint venture with Kensington Resources, Uranerz Inc and Cameco Corporation. A large diameter drilling programme on two of the most interesting kimberlite pipes was successfully completed in 2000.

### 3.2.4 Canastra

De Beers holds rights to mineral claims over the Canastra kimberlite, a prospect in Minas Gerais, Brazil. Alternative mining scenarios have been examined and evaluated. The project does not meet De Beers' investment criteria, and further work is unlikely.

### 3.2.5 Gope

The Gope kimberlite pipe (Go25) was discovered by Falconbridge at Gope in Botswana in 1981. A feasibility study was completed by the De Beers Prospecting Botswana (Pty) Limited ("Debot") and Falconbridge Limited joint venture. The Go25 pipe is approximately 10ha in area but lies buried beneath approximately 70m of Kalahari sediment cover. Socio-economic and environmental concerns have added to the doubts associated with the project. In 2000 the joint venture company, Gope Exploration Limited, applied for and was granted a retention licence for the property by the Government of Botswana.

## 3.3 Early-Stage Exploration Projects

De Beers is actively prospecting for new kimberlites and diamond deposits in many parts of the world using a systematic approach involving desk-top studies, target selection, reconnaissance and follow-up sampling, target delineation and assessment by micro-diamond analysis and indicator mineral interpretation.

### 3.3.1 Angola

De Beers is currently exploring for new kimberlites and diamond deposits in Angola in a joint venture association with the Angolan government organisation Endiama. The De Beers-Endiama (50-50) association currently holds prospecting permits to three concession areas situated in Quela, Mavinga and the Lundas in the north east of the country. So far 59 new kimberlites have been discovered in the Lundas concession area. The poor security situation continues to prevent any work in the Quela and Mavinga areas. De Beers is reviewing its position with respect to its ongoing activities in Angola.

### 3.3.2 Botswana

Systematic diamond exploration by De Beers Prospecting Botswana (Pty) Limited ("Debot") started in the mid 1950s and led to the discovery of the Orapa and Letlhakane pipes (1967) and the Jwaneng pipe (1973). Debot currently holds prospecting rights to several prospective areas in Botswana either in its own right or in joint ventures with other parties. Although several new kimberlites have been found in the southern part of the country, none of these are of sufficient size or apparent grade to suggest that they might be economic.

### 3.3.3 Zimbabwe

Kimberlitic Searches Limited ("KSL"), De Beers' wholly owned subsidiary in Zimbabwe, holds Exclusive Prospecting Orders (EPO's) and mineral claims over approximately 24,000km<sup>2</sup> in the southern and eastern parts of the country. Since recommencing diamond prospecting in Zimbabwe in 1994, KSL has found 41 new kimberlites, two of which are larger than 10ha in extent, the largest being the Mwenezi pipe of 18ha in the Nuanetsi area. Although most of the kimberlites are

diamondiferous, unfortunately none appear to have economic potential, and a number are vertical dykes of limited thickness.

#### **3.3.4 South Africa**

De Beers continues to prospect actively in parts of South Africa. This has resulted in two small diamond mines being brought into production in the Northern Province in the last five years.

#### **3.3.5 Guinea**

De Beers commenced diamond prospecting in Guinea in 1995 and since that time has discovered 11 new kimberlites on its prospecting licences in the eastern part of the country. Based on micro-diamond analysis, some of these kimberlites are interpreted to have possibly significant diamond grades, but they are all narrow dykes and are unlikely to be of economic significance to De Beers. Some follow-up work is required and other new kimberlite discoveries are likely.

#### **3.3.6 Mauritania**

In 2000 De Beers concluded a joint venture with Rex Diamond Corporation with respect to the Akchar licence area in Mauritania, covering an area of approximately 10,000km<sup>2</sup>. An airborne geophysical survey has been flown over the licence area, and results are being followed up. No new kimberlites have been found to date. Discussions are being held with Rex Diamond Corporation on the possibility of joint venturing their other exploration properties.

#### **3.3.7 Other African Countries**

Elsewhere in Africa, assessment of airborne geophysical targets in the western part of Zambia is being carried out in joint venture with African Minerals Limited. No new kimberlites have been discovered to date. Reconnaissance work in northern Mali produced disappointing results, and work has been terminated.

#### **3.3.8 Australia**

De Beers Australia Exploration Limited (previously Stockdale Prospecting Limited) has carried out diamond prospecting in Australia since the late 1960's and in that time it has discovered 244 kimberlite pipes and related occurrences in various parts of the country, a number of which have proven diamondiferous but none of which are economic.

#### **3.3.9 India**

A representative office was established in Delhi in 1997. Five local De Beers companies were incorporated in India after a long period of negotiation with the State and Central Government mining authorities.

Recently, De Beers was granted prospecting licences in Karnataka, and exploration activity is expected to start during the first quarter of 2001.

#### **3.3.10 China**

De Beers operates two joint ventures in China with the Provincial Bureaux of Geology and Mineral Resources in Hebei and Sichuan. Reconnaissance work has been completed in both areas and three months notice of contract termination has been given to the Hebei authorities due to negative results. To date nothing of significance has been discovered in Sichuan.

### 3.3.11 Canada

Early stage prospecting in Canada is being carried out in Ontario, Manitoba, Northwest Territories ("NWT") and Nunavut.

During recent years numerous new diamond bearing kimberlites have been discovered in the Slave Province of NWT and Nunavut, a number of which are currently being assessed.



*Sampling in Nunavut Territory – Canada*

Much of Canada is considered to be prospective, and new kimberlite discoveries are likely in the short term.

### 3.3.12 South America

De Beers' diamond prospecting activities in South America are carried out by Pesquisa e Exploração de Minérios S.A. ("SOPEMI"), a wholly owned subsidiary. So far, well-over 460 kimberlitic intrusions have been discovered by De Beers in Brazil, Bolivia and Venezuela. To date, an economic source of diamonds has not been found.

## 3.4 Support Services

De Beers' global exploration activities are backed up by support services including laboratories in Kimberley, Centurion (Pretoria), Johannesburg, Melbourne, Lobatse (Botswana) and Toronto, the Evaluation Services unit in Kimberley, the Geological Sample Processing Services ("GSPS") laboratory and the GeoScience Centre ("GSC") in Johannesburg. Independent audits of the GSPS have been conducted by MPH Consulting and HA Simons.

The GSC provides diamond isotope, geochemical, petrological, mineralogical, Geographical Information Systems ("GIS") and remote sensing services to all De Beers' prospecting ventures. Analytical facilities for major and trace elements in kimberlitic minerals, kimberlite age dating, and geophysical and remote sensing interpretative technologies provide De Beers with strategic and competitive advantages in terms of quality and quantity of analytical and interpretative output. The GSC also holds an extensive collection of kimberlite and related rocks from all over the world, an unrivalled database on some 6,000 kimberlites and in excess of 6 million indicator mineral grains.

The De Beers Kimberley Micro-diamond Laboratory ("KMDL") specialises in the quantitative recovery of micro-diamonds (<0.5 mm in size) from kimberlites and other related rocks using proprietary technology.

The Evaluation Services Unit in Kimberley provides a quantitative macro-diamond sample treatment service to De Beers' exploration ventures and its operating mines. Bulk sample treatment may be carried out in Kimberley or at the project site using modular treatment plants with flowsheets customised to suit project applications.

The GSPS is a macro-diamond final recovery facility. It specialises in secure quantitative recovery of diamonds from sample concentrates produced from evaluation projects on diamond deposits throughout the world. This unit also carries out diamond characterisation work.

### 3.5 **Safety, Health and Environment**

De Beers Exploration is committed to "best-practice" standards of environmental management and employee health and safety, both at its exploration sites and laboratories. The facilities in South Africa have obtained ISO 14001 accreditation, and Canada and Australia are currently at an advanced stage of achieving similar status.

## 4. Mineral Resource Management

### 4.1 Introduction

The Mineral Resource Management ("MRM") function of De Beers and its partners use a holistic approach to the development and optimal management of resources and reserves. Information gathered through the exploration, project evaluation, exploitation and sales and marketing phases is used collectively to optimise the exploitation of resources and reserves. This approach is necessary because of the complex nature of the sampling, estimation, exploitation and marketing of diamonds. Key to the MRM philosophy is the multi-disciplinary approach whereby the various MRM departments on the mines, at De Beers CHQ and at the DTC in London are staffed by experts in the fields of geology, metallurgy, mining, statistics and geostatistics, survey and diamond revenue. The MRM function ensures that strategies for optimal exploitation and best practice are correctly applied on the mines.

MRM committees operate on the mines to ensure that the correct modifying factors are used to convert (in situ) resources to (recoverable) reserves. These modifying factors include mining dilution, metallurgical recovery factors (liberation cut-off sizes and recovery efficiencies) and revenue. The MRM function is responsible for the development and implementation of resource/reserve reconciliation and auditing systems on the mines.

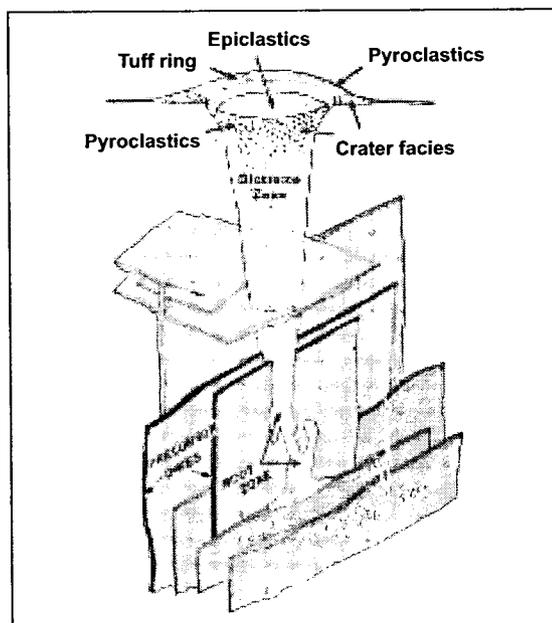
### 4.2 Geology

The primary sources of diamonds are the volcanic host rocks in which the diamonds were transported to surface from deep within the earth's upper mantle. There are two rock types from which hard-rock diamonds are mined, kimberlite and lamproite. All of the De Beers hard-rock mines are in kimberlites, with the only lamproite in production being the Argyle mine in Western Australia. Weathering and erosion of these volcanic rocks liberates the diamonds, which are then incorporated into a variety of placer deposits by sedimentary processes. De Beers operates a number of mines in placer deposits both offshore and onshore along the coast of Namibia and onshore along the West Coast of South Africa.

#### 4.2.1 The Geological Setting of Kimberlite Operations

Kimberlites generally occur as small volcanic pipes, dykes and sills ranging from <1 to 200 ha or more. The pipes occur as gently tapering cylindrical to conical structures that narrow with depth until the original feeder system of dykes and sills is reached. A kimberlite pipe can be divided into three distinct zones - the root zone, the diatreme zone and the crater.

The root zone is characterised by a highly irregular morphology, mainly due to fracture and/or joint control during emplacement. The root zone is generally characterised by complex internal geology caused by the overprinting effects of several different magma pulses.



*Model of a kimberlite system*

Blind extensions, i.e. offshoots from the main pipe which did not reach the surface and are covered by country rock, also occur in the root zone and are typically capped by breccia zones. Kimberlite from the root zone (including dykes and sills) is known as hypabyssal kimberlite and can be subdivided into hypabyssal kimberlite and hypabyssal kimberlite breccia, depending on the country rock xenolith content. Unaltered hypabyssal kimberlite typically exhibits a dark-grey, black to deep green colour and is competent in hand specimen. Alteration generally results in the rock becoming considerably more friable or clayey, and is associated with a change in colour, depending on the amount of water present.

The diatreme zone (i.e. the middle part of the kimberlite pipe) is characterised by a much more regular morphology and steep, smooth wallrock contacts due to the fundamentally different processes that created this part of the pipe compared to the root zone. The country rock xenoliths in this part of the intrusion are unaffected by thermal metamorphism; the absence of which serves as a useful tool in distinguishing diatreme facies kimberlite from hypabyssal kimberlite. The diatreme zone generally exhibits a much simpler, more homogenous internal geology. Kimberlite from the diatreme zone is known as tuffisitic kimberlite and can also be subdivided into tuffisitic kimberlite and tuffisitic kimberlite breccia. Tuffisitic kimberlite is generally lighter in colour compared to the hypabyssal kimberlite and may or may not appear more fragmental, depending on the xenolith content.

The surface expression of a newly erupted kimberlite is in the form of a crater, typically associated with country rock brecciation. The crater is in-filled with pyroclastic and epiclastic material and surrounded by a tuff ring. Crater deposits often exhibit a complex internal geology. The tuff rings are seldom preserved for long due to rapid erosion. Very few kimberlites have their crater deposits preserved, the best examples of active mines containing crater facies material are Orapa in Botswana, and Mwadui in Tanzania. Crater deposits may be extremely variable in appearance and range from fine, bedded sediments that appear similar to common sandstones and shales, to irregular breccias.

During emplacement of the kimberlite, fragments of mantle-derived material are occasionally incorporated into the magma. These mantle-derived rock types are dominated by peridotites and eclogites, both of which can be diamondiferous. Diamonds and their host rocks are therefore transported to the earth's surface much like passengers on a bus - they occur in kimberlite, but are not directly derived from the kimberlite itself. Diamonds may contain inclusions of peridotite or eclogite minerals, and dating of these inclusions has shown that the majority of diamonds are significantly older than the host kimberlite. This serves to confirm that most diamonds are indeed xenocrysts (accidental inclusions) and not related to the kimberlite itself in any way. The abundance of diamond varies considerably between kimberlites because of varying concentrations of diamond in the earth's mantle. In addition, geomorphic processes on surface can preferentially enrich surficial and crater-lake deposits by several orders of magnitude.

#### 4.2.2 Geological Setting of the "West Coast" Placer Operations

The operations of De Beers located on the West Coast of Southern Africa are predominantly situated on the coastal plain and continental shelf.

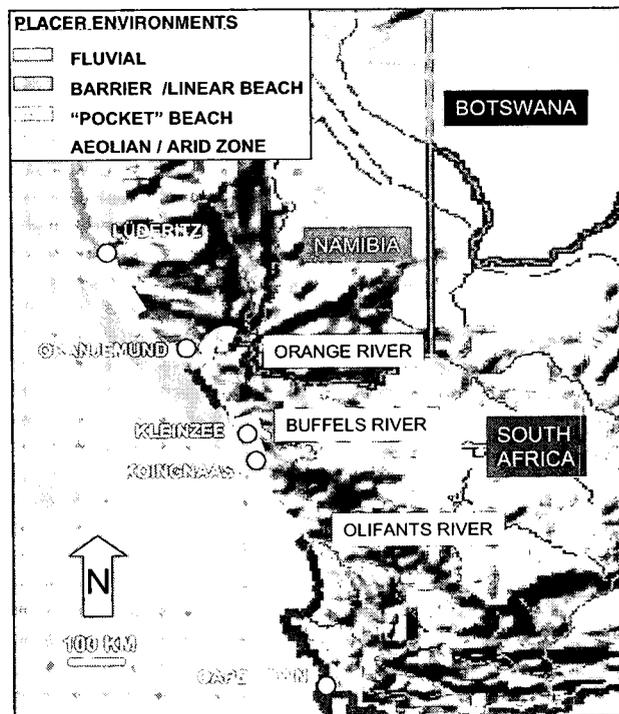
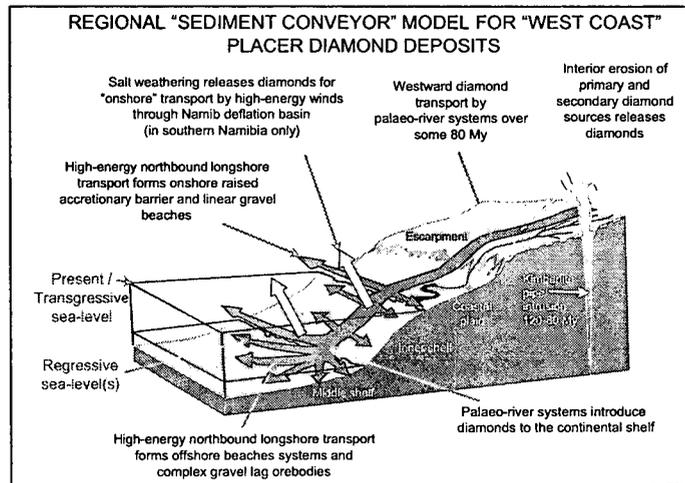
Onshore exploration and mining operations occur in fluvial, marine and aeolian sedimentary environments. Periodic sea-level changes resulting in trans-

gression and regression across the continental shelf and coastal plain, coupled with climate change, have resulted in extensive interaction between placer environments. The reworking of earlier deposits has created ideal conditions to progressively upgrade the concentration of diamonds.

The concentration of placer diamonds is controlled by natural transport and depositional processes and by the presence or absence of fixed trapsites, which generally consist of irregular bedrock morphology and large relatively immobile obstacle clasts. Where trapsites exist, discrete zones of higher-grade diamond mineralisation are patchy and markedly discontinuous (known as the "nugget effect") due to localised transport conditions caused by extreme bed roughness. In the absence of trapsites, diamond placer orebodies are characterised by large volumes and low grades of 1 cpt or less.

The rapid and marked variation of orebody characteristics and diamond content between sedimentary facies within sedimentary orebodies makes mineral resource management of placers a specialised field.

*Map showing the spatial distribution of major placer environments along the West Coast of Southern Africa in areas where De Beers and its partners hold the mineral rights to prospect and/or mine*



Due to the high-energy fluvial and marine environments, most sequences mined consist of coarse clastic gravels and conglomerates ranging in age from Cretaceous, Eocene and Miocene to Pleistocene. Grits and gritstone characterise aeolian placers. Offshore diamond exploration and mining focuses predominantly on marine sequences that were deposited during the Late Pleistocene and Holocene periods (less than 2 million years ago).

The diamonds have been derived from the erosion of primary and secondary sources located within the hinterland of Southern Africa.

#### 4.2.3 Sampling and Estimation

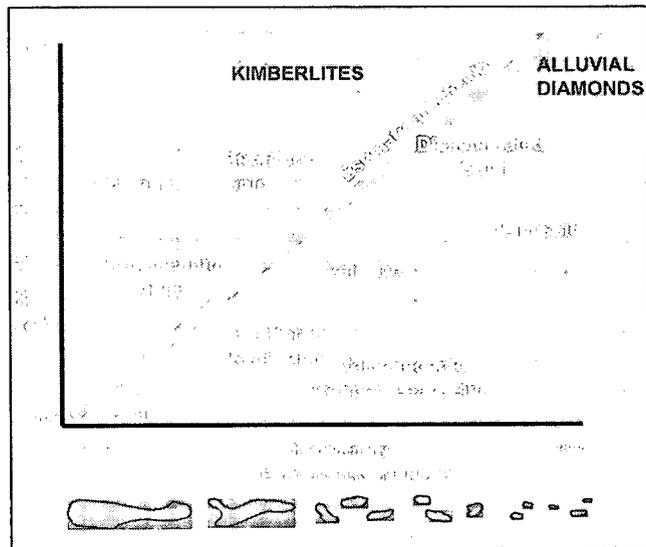
Because of the unique nature of diamonds and diamond deposits, it has been necessary to develop specific methodologies for sampling, evaluation and estimation. The particulate nature of diamonds, their size, shape, quality, colour and value are important factors in the accurate estimation and evaluation of diamond deposits. Diamond occurrences in nature are rare and are usually measured in parts per billion, whereas most other mineral commodities can be measured in parts per million or parts per thousand. As mentioned earlier, diamonds are brought to the earth's surface in volcanic host rocks, principally kimberlite. Most of these primary source rocks or kimberlite pipes do not contain diamonds, and those that do are very rarely economic. Approximately 5,000 kimberlites have been discovered to date world-wide of which only 1% have been developed into mines. Depending on whether the diamonds are contained in kimberlites or placer deposits, they are either free or locked up in the host rock. Though diamond is the hardest natural substance, it is brittle, which makes it susceptible to breakage during its release in either sampling or commercial treatment.

The following diagram illustrates the complex nature and difficulties of estimating diamond deposits compared to other mineral commodities. It also highlights the fact that marine placer deposits require a high degree of selective mining.

Geological modelling is an essential first step in the estimation process, as the variability between facies is much higher than the variability within individual facies. Once a geological model has been developed, it is

then necessary to define the required sampling strategy for grade and revenue determination. This involves establishing sample support size (volume), sample frequency (density) and sample spacing (spatial distribution). The sample size used is a function of the complexity of the orebody and the required level of confidence.

Placer deposits and in particular marine placer deposits are extremely complex and difficult to estimate because of the low level of geological continuity, the clustered distribution of diamonds in trapsites and the low grades. The probability of finding a diamond = the probability of finding a trapsite times(x) the probability of finding a



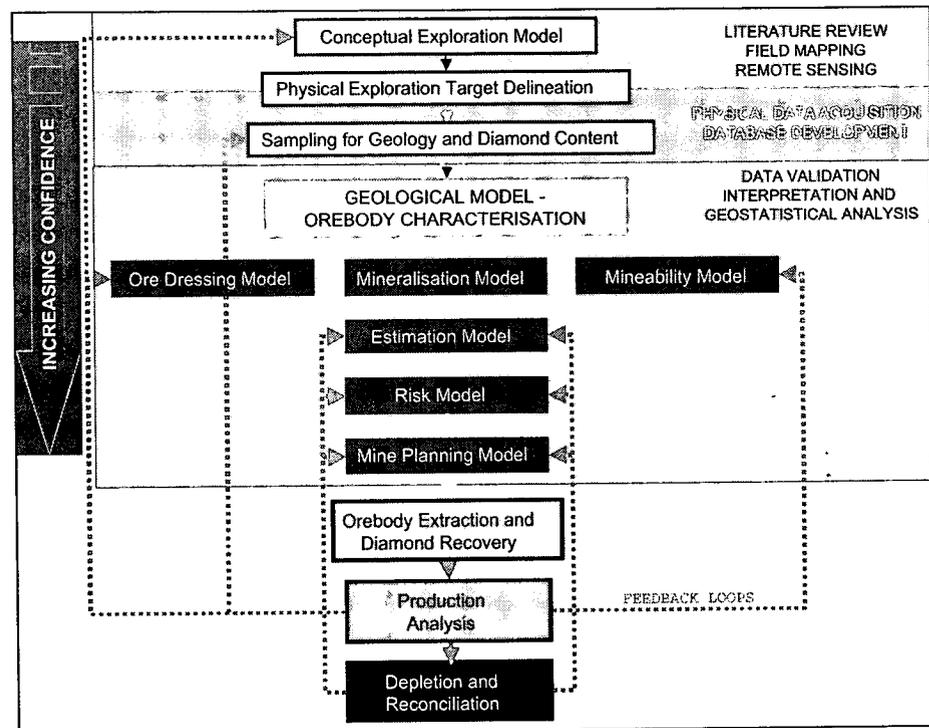
*Grade and geological continuity – sampling and estimation difficulty*

diamond in a trapsite. Therefore a large sample support size is required, or alternatively cluster sampling can be used to collect as large a sample as possible. The sample size typically used in the offshore marine deposits is 10m<sup>2</sup>, and 4m<sup>2</sup> in the onshore deposits depending on the geological continuity and trapsite morphology of the orebody. Samples are collected from trenches along sample lines that are positioned according to the simulated linear deposition of the mineralisation. Because of this complexity, special techniques in sampling strategy and resource estimation have been developed in conjunction with world leaders in the fields of classical statistics, geostatistics and spatial simulation of ore deposits.

The estimation process in kimberlites uses geostatistical techniques, but there are added difficulties of variable rock density and variable diamond liberation and recovery characteristics for different host rocks.

In order to estimate the value of the diamonds, it is necessary to obtain bulk samples per geological facies and to recover as many diamonds as possible, generally at least 2,000cts. During exploitation, selective mining is undertaken locally to footprint the detailed diamond characteristics (diamond assortment) per geological facies to help in forecasting the diamond assortment for planning purposes.

De Beers is pioneering the use of micro-diamonds in the estimation of macro-diamond grades, both global and local, as well as in the development of recovery factors as discussed in Section 5.2.



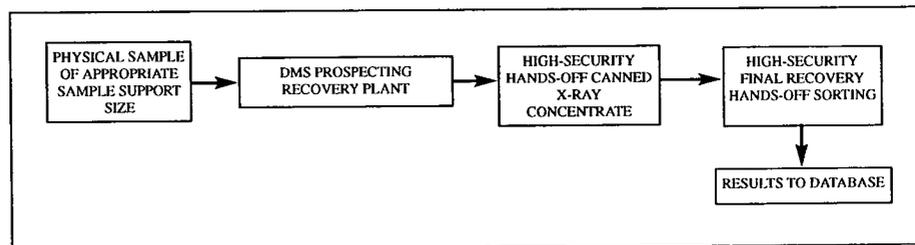
*Project-based methodology for development of diamond resources*

The MRM teams at De Beers typically follow a project-based methodology for the diamond resource. Extensive use is made of production information to continuously improve sampling methodology and the recovery of diamonds from geological samples.

Specific remote sensing/mapping, drilling and sampling systems are required for the evaluation of different orebody types. Although the processes are similar at each operation in general terms, the sampling campaigns differ in order to ensure sampling

is representative and that the required level of confidence is achieved. Different technology is used as phased evaluation progresses, and higher levels of confidence are required to move from inferred to indicated resources.

All samples are treated through high security, specialised sampling plants utilising dense media separation ("DMS") cyclones. De Beers' Diamond Control Team regularly audits security measures. Heavy concentrate is sorted using specifically designed x-ray sorting systems, and the product is canned in a hands-off high-security environment. Final recovery of sampling diamonds occurs in specially designed high-security, hands-off prospecting laboratories. The independent Diamond Control Teams comprising personnel from both operations and from De Beers' corporate headquarters subject procedures to regular audit.



*Simplified sample flowchart*

To ensure data validation, an integrated system of acceptability criteria involving the flagging of samples, statistical tests and geological analysis is undertaken on all sampling, geological and diamond resource data.

The integrity of the key databases of sampling, geological and diamond resource data are maintained by a combination of user procedures, restricted input criteria, purpose-built referential integrity and customised audit functions. In addition to audit trails, databases are regularly backed-up.

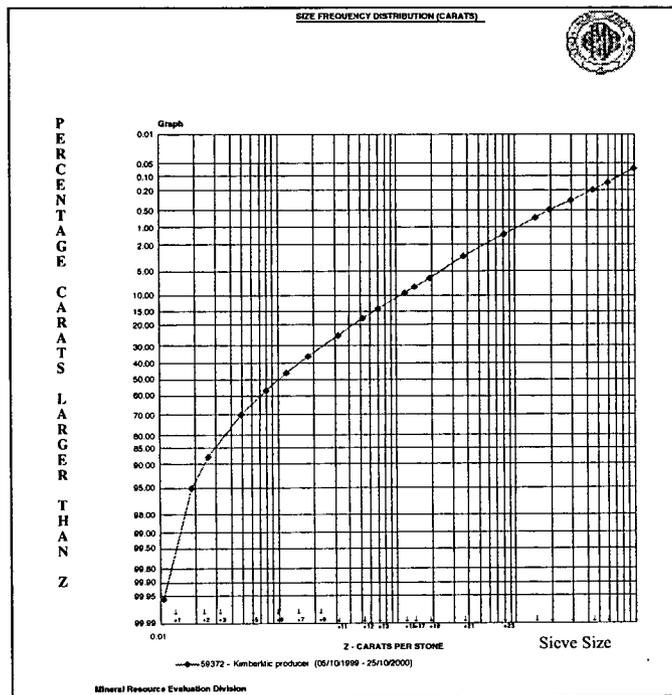
#### 4.2.4 Estimation of Diamond Revenue

In order to produce an estimate for the dollar per carat revenue and the diamond assortment profile for a given deposit, at an overall mine level, or at an individual facies or lithology level (be it an existing operation or a new project), the following procedures are followed:

#### 4.2.5 Size Frequency Distribution

The estimation process begins with the size frequency distribution. Typically this is represented on a logarithmic plot. The cumulative percentage carats larger than Z are plotted on the y-axis against Z, the number of carats per stone, on the x-axis. For a typical kimberlitic deposit, the graph may look like this:

*Kimberlitic Size Frequency Distribution:*



In most instances, the size frequency distribution will require a degree of modelling. This will amongst other things, estimate the quantity of large diamonds considered to be missing either as a result of the sample size or the recovery technique. Further modelling may be necessary to account for diamond breakage in the recovery process and to reflect the bottom cut-off that will be utilised in production if this varies from that of the sampling program.

An under-recovery of fines may also be evident from examination of the distribution, and these too will have to be adjusted back into the sample.

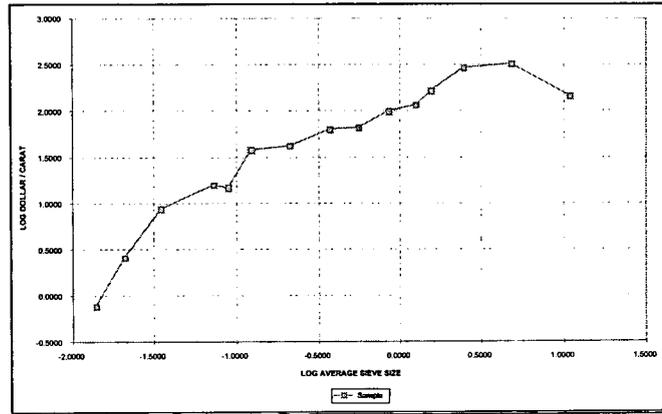
Typically, a parcel of 2,000 carats would be required for such an exercise.

#### 4.2.6 Dollar per Carat Estimation

Having modelled the size frequency distribution, the next step is to analyse the dollar per carat revenue data. The raw information is available once the sample parcel has been valued using the current DTC price book. This process will take place at one of the DTC sorting and evaluation houses, where each stone will be classified according to its weight, model (i.e. shape), quality (i.e. absence or presence of cracks and inclusions) and colour. This combination of variables can lead to up to 16,000 price book items.

A similar modelling process will be necessary to ensure fair representivity of the diamond assortment across the sieve classes, and again a plot in logarithmic space is utilised. In this case the log of the average sieve size is plotted on the x-axis, against the log of the dollar per carat on the y-axis.

Statistical modelling is carried out on the data to arrive at a best fit curve and develop a theoretical dollar per carat per sieve class. This in turn would be applied to the modelled size frequency distribution in order to arrive at a final dollar per carat for the parcel.



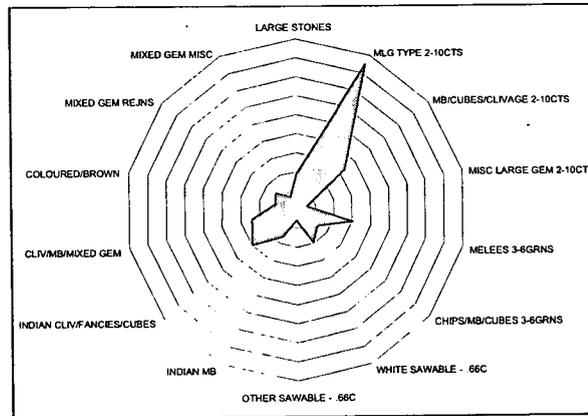
Log US\$/ct v log sieve size

Typically, a parcel of at least 2,000 carats would be required for such an exercise.

**4.2.7 Diamond Assortment**

The final stage in the modelling process is to achieve a greater understanding of the diamond assortment profile of the final production. Having valued the sample at full price book level, an amalgamation procedure is followed which will reduce the potential 16,000 price book items to 14 representative major article groups. This can then be more directly associated with the downstream availability planning.

The major article groupings can be graphically represented in a number of ways; however, either a stacked bar chart or radar charts are usually favoured. The latter is particularly useful for measuring variance from a forecast.



Radar chart for a typical mine

To complete the process, a thorough auditing and reconciliation function is carried out. The actual figures compared to the expected forecasts will be analysed for total caratage, variance in size distribution and ultimately variance in assortment. The information gained from these exercises will then be fed back into the modelling process to reduce the error in subsequent estimates.

**4.2.8 Reconciliation and Auditing**

Reconciliation of estimated grades, revenues and diamond assortments versus those recovered is undertaken for all operations of De Beers and its partners using in-house audit systems. The principal system utilised is known as MINRAS (Mineral Resource Auditing System). MINRAS is a relational database management system ("RDBMS") that stores and tracks all relevant data and information about an operation's mineral resources and reserves. More specifically, the data and information contained in the resource database is a set of relevant models, which estimates each sub-division, or unit of resource. These models have been derived using various techniques such as geological interpretation and spatial statistics (e.g. grade, density, ore dressing studies,

etc.) and are associated with both in-situ resources (e.g. blocks, panels etc.) or bulked resources (e.g. stockpiles, dumps etc.). Resources and reserves are classified and reported in the system according to the SAMREC Code in cases where implementation is complete. The database not only contains the status of unmined resources and reserves but also all historical information regarding adjustments and resource movements. The current or future information contained in the resource database is used for the strategic business planning cycle, and the historical information is used for reconciliation, analysis, audit and playback of various scenarios. All relevant data elements such as grade, volume and density can be selected to be auditable, and internal or external auditors can perform audit exception reporting.

#### 4.2.9 Resources and Reserves

De Beers has made a policy decision to classify resources and reserves according to the rules for public reporting in South Africa, as defined by the South African Mineral Resource Committee (SAMREC). Mineral Resource Management teams at operations are in the process of implementing this policy. This code has been incorporated into the JSE Listings Requirements. The SAMREC code has been compiled along the lines of the Australian JORC code, which has been used as a guideline for mineral codes drafted in other countries such as Canada, US and the European Union.

The SAMREC code requires that a Competent Person be responsible for the declaration of the resources and reserves in their defined sub-categories in all public reporting, which includes the company annual report. Dr W.J. Kleingeld, Group Manager Mineral Resources, is De Beers' appointed Competent Person.

In accordance with the SAMREC code the following table lists the resources and reserves of De Beers and its partners:-

#### SUMMARY OF DE BEERS AND ITS PARTNERS' RESOURCES & RESERVES (as at end December 2000)

Operating mines & advanced projects	INFERRED RESOURCES					INDICATED RESOURCES					PROBABLE RESERVES				
	Metric Tonnes millions	Grade (cpht)	Area (m <sup>2</sup> ) millions	Grade (m <sup>3</sup> )	Total Carats millions	Metric Tonnes millions	Grade (cpht)	Area (m <sup>2</sup> ) millions	Grade (m <sup>3</sup> )	Total Carats millions	Metric Tonnes millions	Grade (cpht)	Area (m <sup>2</sup> ) millions	Grade (m <sup>3</sup> )	Total Carats millions
<b>SOUTH AFRICA</b>															
Finsch	51.5	36.9			19.0	28.4	52.8			15.0	25.4	43.3			11.0
Kimberley	188.0	7.4			14.0	88.0	18.2			16.0	8.0	18.8			1.5
Koffiefontein	130.0	3.1			4.0	10.0	5.0			0.5	21.0	8.6			1.8
Marsfontein	0.3	12.1			0.04	0	0			0	0	0			0
Namaqualand Mines	0	0	16.1	0.34	5.4	0	0	18.2	0.06	1.1	0	0	17.4	0.37	6.4
The Oaks	2.6	53.8			1.4	0	0			0	0	0			0
Premier	117.0	9.4			11.0	180.0	67.8			122.0	39.0	53.8			21.0
Venetia	64.0	77.3			49.5	9.8	134.7			13.2	43.6	121.6			53.0
<b>BOTSWANA</b>															
Orapa	273.0	45.8			125.0	105.9	34.5			36.5	274.0	57.8			158.5
Lethakane	47.4	26.4			12.5	6.2	30.6			1.9	9.0	21.1			1.9
Jwaneng	229.6	160.7			369.0	14.0	28.6			4.0	44.0	90.9			40.0
<b>TANZANIA</b>															
Williamson	114.0	5.7			6.5	0	0			0	0	0			0
<b>NAMIBIA</b>															
Namdeb & Debmarine	301.7	1.5	23.9	0.17	8.6	73.6	2.3	18.8	0.20	5.4	59.4	1.5	6.8	0.19	2.2
<b>CANADA</b>															
Snap Lake	9.3	196.8			18.3	12.0	197.5			23.7	0	0			0
<b>GRAND TOTAL</b>	<b>1,528.4</b>	<b>41.5</b>	<b>40.0</b>	<b>0.24</b>	<b>644.2</b>	<b>527.9</b>	<b>44.4</b>	<b>37.0</b>	<b>0.13</b>	<b>239.3</b>	<b>523.4</b>	<b>55.3</b>	<b>24.2</b>	<b>0.32</b>	<b>297.3</b>

(i) Namdeb/Debmarine and Namaqualand Mines are two-dimensional placer type deposits reported in square metres (m<sup>2</sup>) and grades calculated in carats/m<sup>2</sup>  
(ii) Snap Lake is an advanced Canadian exploration project

GRAND TOTAL (includes Kimberlites & Placers)	Metric tonnes million	Grade cpht	Metric (m <sup>2</sup> ) million	Grade cts/m <sup>2</sup>	Carats million
Probable reserves	523.4	55.3	24.2	0.32	297.3
Indicated resources	527.9	44.4	37.0	0.13	239.3
Inferred resources	1,528.4	41.5	40.0	0.24	644.2
<b>GRAND TOTAL</b>	<b>2,579.7</b>	<b>44.9</b>	<b>101.2</b>	<b>0.22</b>	<b>1,180.8</b>

## 5. Diamond Winning

### 5.1 Mining

#### 5.1.1 Introduction

Diamond "winning" (i.e. the act of mining and recovering diamonds) operations have been conducted viably by De Beers since the late 19th century.

The scope of these operations includes open-pit and underground mining of kimberlite pipes, mining of fluvial, alluvial and deflation deposits and more recently the capability and capacity to mine marine deposits at depth beneath the sea.

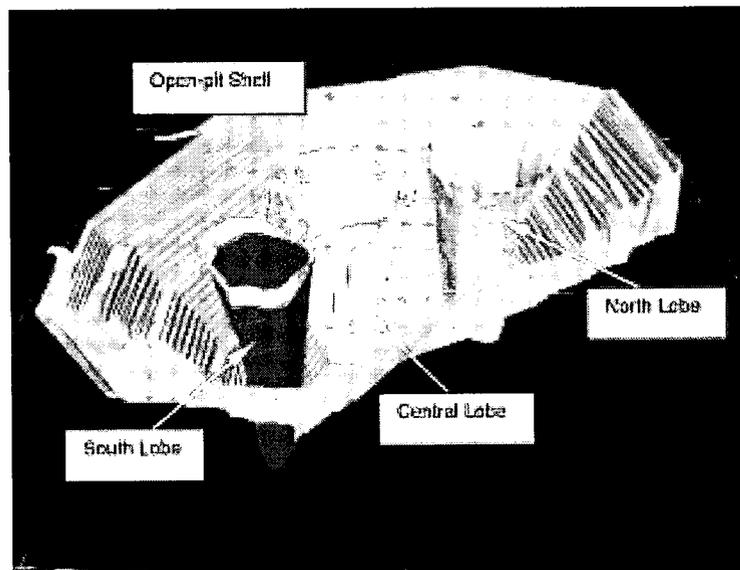
De Beers' mining engineers, geologists and geotechnical engineers have developed expertise in the uniqueness of underground block caving of kimberlite pipes, in the mining of beach and marine deposits on and off the West Coast of Southern Africa and in open-pit mining operations. All these have resulted in a competence of the group to exploit lower grade deposits feasibly and thus to extend probable reserves, whilst maintaining and improving the margins on existing reserves.

#### 5.1.2 Mining Methods

##### 5.1.2.1 Open-Pit Mining

Surface outcrops of a deposit are normally exploited using open-pit methods. The advantages of open-pits are generally:

- earlier revenue generation;
- flexibility of mining rate and sequence;
- lower initial capital and operating cost per tonne mined;
- less limitation on size of machinery; and
- better blending capabilities.



*Typical open-pit planning output showing pipe boundaries and pit shell (Jwaneng Mine)*

The size, shape, value of the resource and the stability of the host rock are the prime determinants of the layout and ultimate depth of the open-pit mine.

Within De Beers, sophisticated computerised design and scheduling software tools are used continuously to ensure that the return from exploiting the resource is optimised.

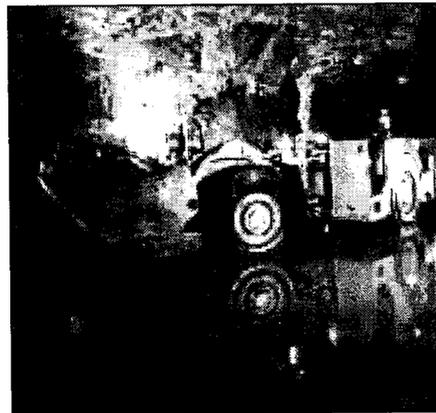
The use of GPS and dispatch type control systems, integrated with on line drilling systems and blast design contributes towards enhanced efficiency of the mining operations.

#### 5.1.2.2 Underground Mining

Kimberlite pipes have been mined by a variety of underground mining methods over the years. This section focuses on the methods that are still being applied today.

Mechanised blast hole open stoping ("BHOS") has generally been selected as the most appropriate method for facilitating the change from open-pit to underground mining for the following reasons:

- fast build-up of tonnage and easy interface with open-pit layout;
- low front-end capital requirement (but high long term development cost);
- opportunity for selective mining of waste; and
- more control and less dependence on the predictability of the rockmass.



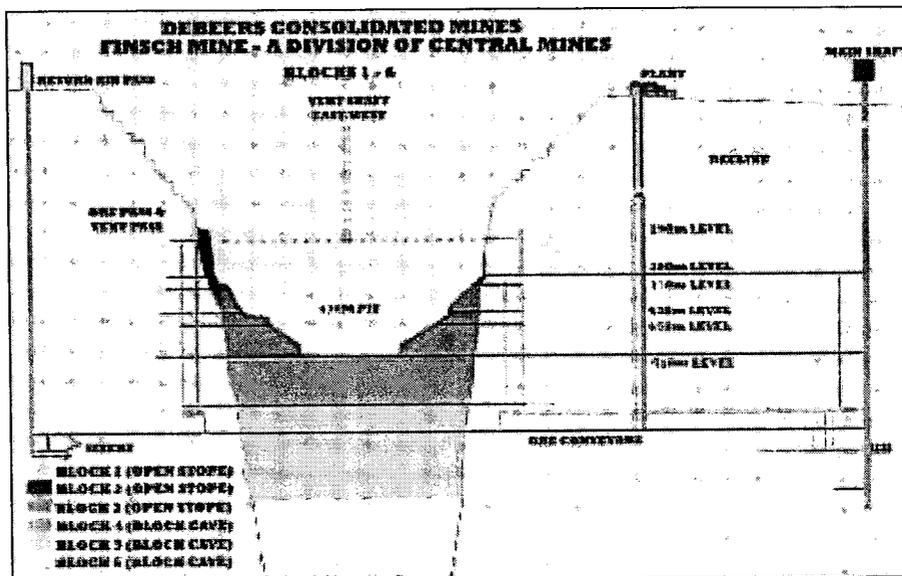
*LHD hauling kimberlite in an underground operation*

This method has been applied at Premier, Koffiefontein and Finsch mines.

Long hole drilling rigs are used to drill rings of holes from drill drives situated perpendicular to the pit faces. These holes are then charged and blasted and the broken ore pulled to the production levels below where the material is loaded by load-haul-dump units ("LHD"s).

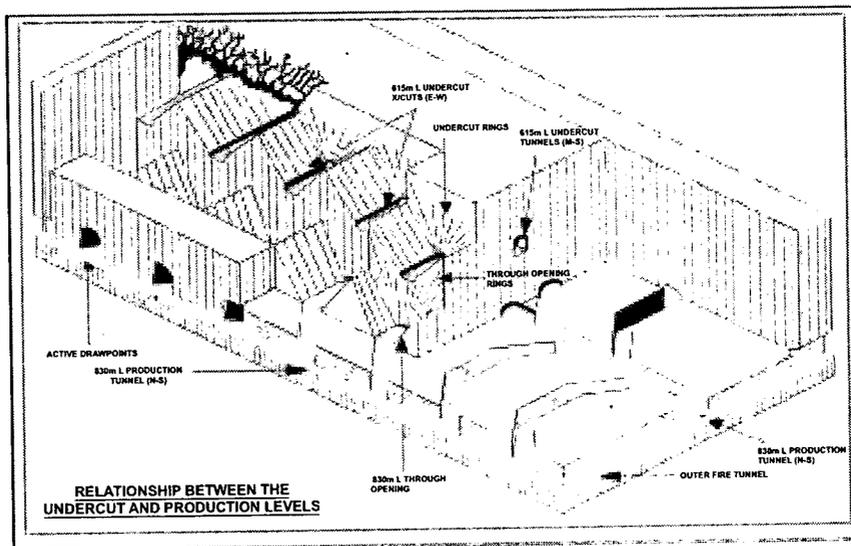
The depth to which BHOS is applicable is however limited in kimberlite pipes situated in unstable country rock such as the Karoo System. BHOS is vulnerable to waste dilution, and in certain areas the mining method is revised in order to cope with early waste dilution resulting from pit sidewall failures. In areas where this has occurred, the mining method has been changed to a modified sub-level caving method. This is currently the case for Koffiefontein and Finsch.

Modified sub-level caving involves a similar process to blast hole open stoping. The underground infrastructure (the tunnels and level spacing etc) remains largely unchanged, but the amount of material extracted is reduced to facilitate semi-choke blasting. The broken ore is then loaded via the tunnels by LHDs. This creates a layer of ore above the retreating tunnels that protects against waste ingress with the loaded ore. This method reduces the percentage of ore that can be extracted, due to ore being left in the protective layer. Thus it should be seen as an interim method only, while the infrastructure for a block cave is being established.



*Schematic section of Finsch Mine, indicating mining methods used*

Block caving is the most cost effective and productive method of mining kimberlite underground. It is however dependent on the pipe having sufficient cross-sectional area to allow the ore to cave, once it has been undercut. Currently De Beers employs scraper drift block caves at the Kimberley Mines, where poor ground conditions require small, closely spaced tunnels. Mechanised block caving is used at Premier Mine, where the more competent rockmass facilitates larger, more widely spaced tunnels allowing the use of high-capacity electric - and diesel-driven LHDs. A new block cave is in the process of being established at Finsch (Block 4) and another is in the final stages of planning at Premier (C-Cut).

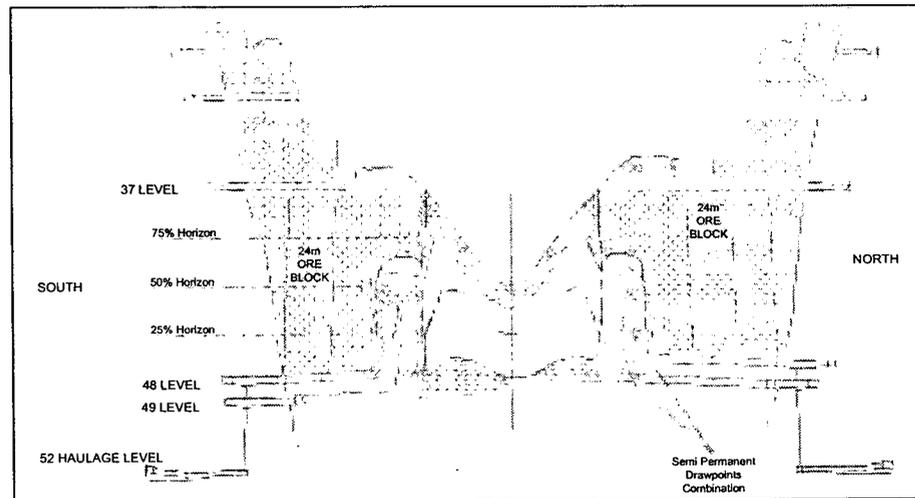


*Diagrammatic representation through a block cave section (Premier Mine)*

Once the rockmass has been destabilised by undercutting and caving occurs, the ore migrates through a series of drawbells (resembling an egg box) developed between the production and undercut levels. These drawbells concentrate the broken ore into draw

points, where it is loaded by LHDs. Any oversize material is drilled and blasted at the drawpoints by means of specialised equipment.

A new mining method being implemented at Koffiefontein Mine is called front caving which is a combination of sub-level caving and blockcaving. The front cave method was developed to control waste dilution from a large sidewall failure in the pit. The front cave is dependent on extremely accurate and disciplined draw control to ensure that the material is drawn out of the mine in the correct sequence, without any uneconomic mixing of kimberlite with waste. Another advantage of this method is that overall draw level infrastructure is less expensive than a similar sized block cave layout, since the complete drawpoint infrastructure is not required to last the life of the cave. Lower initial capital requirements, together with the benefit of concurrent production from the upper levels, further ensure that early revenue offsets initial capital expenditure.



*Diagrammatic section of Koffiefontein Mine illustrating the front caving mining*

#### *Underground ore transport*

Most orepasses for underground mines are situated in the host country rock. Although the haulage distances and cycle times are at times longer than ideal, the variable geotechnical conditions of the kimberlite generally precludes ore-passes within the kimberlite ore-body.

At Premier Mine, as part of the draw-control management process, the LHD loading is datalogged automatically via a system of beacons, on-board LHD computing and leaky-feeder transmission to a surface data-storage facility. The Finsch Mine system of LHD management is more complex, providing supervisory functions, similar to that of open-pit truck dispatch systems. Each of the Finsch Mine ore-passes empties into a mineral sizer, and a horizontal conveyor system transports the ore to the shaft. Radar measuring devices monitor the content levels in the orepasses to enhance the groundhandling management process.

Both Premier and Koffiefontein mines use electric train haulages for collecting the ore from the ore-passes and transporting it to centralised crushing stations equipped with jaw crushers. At Koffiefontein Mine, the crushed ore is fed via a loading station into skips and hoisted to the surface by means of a vertical shaft equipped with a Koepe Winder. At Premier Mine the crushed ore is transported by means of a series of inclined conveyors to the loading station at the shaft, used previously to serve the above-sill mining operations and then hoisted to the surface.

### 5.1.2.3 Alluvial Mining

De Beers mines extensive marine terraces at Namaqualand and north of the Orange River at Namdeb. Ancient river gravels are also mined at Daberas on the North bank of the Orange River. These deposits, together with those at Elizabeth Bay, form the majority of De Beers' placer mining activities.

Overburden removal is the first step in the mining process. The overburden requiring removal can be anything from zero to 40m thick and can vary from loose sand to cemented conglomerate. A variety of methods and equipment are used for this process, depending on the application:

- *conventional stripping:* This method utilises bowl scrapers and bulldozers. Although it is a flexible system it is a more costly method.
- *ADT stripping:* This method utilises excavators and articulated dump trucks (ADTs) and is extensively used due to its flexibility and lower cost.
- *stripping by bucket-wheel excavator:* Namdeb currently runs 2 bucket-wheel excavators. The larger O&K S800 has the capability to strip 12Mtpy of overburden up to depths of 15m and the smaller O&K SH400, which operates in areas of overburden depths up to 11m, has the capability to strip 6Mtpy.
- *stripping by dragline:* This is the lowest cost stripping method; however, the lack of mobility of the dragline implies that areas requiring overburden stripping should be situated adjacent to each other wherever possible. The dragline generally operates in areas of unconsolidated overburden of 15m to 30m in depth.



*Aerial view of the Namdeb onshore beach placer mining operations*

#### *Ore Excavation and Bedrock Cleaning*

The excavation of the bulk of the ore that overlies the bedrock is achieved by trackdozers and excavators which create windrows from which ground is removed by rubber-tyred front-end loaders into ADTs and rigid frame trucks. Employees utilising pneumatic breakers and a containerised vacuum cleaning system perform final bedrock cleaning. In areas where cemented conglomerates occur, drilling and blasting is necessary. In other areas where only light cementation occurs, hydraulic impact hammers are used to separate the diamond bearing material from the bedrock, or it is broken up using the trackdozers' ripping tool.

The haultrucks or ADTs carry the ore from the mining faces to the treatment plants. It is therefore of importance to have a network of major and minor haul roads. The correct maintenance of these haul roads helps reduce the running cost of the haultrucks or ADTs.

#### *Dewatering*

Methods have been pioneered at Namdeb for mining the foreshore (the area between the original sea low water mark and original high water mark). This operation has

managed to advance some 300m beyond the original high water mark and has allowed for the mining of ore down to 19m below mean sea-level. Beach walls are created and maintained by dumping overburden sand onto a wall, which is subsequently pushed by trackdozers further out to sea, to counter erosion by wave attack.

In areas where the water table is above the diamondiferous horizon, a system of well points is installed in banks, depending on the depth, along the landward side of the wall in order to stabilise it and at the same time reduce seepage into the working area. Further dewatering is carried out using conventional pumps, allowing the mining operations to proceed below sea-level. The water is pumped from the wellpoints and pumps to a sump from which it is pumped back to the sea or out of the area using larger pumps.

#### *Surf Zone Mining*

Generally, contractors are used to mine in the surf zone (30m from high water mark). The contractors, utilising their own equipment, scour out the gullies in the surf zone. This process is weather dependent and makes up a small contribution to the total mining volume.

#### *Dredging*

Dredging has been implemented at Namdeb for overburden removal in areas likely to have very wet ground conditions. The dredge is floated in an initial pond and then moved into the mining block, excavating down to the diamondiferous material and the bedrock using a cutter suction head. This will generally take place down dip to enable the water level to be controlled and enable conventional bedrock cleaning to take place once the water level has dropped sufficiently. The discharge of the dredge is on the seaward side of the seawall, "pushing" back the sea and resulting in more ore reserves becoming accessible. The water for the dredge pond is supplemented with water pumped from the sea. The dredge is also equipped with a floating treatment plant to allow the treatment of low-grade diamond bearing overburden. The successful implementation of this mining method has and will continue to result in substantial increases in Namdeb's mineable reserves.



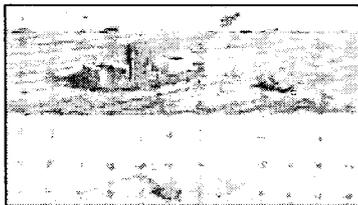
*The dredge operating at Namdeb, with the floating treatment plant in the background*

#### **5.1.2.4 Marine Mining**

De Beers Marine's current production fleet consists of four mining vessels and one evaluation sampling and mining vessel, based in Cape Town. The company currently provides a total offshore management service for the exploration and recovery of marine diamonds.

Two mining methods are used - one horizontal and the other vertical attack:

- *horizontal system:* A seabed crawler, achieves precise coverage of the area to be mined and utilises an airlift system to deliver diamond-bearing gravels to the vessel through flexible slurry hoses.
- *vertical system:* A large-diameter drilling device mounted on a compensated steel pipe drill string, recovers diamond-bearing gravels from the seabed in a systematic pattern over the mining block.



*Diagram of horizontal mining system*



*Diagram of vertical mining system*

De Beers Marine are constantly researching and developing more advanced underwater mining systems to facilitate the mining of the seabed at lower costs and at a higher rate.

### 5.1.3 Safety and Health

De Beers is committed to the promotion of the health and safety of its employees and all DBCM mines have instituted procedures to achieve those aims. Each mine has a Safety, Health and Environmental department that continuously monitors compliance and works to promote improvement. Health and Safety agreements have been concluded on all mines, and full-time health and safety representatives play a major role in accident and incident prevention. Health and Safety committees function effectively at all operations. Risk assessments of work are ongoing and reviewed regularly. Wellness and health engendering programmes ensure that health and safety awareness is communicated to all employees, including contractors. There is also, compulsory health and safety training for all. In addition, outside consultants are used to measure compliance with international best practice.

De Beers' mines participate in the internationally recognised National Occupational Safety Association ("NOSA") safety grading system – without exception being graded four star or better. De Beers Marine is graded according to the NOSA Sea Safe System, with the vessels of the fleet being individually graded. The top NOSA award, the Noscar, is presented to operations that consistently excel at safety. This Noscar award is currently held by De Beers Marine, Venetia, and at Namdeb's Elizabeth Bay and Orange River mines. The group's lost time injury frequency rate ("LTIFR") remains below one – better than any other large mining house in the world.

## 5.2 Metallurgy

### 5.2.1 Introduction

Metallurgy provides strategic metallurgical leadership by ensuring that metallurgical excellence, standards and best practice are established and maintained on all group operations. This ensures that the operations have the capacity to achieve their strategic KPIs. Metallurgy has a close relationship with the operations and provides key services including annual diamond value management audits and placement of technical staff.

A model for the design of new plants has evolved and continues to be fine-tuned. Projects are initiated from head office or from the mines and follow the pre-feasibility study, feasibility study, full project route to fruition. The systems acquisition approach is the basis of all projects, and a Required Operating Capability ("ROC") is produced from which a Project Execution Plan ("PEP") is drawn up.

To measure process plant efficiency is prohibitively costly, given that the residual concentration of diamonds in these streams is less than one part per billion. Thus, in order to ensure that the operations are run optimally, a strategic programme of continuous optimisation has been adopted, namely Diamond Value Management ("DVM").

DVM encompasses the following value adding components:

- diamond control, that addresses elements associated with security of the product;
- diamond damage, a system of measuring and tracking the revenue losses attributable to damage;
- diamond recovery efficiency, a multitude of techniques that measure and improve free diamond recoveries; and
- optimum top, recrush, and bottom cut-off sizes which are determined and monitored at each operation using techniques such as granulometry, stage crushing and size frequency analysis.

Ore dilution, an approach aiming to quantify and minimise waste rock fed to the process, and marine mining tool efficiency are additional elements that add value.

In order to ensure ongoing success over a wide range of operating conditions, De Beers has continually invested in research and development. The product of this investment is embodied in the corporate research and development centre (DebTech).

### 5.2.2 DebTech

DebTech's mission is aligned with the current vision of De Beers. Through research, development, delivery and support, in exploration, mining and ore treatment, DebTech provides timely, cost-effective technology platforms. DebTech has knowledge of De Beers' needs and opportunities in diamond winning, knowledge of current and emerging technology, and the capability to match the technology with these needs. The selected technologies will provide the capability to profitably mine lower-value ore bodies and to maximise extraction of value from the ore deposit.

Research is concerned with projects and activities leading to new knowledge. Development utilises new and existing knowledge to produce new products and services. Unlike many corporate R&D organisations, DebTech goes further; the 'Products and Services' function is responsible for the building, integrating, transferring and long-term support of projects and activities.

Several engineering and scientific disciplines support this value generation chain. These disciplines provide specialised technical competencies, such as x-ray, electro-optics, signal processing and materials handling to the projects as required. Recent products include LARA, a high-performance, value-engineered x-ray diamond sorting machine, and Scannex, a low-dosage full-body x-ray scanning and digital imaging machine. In addition DebTech has developed a completely automated recovery plant and fully integrated hands-free sort-house, including diamond sorting using laser-Raman technology.

Other examples of current and past research and development projects include work in exploration drilling, undersea mining tool development, technology to detect diamonds whilst still locked in pieces of rock, diamond liberation studies, unique security platforms, and remotely operated high-capacity diamond packaging and weighing machines.

At the business level, DebTech measures the value of current and emerging technology based on the extent to which it will increase De Beers' diamond revenue earnings, and/or reduce its operating costs. DebTech then prioritises, initiates and manages programmes of research and development and supply accordingly.

In keeping with the De Beers philosophy of responsible and environmentally friendly mineral resource mining and processing, DebTech has established a programme of environmental technology development. This programme includes novel technologies

developed for water reclamation and purification. Technology developed in-house is also sometimes applicable to other fields, as demonstrated by the LODOX x-ray machine that has been installed at Groote Schuur hospital in Cape Town, facilitating high-speed low-dose full body digital imaging for trauma patients.

### 5.2.3 Design of Diamond Winning Processes to Match Reserve Characteristics

The recovery of diamonds from ore involves four primary processes:

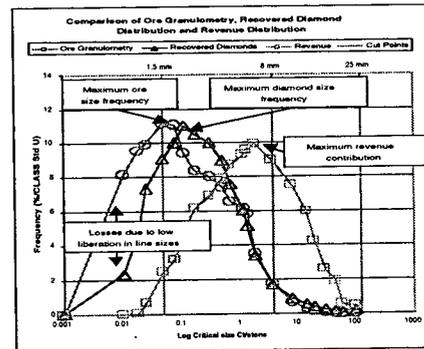
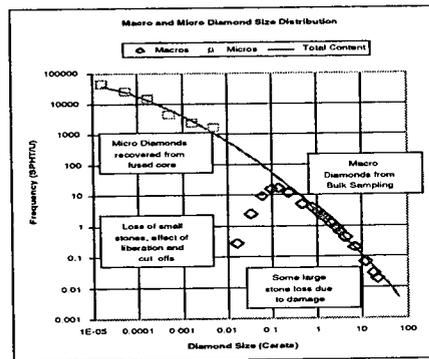
- ore extraction;
- liberation;
- free diamond recovery; and
- final sizing weighing and packaging.

The ore is received at the plant in a mixture of material ranging from clay to boulders. The feed is washed, scrubbed, crushed, and its diamond content is progressively upgraded to facilitate diamond recovery.

The value of diamonds increases exponentially with size. Thus, De Beers does not employ the milling and chemical extraction methods, common to the mineral processing industry. To extract maximum value, the process must be matched to the combination of ore facies, fracture properties of the host ore, and included diamond distribution.

From initial core samples, an estimate of the micro diamond content is obtained. These results are combined with results from drill chip and bulk sampling to determine the total diamond content per facies, and more importantly the size distribution of this total content.

This distribution is used to determine the optimum number of crushing stages that are required in the process.



This process ranges from setting the initial drilling and blasting parameters, through to the determination of the bottom cut-point of the finest screens used in the recovery process.

Granulometry of the material exiting each process is evaluated to determine the optimum top, middle and bottom cut point. This optimum is defined as the combination, which maximizes the recovery and throughput for the blend of facies to be treated. 25mm is a typical top cut size, which equates to a diamond of critical size of approximately 120cts. The kimberlite at Premier Mine contains diamonds larger than this, thus it has been equipped with a large-diamond recovery plant. The bottom cut point is typically set at 1.0mm, as is usually not economic to recover diamonds

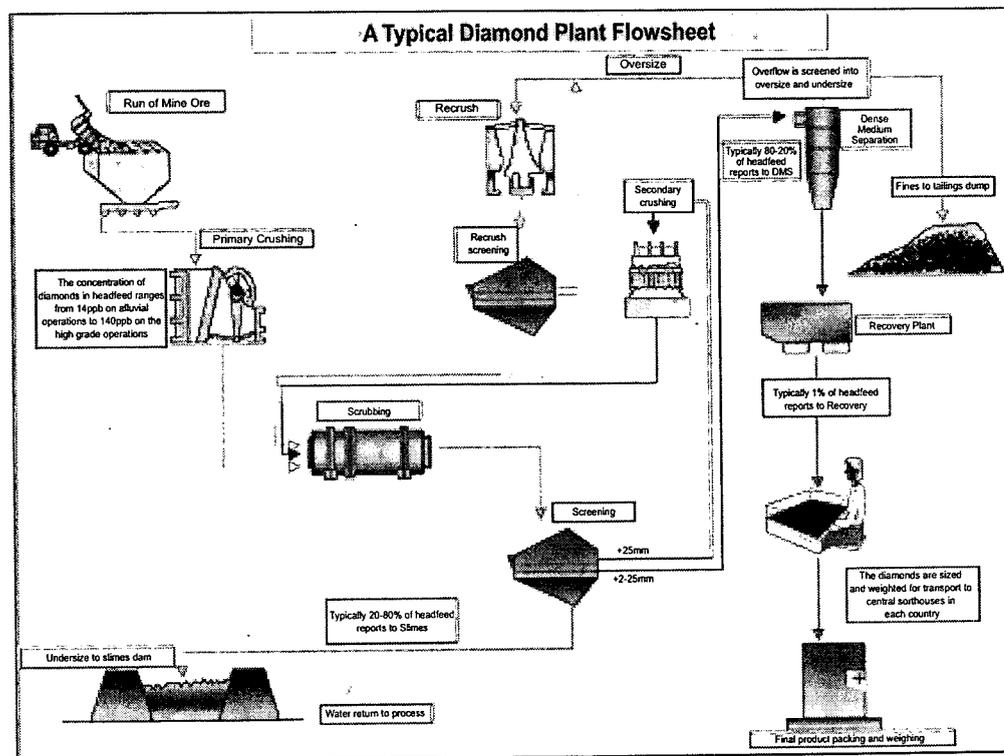
from particles below this size. The middle cut point is used to select and crush coarse tailings to liberate diamonds and hence increase recovery. The balance between these parameters is reviewed from time to time as the ore mix that is treated, and the revenue distribution of the diamonds produced, changes.

Once the primary parameters of an operation have been determined, a programme of characterising the waste, ore and diamonds is carried out to design and optimise the process flowsheet. This characterisation is used to determine the interaction matrix between a) the bulk rock, unique mineral and diamond properties on the one hand, and b) liberation, recovery and throughput on the other.

Typical trade-off studies include the balance between recovering more small diamonds and increasing throughput, and crushing finer to improve liberation versus installed crushing capacity. These trade-off studies also have impact on the required size of water treatment and reclamation systems. The conclusions arising from these studies are augmented with information gathered during the treatment of bulk samples.

Diamond characterisation studies are used to identify a particular sequence of processes in the final recovery processes that will provide maximum recovery. The characteristics that are studied for both the diamonds and gangue in the concentrate include x-ray luminescence profiles and magnetic susceptibility.

#### 5.2.4 Diamond Plant Flowsheet



##### 5.2.4.1 Diamond winning process description

Diamond winning processes includes scrubbing, crushing and screening, dense medium separation and final recovery.

#### 5.2.4.2 Scrubbing, Crushing and Screening

Ore is delivered to the plant in sizes less than 1 m<sup>3</sup>. This ore falls into a primary crusher of either the jaw, gyratory or mineral sizer type and reduced to less than 250mm fragments. The crushed ore is then washed through a scrubber that removes much of the fine material and prepares the ore for sizing into several fractions.

The oversize (+25mm) reports for secondary crushing to reduce the size to less than 25mm. The crushed product passes over a screen that would separate and recycle the + 25mm fraction back to the crusher, with the undersize reporting to either a scrubber or DMS. On some operations where the ore is exceptionally hard a tertiary stage of crushing is employed.

There are two primary modes of crushing, geometric and inter-particle:

- *geometric crushing* is used for larger particles, and involves simply squeezing the particle between two metal plates. This type of crushing produces uniaxial stress and hence a flatter shaped product, and can be used to crush relatively large rocks. Gyratory and most cone crushers operate in this mode.
- *inter-particle crushing* involves rock-on-rock crushing that can be induced by compressing a bed of broken rock. The resultant multi-axial stress results in a crushed ore product that is typically half the size of the operating gap in this type of crusher. This means that diamonds are liberated without damage.

Crushed material is once again washed through a scrubber, the product being screened and sprayed, to remove undersize material, typically less than 1.5mm. This undersize material, in the form of slurry, reports to a water recovery system, typically comprising de-gritting and thickening. The slimes so produced are disposed of in a slime dam. On some sites this process produces slurry that is dry enough to be disposed of with the coarse tailings.

#### 5.2.4.3 Dense Medium Separation and Concentration

Custom-sized material, typically 1.5 to 25mm in size, moves to the next process, dense medium separation (DMS), where the ore is separated into a dense, or sink, component and a float component that is discarded.

The medium used is a mixture of water and ferro-silicon, which creates an apparent density of 3.1g/cm<sup>3</sup>. As diamonds have a density of 3.5g/cm<sup>3</sup>, they sink, and the majority of the ore, typically 99%, floats. The ore that floats is discarded on coarse tailings dumps. At some plants this material is crushed and separated a second time to improve the overall diamond liberation. Several other minerals sink along with the diamonds, such as magnetite and garnet, producing a diamond concentrate, that is transported to the recovery process.

#### 5.2.4.4 Diamond Recovery

Recovery methods for diamonds vary considerably, as they depend on the physical characteristics of the diamonds and the gangue that sinks along with the diamonds. Processes that are used include permanent magnet roll separators, x-ray separators, laser Raman separators, grease belts, and hand sorting. These are usually used in separate size streams to ensure maximum efficiency. Tailings from these processes are usually stored in a secure area to ensure any losses can be reclaimed when deemed economically viable.

#### 5.2.4.5 On Site Sorthouse Processes

The concentrates generated from the recovery processes, which in some cases concentrate in a ratio of 1 part of product to a 1,000 parts of discard, are either sent to

hand sorting, or in the case of more modern facilities such as the Debswana FISH (fully integrated sort-house) to single particle sorting that carries out a final diamond waste separation. At each operation these diamonds are sized, weighed and packaged for dispatch to a regional sorting and valuation facility.

## **5.3 Engineering**

### **5.3.1 Introduction**

The engineering management for De Beers is structured as two discrete entities, DBCM and Namdeb being one, and Debswana the other.

CHQ Services Engineering provides a centre core of consulting services to the group operations and major project teams. The philosophy of support is to provide a basic expert capability in the engineering discipline areas of asset management, civil, electrical, control and instrumentation, mechanical, mining equipment and project services. All other services are out-sourced via group or individual unique contracts.

The engineering functions at the DBCM and Namdeb operations are integrated within the production business units of these operations, with the engineering managers (and mine engineers) having a functional technical and legal responsibility for engineering matters.

Debswana operates in a similar fashion to DBCM, except that it has some limited central resources and makes use of the DBCM discipline expertise as required owing to limited resources of this type in Botswana. It maintains an experienced projects section in Johannesburg to project manage and execute large projects. This team taps into the group knowledge base as appropriate.

### **5.3.2 Project Management**

De Beers has a project management division, which provides project management services for new acquisitions, and various improvement or expansion projects at the operations. A core team of professional experts joins with designated project teams to form small owner representative bodies. The major work is then outsourced to professional consulting and project management service providers on contract. These companies design fit for purpose solutions on a lump-sum or re-measure basis. The risk to De Beers is thus minimised, as the contractor has accountability included in their services.

De Beers follows the PMBOK (Project Management Book of Knowledge) project management system including the system engineering acquisition methodology. A comprehensive set of guidelines has been developed and is used as a standard measure for project controls.

### **5.3.3 Asset Management**

The function of Asset Management is the co-ordinated and optimum management of the design, acquisition, utilisation, maintenance, and disposal of fixed assets and equipment. The company considers asset management a strategic leverage area, which is a key element in achieving the company goal of optimising the NPV of the operations. There is a centrally co-ordinated asset management plan with all operations having on-site teams to optimise the costs and use of assets. The primary goal of asset management is to ensure that equipment is safe, reliable and efficient, so that production targets can be met on time and at optimum cost. The secondary goal is to perform approved properly engineered and correctly funded modifications, replacement and development of the assets.

An "Asset Management Guideline" has been drawn up, which contains policies, procedures, and guidelines for the implementation of matters relating to asset management.

Mining equipment contributes significantly to operating cost, productivity and efficiencies and therefore it is given specific emphasis to reduce the costs of ownership, whilst improving productivity of assets throughout their entire life cycle, from specification, justification and procurement, through operation and maintenance to disposal. Over the last two years a strategy has been implemented to update mining fleets, outsource maintenance and to improve machine efficiency in order to reduce overall mining costs.

#### **5.3.4 Civil Engineering**

Specialist tailings management consultants are appointed to monitor the performance of the group's slimes dams and tailings dumps. The consultant's appointments are in terms of the Minerals Act or other regulations, and their duties are to review and advise on monthly operational data from the mines, to conduct quarterly inspections of the facilities and produce annual reports.

The CHQ civil engineering section provides technical support, appoints, monitors, and co-ordinates consultants and contractors for the provision of civil and structural engineering for the mines and operations. In addition, management is advised on civil and structural engineering policies, standards and best practice.

#### **5.3.5 Mechanical Engineering**

The objectives of the CHQ mechanical engineering section is to provide central support for critical and high-risk engineering functions in both operations and projects. This includes:

- shafts and winding, including ropes and conveyances. It ensures that all operations conform to legal requirements and that safety critical inspections are carried out by competent persons and certain inspection reports are reviewed;
- primary pumping and de-watering;
- selection of equipment for standardisation and economic life;
- structural design analysis including vibration analysis to reduce the possibility of material fatigue failure and ensure personal comfort of workers in the area; and
- reviewing processes and equipment with a view to maximising energy and cost efficiency.

The Mechanical Engineering section also conducts audits and inspections, conducts failure analysis and performs tests of critical equipment and components to reduce the possibility of failure.

#### **5.3.6 Electrical Engineering**

The CHQ electrical engineering section carries out the following major roles:

- group electrical specifications, which are used for the procurement of major equipment, have been written and are updated as required;
- close liaison with Eskom, with specific emphasis on point of supply negotiations, tariff analysis and to ensure best service levels; and
- electrical power management audits.

### **5.3.7 Control and Instrumentation**

The Control and Instrumentation ("C&I") discipline, in collaboration with its information technology, security, process, electrical and other associated counterparts, assumes responsibilities within the areas of measurement, control, automation and optimisation technologies as applied within the group. The C&I component of CHQ, in collaboration with DebTech, provide direction and consultative, facilitative and quality assurance services to the operations and projects. With the increasing trend of automation and control within the group and in order to optimise use of assets, C&I is becoming more complex and is rapidly expanding at the operations. Most of the larger operations are being staffed with C&I professional engineers and are assisted by skilled technicians.

### **5.3.8 Standards and Major Procurement**

Standards are provided in the form of technical specifications for the more commonly used materials, commodities and designs for projects, maintenance and operations. The operations are provided with technical support for the procurement of major equipment in the form of an equipment acquisition philosophy that entails procurement through a tender process whereby equipment performance is evaluated in terms of operational requirements incorporating lifecycle costing for specific applications.

### **5.3.9 Operations Engineering**

#### **5.3.9.1 General**

The operations engineering departments are headed by engineering managers who report directly to the general managers of the mines and have a functional reporting role to the general manager level engineers at the two centres. Nearly all operations operate in a business unit model, whereby production sections are headed by a business unit manager who has all disciplines operating within that area reporting to him. The engineering manager has the overall engineering legal responsibility, responsibilities include implementation of best engineering practice and standards as well as staffing. Engineering managers usually have services engineering sections such as power, water, non-production maintenance and projects reporting to them. They are also responsible for asset management, including planned maintenance systems and asset management standards used by all engineering sections. In addition, engineering managers are usually responsible for capital control and large projects within the operations. Certain engineering managers are also responsible for safety, loss control and environmental sections.

#### **5.3.9.2 Mining**

Underground mining usually has two engineering sections headed up by section engineers. These sections have a number of workshops to cover the trades of electrical, control and instrumentation, fitting, platework, auto electrical and mining equipment mechanics.

The shaft engineering section ensures the proper maintenance of this safety critical equipment and ensures that hauling meets production targets in these production bottlenecks. Conformance to legal inspections and industry best practice is of a crucial importance. This section usually also maintains the underground material handling equipment such as trains, crushers and conveyors. The trackless section maintains the underground mobile mining equipment such as LHDs, drills, development machines, vehicles, etc.

Open-pit mines have section engineers responsible for maintenance of the earthmoving fleets consisting of shovels, excavators, front end loaders, haul trucks, ADTs, dozers, graders, vehicles etc.

All mines have workshops capable of servicing the needs of plant and mining equipment. There is an increasing move towards outsourcing maintenance of the mining equipment to contractors under repair and maintenance contracts. This applies to Orapa, Letlhakane, Jwaneng, Venetia, Finsch and parts of Namdeb.

### **5.3.9.3 Treatment**

Treatment plants usually have a section engineer, and there are a number of workshops in the areas of electrical, mechanical, control and instrumentation and platework trades. Maintenance is usually all in-house, with suppliers providing maintenance in specialised cases. All x-ray diamond recovery and sorting equipment is supplied by DebTech who provide an audit inspection service to ensure standards are not compromised. There is an increasing move to automation and control of process equipment. All large treatment plants (except Kimberley) have PLC control SCADA systems.

### **5.3.9.4 Electrical**

Electrical engineering sections ensure that the operations have reliable power supplies and that appropriate tariffs are applied. De Beers' standard is to ensure that there is adequate standby capacity in the event of a long lead time item of equipment failure. Electrical engineering standards meet SABS requirements.

### **5.3.9.5 Water**

Most mines tend to be located in regions of water shortages. All mines have sufficient water supplies to meet current operational needs with adequate standby capacity where needed. Water is treated as a scarce resource and there are projects to minimise water use where ever possible. Those mines that rely on boreholes have spare capacity to meet long-term needs and are monitored and modelled by external consultants to ensure long-term responsible abstraction.

## **5.3.10 Major Projects (greater than US\$15 million)**

### **5.3.10.1 Overview**

In designing large projects the following considerations are taken into account:

- the mineral resource is evaluated via a full exploration and geological programme of drilling, bulk sampling, micro diamond analysis, geotechnical studies and ore dressing studies;
- the mineral resource is fully evaluated by the Mineral Resource Management Department and classified, graded and valued;
- the project is firmed up through the phases of desktop/conceptual, pre-feasibility and feasibility studies. These studies are conducted to group standards as documented in the company's MRM, mining and project management guidelines;
- due cognisance is taken of all internal factors that include: mining scoping studies to optimise life of mine and return, mine planning to optimise ore extraction and project NPV, process engineering design to optimise recovery subject to the ore characteristics and engineering designs to approved design standards;
- external factors that are considered include; infrastructure needs, water supply, power, sewage, waste disposal, roads, security, maintenance facilities, logistics, and accommodation;

- other macro environmental considerations that impact on major projects include conformance to country environmental laws and best practice, no compromise in safety and health, and socio-economic impacts; and
- all applications for projects are subjected to a review and audit process to ensure objectives are realistic and that best practices have been followed.

### 5.3.10.2 Project Descriptions

**Premier Mine C-Cut** (US\$650 million): A full feasibility study has been prepared, and is currently being reviewed prior to application to the De Beers Board in May 2001. The project consists of new shafts, development work, material handling systems and a new plant to treat 9Mtpy.

**Kimberley Mine CTP** (Combined Treatment Plant – US\$100 million): The CTP plant is under construction for completion by the end of 2001. The project has been fast-tracked to optimise the financial return on the investment. The cost of this project is being reviewed and is estimated to be US\$16 million over the authorised capital.

**Finsch Mine Block 4** (US\$89 million): Work has commenced on this project to mine by block-cave method at a new level 100m below the current open stoping Block 3 level. Orders are being placed for the two long lead crusher units.

**Namdeb Chameis Pocket Beaches**: A feasibility study has commenced to mine a series of beaches via dredge and a movable plant.

**Debswana Orapa Mine Second Primary Crusher** (US\$25 million): This project is currently in the early stages of construction and provides a 3,200tph primary crusher and associated infrastructure to feed to the two Orapa treatment plants. Scheduled completion is March 2002.

**Debswana Jwaneng Mine Surface Primary Crusher** (US\$24 million): This Project was approved in March 2001 and provides for another 1,800tph primary crusher and associated infrastructure. Scheduled completion is end-December 2002.

**Debswana Damtshaa Mine** (BK 9) (US\$30 million): Construction has commenced in March 2001 on this green field site approximately 17km west of Orapa. The project scope includes the provision of a complete mine and treatment facility, as well as the associated infrastructure, to treat 200tph from four satellite pipes. Scheduled completion is end-September 2002.

**Snap Lake Project (Canada)** (US\$250 million) With the purchase of Winspear Diamonds Inc. in Canada, De Beers is currently compiling an application for approval in May 2001 to carry out a feasibility study to build the Snap Lake mine. The scope of the project is to build an underground mine and treatment plant to process 3,000 tpd initially, and associated infrastructure to support this remote location in a harsh arctic environment. Production is scheduled for 2004 depending on permitting application process.

## 5.4 Production Schedule

The production schedule of the various operating mines of De Beers and its partners is compiled below, taking cognisance of all aspects related to available resources and reserves and appropriate conditions: availability and capacity of plants and equipment, revenues and forecasted capital and working cost requirements. The table below shows the planned duration of the life of mine ("LOM") based on production schedules (tonnes mined and carats recovered) as used in the strategic business plans. In the schedule below, a probability factor has been applied to the grade per mine for all inferred resources per operating mine as shown. The probability factor reflects potential techno-economic and grade uncertainties, which may impact negatively on recovered carats. Details of the factors applied to inferred resources are

discussed for each mining operation in Section 6. Also shown is the planning revenue per mine as used in the financial model.

The planning process has scheduled a small amount of production at Marsfontein during 2002, however, the likelihood is that the resources will be completely depleted during 2001.

Planning revenue per carat is included below for each operating mine and for Snap Lake, based on forecast figures for 2001. In the case of Namdeb, the former revenue pertains to Namdeb onshore and the latter is an average for the Atlantic 1.

Production Schedule														Total tonnes, carats & average grade
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 to 2015	2016 to 2020	2021 to 2030		
<b>Finsch (US\$50 per carat)</b>														
Tonnage mined (millions)	4.6	4.6	4.6	4.5	4.7	4.4	4.6	4.6	4.4	4.4	22.0	19.7	17.4	105
Average grade (cpht)	39.5	42.7	40.0	45.8	51.6	51.5	48.0	42.3	36.2	35.7	29.4	36.1	26.7	36
Carats recovered (millions)	1.8	2.0	1.8	2.0	2.4	2.3	2.2	1.9	1.6	1.6	6.5	7.1	4.7	38
<b>Kimberley (US\$76 per carat)</b>														
Tonnage mined (millions)	4.1	7.2	8.7	8.7	8.7	8.8	8.8	8.8	8.8	8.8	43.8	21.2		146
Average grade (cpht)	15.9	22.4	21.6	21.9	21.5	21.1	21.3	21.6	21.6	21.1	11.4	11.2		17
Carats recovered (millions)	0.6	1.6	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	5.0	2.4		25
<b>Koffiefontein (US\$228 per carat)</b>														
Tonnage mined (millions)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	6.6			29
Average grade (cpht)	7.4	7.3	7.3	6.9	6.8	6.7	6.6	6.1	5.3	5.2	5.2			6
Carats recovered (millions)	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3			2
<b>Marsfontein (US\$165 per carat)</b>														
Tonnage mined (millions)	0.6	0.1												1
Average grade (cpht)	4.3	0.0												3
Carats recovered (millions)	0.02	0.0												0.02
<b>The Oaks (US\$127 per carat)</b>														
Tonnage mined (millions)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2						2
Average grade (cpht)	25.1	24.5	24.5	19.6	31.0	37.6	35.5	43.4						30
Carats recovered (millions)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1						1
<b>Premier (US\$46 per carat)</b>														
Tonnage mined (millions)	3.5	4.0	3.8	3.8	4.8	7.7	8.7	9.0	9.0	9.0	45.0	45.0	41.0	194
Average grade (cpht)	59.0	56.3	56.1	52.7	47.0	47.4	54.8	58.7	60.4	60.3	54.1	52.7	76.1	59
Carats recovered (millions)	2.1	2.2	2.1	2.0	2.3	3.7	4.8	5.3	5.4	5.4	24.3	23.7	31.2	115
<b>Venetia (US\$55 per carat)</b>														
Tonnage mined (millions)	4.2	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	23.0	2.0		71
Average grade (cpht)	136.1	138.3	131.7	133.4	134.7	141.0	153.9	143.8	131.4	155.9	85.5	72.4		120
Carats recovered (millions)	5.7	6.4	6.1	6.1	6.2	6.5	7.1	6.6	6.0	7.2	19.7	1.5		85
<b>Namaqualand Mines (US\$127 per carat)</b>														
Tonnage mined (millions)	6.6	6.6	6.6	6.3	6.1	6.1	4.2	1.9	1.9	1.0				47
Average grade (cpht)	11.5	11.5	11.4	11.7	11.5	11.5	15.6	28.7	26.1	28.8				14
Carats recovered (millions)	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.3				6
<b>Namdeb (incl. marine) (US\$322 &amp; US\$298 per carat)</b>														
Tonnage mined (millions)	30.2	30.9	34.9	38.5	38.5	35.4	33.2	35.4	32.3	18.3	49.8	8.6		386
Average grade (cpht)	N/A	N/A	N/A		N/A									
Carats recovered (millions)	1.3	1.3	1.3	1.3	1.3	1.2	0.8	0.8	0.8	0.8	1.9	0.0		13
<b>Jwaneng (US\$108 per carat)</b>														
Tonnage mined (millions)	9.4	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	46.1	46.1	73.4	258
Average grade (cpht)	128.1	124.5	124.5	123.7	119.5	118.2	117.0	115.7	114.5	113.3	109.5	103.3	91.6	107
Carats recovered (millions)	12.0	11.5	11.5	11.4	11.0	10.9	10.8	10.7	10.5	10.4	50.4	47.6	67.2	276
<b>Orapa (incl. BK9) (US\$47 per carat)</b>														
Tonnage mined (millions)	17.5	17.8	19.0	19.1	19.1	19.1	19.1	19.1	19.1	19.1	95.7	95.7	191.1	571
Average grade (cpht)	69.3	58.9	60.2	50.2	57.1	66.5	68.5	70.5	70.9	65.1	57.5	41.9	32.4	49
Carats recovered (millions)	12.1	10.5	11.4	9.6	10.9	12.7	13.1	13.5	13.6	12.5	55.0	40.1	61.8	277
<b>Letlhakane (US\$191 per carat)</b>														
Tonnage mined (millions)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	11.4			48
Average grade (cpht)	30.3	28.9	29.2	27.4	24.6	23.6	21.3	20.5	23.1	18.8	13.9			22
Carats recovered (millions)	1.1	1.0	1.1	1.0	0.9	0.9	0.8	0.7	0.8	0.7	1.6			11
<b>Totals (operating mines only)</b>														
Tonnage mined (millions)	87	91	98	101	102	101	99	99	95	80	343	238	323	1,857
Average grade (cpht)	44	41	39	36	37	40	43	43	43	51	48	51	51	46
Carats recovered (millions)	38	37	38	36	38	41	42	42	41	41	165	122	165	847
<b>Snap Lake (US\$100 per carat)</b>														
Tonnage mined (millions)				0.3	1.1	1.1	1.5	2.2	2.2	2.2	10.8	3.0		24
Average grade (cpht)				190.0	173.0	173.0	173.0	173.0	173.0	173.0	136.5	121.1		151
Carats recovered (millions)				0.6	1.9	1.9	2.6	3.7	3.7	3.7	14.7	3.6		37
<b>Totals (operating mines plus Snap Lake)</b>														
Tonnage mined (millions)	87	91	98	101	103	102	100	101	97	82	354	241	323	1,881
Average grade (cpht)	44	41	39	37	39	42	45	46	46	54	51	52	51	47
Carats recovered (millions)	38	37	38	37	40	43	45	46	45	45	179	126	165	884

(i) The first 3 years (2001-2003) are based on a three-year rolling forecast; 2004 to 2030 are based on the SBP 2000

(ii) Williamson Mine is marginal and is not reflected in the production schedule or financial model

(iii) The schedule represents the total production from De Beers and its partners and has no reference to attributable economic interests

## 6. Discussion of Mining Operations

### 6.1 Finsch Mine

#### 6.1.1 Background

The Finsch kimberlite pipe was discovered in 1960, and is named after its two discoverers, Fincham and Schram. Mining operations exploit a single kimberlite pipe, situated on the farm Carter, located 165km west of Kimberley.



*Aerial view of Finsch pit and treatment plant*

De Beers acquired a controlling interest in the mine in 1963 and began construction of a pilot plant in 1964. Finsch began shaft sinking in the 1980s and changed over from a conventional open-pit mine to an underground operation in 1990. Evaluation sampling has been carried out primarily through underground drilling and tunnel sampling.

The circular kimberlite intrusion has a surface area of 18ha and is composed of several distinct kimberlite zones and precursor intrusions. Kimberlite types identified within the main pipe consist of diatreme-facies, tuffisitic kimberlite breccias and late stage hypabyssal kimberlite dykes and plugs. Significant volumes of down-raftered xenolithic materials derived from the local country rock are present within the pipe.

Finsch Mine has a 5 star NOSA rating and achieved 1 million fatality free shifts during 2000. The mine is planning to obtain ISO14001 accreditation during 2001.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 80%. This factor is based on an established and consistent mining history and well-developed geological model albeit with limited sampling data.

### 6.1.2 Diamond Winning

#### 6.1.2.1 Extraction

Currently production comes from the 350 and 510 mLs using the blast hole open stoping method ("BHOS"), and is moving to a modified sub-level caving system due to pit side-wall failures. Trackless equipment is utilised on the production levels, with ore reporting via ore passes to a conveyor level, where ore is transported to the shaft.

Finsch develops and implements leading edge underground technologies. A high degree of fleet management technology has been installed; this includes remote-controlled rock breakers and LHDs for extracting ore from open stopes.

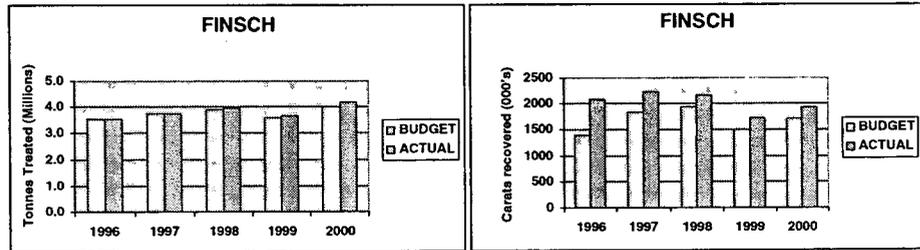
A new block cave (Block 4) is in the process of being established at a new level 100m below the current open stoping block 3 level, to replace tonnage from the upper blocks which are nearing depletion. Production is expected to commence from Block 4 in 2003. A further drop down to Block 5 is planned to start in 2014.

### 6.1.2.2 Treatment

The original plant was commissioned in 1963 and modified in 1980 to replace pans with DMS. The modifications also included an upgrade of the control systems to an improved level of automation. The plant is in good condition and has a capacity of 900tph. ROM is treated through crushers, scrubbers and DMS, with the concentrate being transferred to recovery plant employing x-ray technology for final diamond recovery. An "expert control" system is currently being installed to optimise plant utilisation.

As there are extensive tailings reserves that contain economically recoverable grades, an additional tailings treatment facility is being investigated.

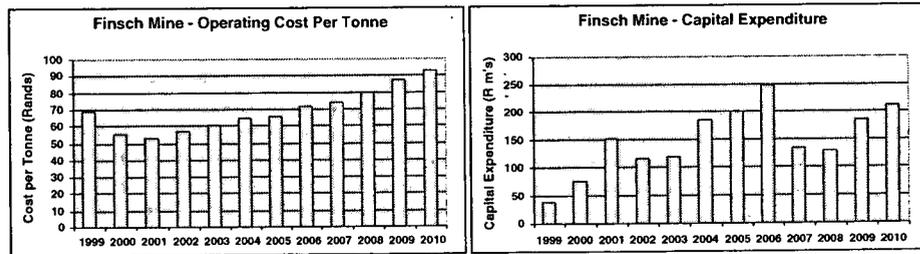
### 6.1.3 Current Production Trends



A steady increase in tonnage treated came from stretched targets and improving efficiency until 1999, when the budget was reduced due to market conditions. 2000 saw a large increase in tonnage treated due to an increase in the amount of tailings retreatment. This increase was not entirely reflected in the carats recovered, as the grade of the additional retreatment tonnage is low and the ROM grade decreased from 50 to 45cpht.

The current reserves will be depleted in 2027. However, drilling planned in 2001 could delineate resources below those currently planned.

### 6.1.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure fluctuations are due to the establishment of Block 4.

### 6.1.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Finsch</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	25.4	43.3	11.0
Indicated resources	28.4	52.8	15.0
Inferred resources	51.5	36.9	19.0
<b>Total reserves and resources</b>	<b>105.3</b>	<b>42.7</b>	<b>45.0</b>

\*At a bottom cut-off size of 1.4mm, a planning revenue of US\$50 per carat and to a depth of 830m

## 6.2 Kimberley Mines

### 6.2.1 Background

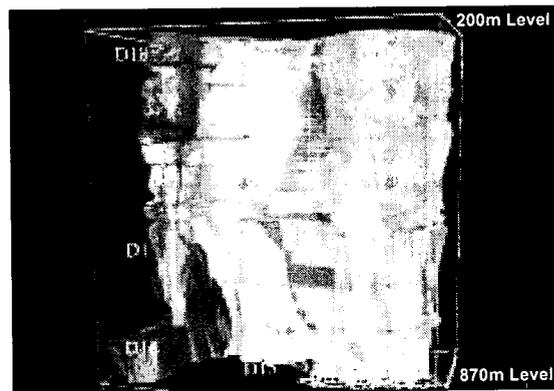
The first diamond in South Africa was discovered in 1866 on the banks of the Orange River, and subsequently diamonds were found along the Vaal River, where the so-called 'wet diggings' were established. Diamonds were afterwards discovered on the farm Dutoitspan, leading to a digging rush on the 'dry diggings'. Chaotic mining then ensued, with many individuals owning claims on each mine. These were later consolidated into several companies and eventually amalgamated under the control of De Beers Consolidated Mines Limited by the late 1890s. The principal kimberlite pipes mined during this time were Kimberley, De Beers, Dutoitspan, Bultfontein and Wesselton. In each of the orebodies a number of kimberlite types are present, and the complexity of the orebodies is due in part to their location in the root zone of the pipe. All the pipes were originally mined in the diatreme zone at present day surface level, transitioning to the root zone at depths between 400 and 800m below surface.



*Aerial view of Kimberley mines and current treatment plant*

The Kimberley and De Beers mines were worked open-pit to a depth of approximately 122m, when production moved underground. Bultfontein and Wesselton converted to underground operations when their average depth was 76m. The method adopted for underground operations was a mixture of chambering and sub-level caving, used from about 1890 until the 1950's. The mining method was then converted to a more efficient block caving method and later, vertical crater retreat stoping. Only underground operations at Bultfontein, Wesselton and Dutoitspan mines remain today. Since 1978, the retreatment of old tailings dumps has also been a major source of production, with 40-50% of plant feed being derived from this resource.

Sampling on the underground mines has been carried out principally by the development of sampling tunnels on specific levels, with each level sampled by extracting development ground in set patterns. In addition, the main Kimberley dumps have been sampled extensively, with several dumps classified as indicated resources for the Combined Treatment Plant ("CTP") feasibility study.



*Geological model of the Wesselton Kimberlite Pipes. Colours indicate separate Kimberlite zones.*

Kimberley Mines has a 5 star NOSA (National Occupational Safety Association) rating and achieved 1 million fatality free shifts during 2000. The mine is planning to obtain ISO14001 accreditation during 2001.

### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 70%. This factor is based on an established mining history. The majority of inferred resources comprises "root" zone hypabyssal kimberlites and dumps. Geological models are complex and variable in the root zones and the dumps have limited sampling data.

## **6.2.2 Diamond Winning**

### **6.2.2.1 Extraction**

#### *Wesselton*

This mine produced 0.13Mcts during 2000 from 0.65Mt. All production comes from the 995mL scraper winch block cave that exploits the centre south lobe and north south lobe of the Wesselton kimberlite pipe. The current reserves will be depleted in 2007.

#### *Dutoitspan*

This mine produced 0.03Mcts during 2000 from 0.22Mt. Production comes from the 870mL scraper winch block cave that exploits the east block and west extension portions of the pipe. The current reserves will be depleted in 2007.

#### *Bultfontein*

This mine produced 0.18Mcts from 0.67Mt during 2000. Ore is produced from the 845mL block cave as well as from rim loading on the 735 and 750m levels. The current reserves will be depleted in 2002.

#### *Dumps*

Various dumps were treated during 2000, producing 0.15Mcts from 1.16Mt. These dumps are planned to be depleted by 2018.

#### *Contractor Operations*

Contractors at Kimberley produced 0.08Mcts from 0.8Mt from various sources. Planned operations extend to 2018.

#### *Combined Treatment Plant ("CTP")*

The construction of a new combined treatment plant is currently in progress, and will be completed at the beginning of 2002. The new plant is expected to improve the recovery efficiencies and profitability of Kimberley Mines, generating long-term economic benefits. New technology will turn previously uneconomic resources both on surface and underground into viable operations. An added environmental benefit is that retreatment of the mine tailings dumps will go hand-in-hand with dump rehabilitation.

### **6.2.2.2 Treatment**

Commissioned in early 1970's, operations were suspended in 1982 and resumed in 1987. The plant has undergone minor upgrades to improve process efficiency and control functions. Process efficiency is fair, and the plant is in a fair condition. The plant treats 750tph ROM through crushers, scrubbers and DMS; concentrate is transferred to a recovery plant employing x-ray sorting for diamond recovery. The plant has a medium level of conventional automation.

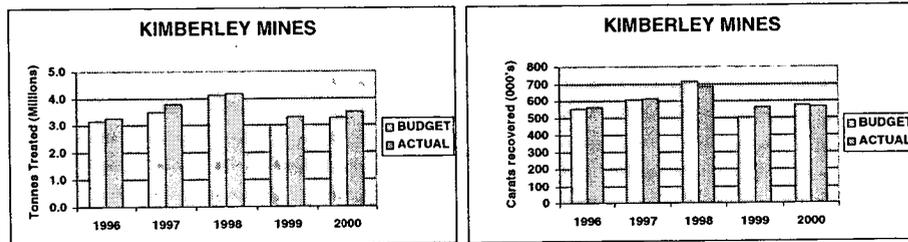
Underground material is crushed to -32mm. The feed is screened to remove +32mm material, and then undersize moves into the pan plant.

The pan plant process accommodates a wide ore-size range and tolerates varying degrees of undersize material. The material is distributed to 24 primary pans. The discard from these pans is screened to produce, two fractions, a -12mm fraction that reports to the secondary pans and a oversize +12mm fraction that is re-crushed.

The re-crush plant uses five cone fraction crushers in closed circuit to produce a -8mm product. This material returns to the secondary pans for concentration.

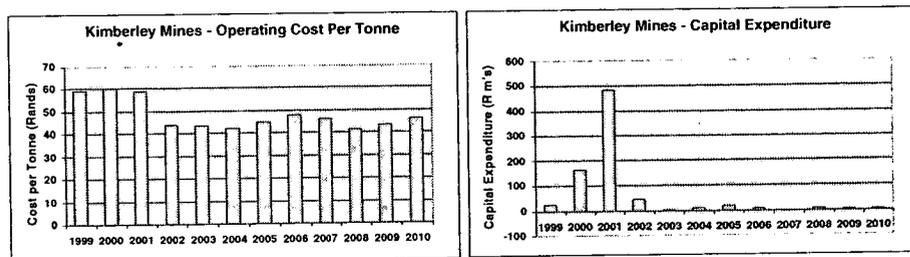
The concentrate from both sets of pans is treated in a recovery plant that includes a dense medium cone, an x-ray plant that treats a 7 to 32mm fraction, and a grease belt section that recovers the fine diamonds. An expert information system is currently being installed to optimise plant utilisation, and a tailings treatment facility is under investigation.

### 6.2.3 Current Production Trends



Over the last five years Kimberley operations have regularly exceeded budget in tonnage treated and carats produced. Targets were reduced in 1999 along with all other South African producers due to prevailing economic conditions. Production has not reverted to 1998 levels primarily due to the nearly depleted resources of the mature underground operations, particularly Bultfontein Mine.

### 6.2.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 are forecasts. The capital expenditure reflects the feasibility study costs (1999 to 2000) followed by the construction of the CTP in 2000 to 2002. The operating cost graph shows the positive effect of the CTP from 2002 onwards. Operating costs fluctuate from 2005 onwards due to the planned closure of some of the underground sources over this period.

### 6.2.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

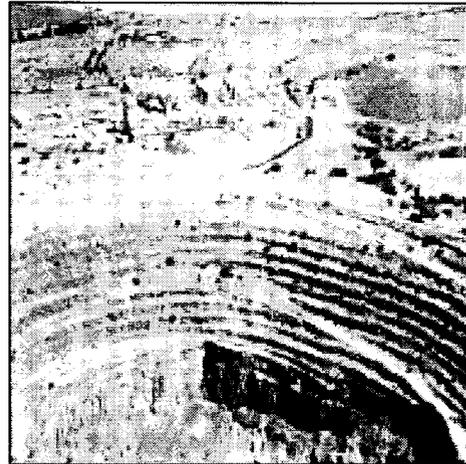
<b>Kimberley</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	8.0	18.8	1.5
Indicated resources	88.0	18.2	16.0
Inferred resources	188.0	7.4	14.0
<b>Total reserves and resources</b>	<b>284.0</b>	<b>11.1</b>	<b>31.5</b>

\*At a bottom cut-off size of 0.5mm, a planning revenue of US\$76 per carat and to a depth of 995m

## 6.3 Koffiefontein Mine

### 6.3.1 Background

Diamonds were first discovered on the farm Koffiefontein in 1870. Mining commenced on a number of small claims, which were amalgamated into Koffiefontein Mine Limited, coming under the control of De Beers in 1911. Mining operations continued intermittently until the depression in 1932 when work was suspended. In November 1950, De Beers sunk a prospecting shaft, and production between 1951 and 1953 came from the sampling of the 244mL, after which work was stopped. Koffiefontein Mine re-opened in 1970. Production started in August 1971 as an open-pit operation to a depth of 270m. Underground development started with a sampling program in 1974, and underground production started in 1982. Operations were temporarily suspended in June 1982 and resumed in March 1987. By the end of 2000, approximately 8.4Mcts had been recovered out of the approximately 93.2Mt of kimberlite ore mined since the 1870s.



*Aerial view of the Koffiefontein pit and treatment plant*

The Koffiefontein pipe is the largest and most economic of a cluster of three pipes in the area, the others being Ebenhaezer and Klipfontein lying to the north-west. The Koffiefontein pipe consists of diatreme facies tuffisitic kimberlite emplaced in basement granite gneiss and Karoo shales and sediments. Koffiefontein is one of the smaller De Beers pipes in production and has an area of 11.1ha at the present day erosion surface, narrowing to 7.8ha at the 490mL, currently the lowest production level.

Kimberlite ore in the upper levels was extracted by the blast hole open stoping method and later with sub-level caving mining methods. Development and thereafter undercutting for the front cave began in mid 1997 to control and manage the waste dilution caused by dolerite sidewall failures of the pit. Full production from the front cave commenced in 2000.

Koffiefontein Mine has a 5 star NOSA rating and achieved 3 million injury-free hours during 2000. The mine also achieved a lost time injury frequency rate (LTIFR) of zero for 2000. The mine is planning to obtain ISO14001 accreditation during 2001 and Noscar (National Occupational Safety Accredited Award) status during 2003.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 70%. Jagersfontein dumps are included in the inferred resources and are presently being bulk-sampled. The completion of this program should move much of this resource into an indicated category.

### 6.3.2 Diamond Winning

#### 6.3.2.1 Extraction

Koffiefontein produced 0.15Mcts during 2000 from 2.2Mt of ore. Production comes from the upper 370mL using the sub-level caving method and from the

480/490mL front cave. Trackless equipment is utilised on the production levels with ore reporting to a haulage level, from which ore is transferred by rail to crushers adjacent to the shaft.

The front cave mining method was pioneered at Koffiefontein to manage anticipated waste dilution caused by pit sidewall failures, thereby effectively reducing and delaying the influx of dilution to the underground loading points.

The current reserves are expected to be depleted by 2013. The resources below the current infrastructure are currently being evaluated and, if proved viable, will extend the life of the operation by approximately 12 to 15 years.

**6.3.2.2 Treatment**

Commissioned in early 1970's, the 650tph plant has undergone minor upgrades to improve process efficiency and control functions. Process efficiency is good, and the plant is in a fair condition.

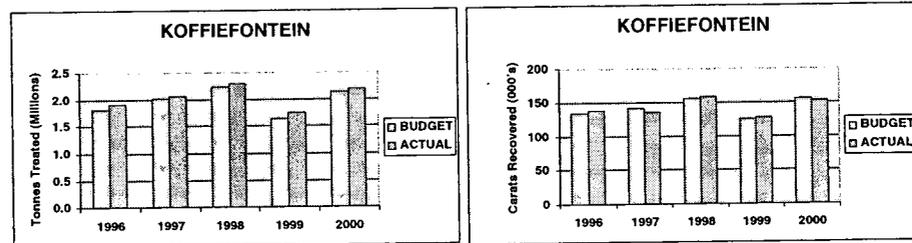
Ore is delivered directly from the shaft by conveyor or from the surface stockpile to the scrubbers, where it is subjected to a washing process and separated into the -2mm, 2 to 32mm and +32mm size fractions. The +32mm material is conveyed to the secondary crushers, whilst the 2 to 32mm material is conveyed to the secondary screens in the storage and screening section. The -2mm material is sent to the tailings dump. The secondary crushers process the +32mm material to a -32mm product, which then joins the -32mm material from the scrubbers and is conveyed to the storage and screening section.

The additional -2mm material generated by the crushing section is removed in the storage and screening sections for the DMS. The DMS floats or tailings are then separated into -12mm and +12mm size fractions. The -12mm fraction is conveyed to the tailings dump while the +12mm material is recycled to the tertiary crushers in an attempt to liberate any locked diamonds.

Diamonds are recovered by means of x-ray technology, which replaced the grease recovery system in an attempt to eliminate diamond loss due to theft and poor recovery efficiencies. Two additional x-ray machines will be installed during 2001 to improve fines recovery efficiency.

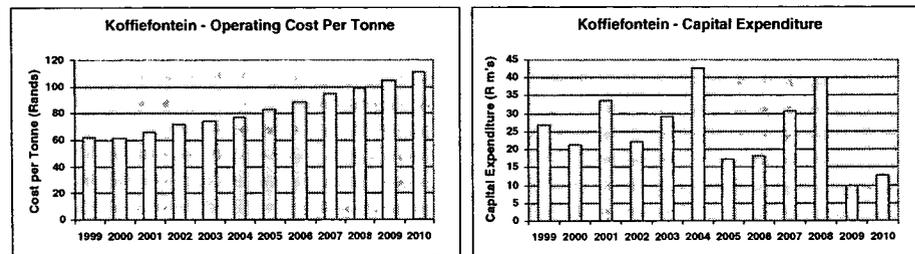
Opportunities to improve recovery efficiency through an integrated plant upgrade are currently under investigation.

**6.3.3 Current Production Trends**



A steady increase in tonnage and carats produced since 1996 has resulted from stretching and meeting the targets. There was a reduction in 1999 due to market conditions, with a return to 1998 levels in 2000. The mine converted to 3 shifts per day from a 2-shift operation during 2000. Production for 2001 has been planned at 2.4Mt.

### 6.3.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 are forecasts. Capital expenditure fluctuations are due to the replacement of mining equipment.

### 6.3.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

Koffiefontein	Metric tonnes (millions)	Grade (cpht)	Carats (millions)
Probable reserves	21.0	8.6	1.8
Indicated resources	10.0	5.0	0.5
Inferred resources	130.0	3.1	4.0
<b>Total reserves and resources</b>	<b>161.0</b>	<b>3.9</b>	<b>6.3</b>

\*At a bottom cut-off size of 2mm, a planning revenue of US\$228 per carat and to a depth of 490m

\*In 1999, Jagersfontein dumps were quoted separately. This year they have been included in the Koffiefontein inventory

## 6.4 Marsfontein Mine

### 6.4.1 Background

Marsfontein Diamond Mine exploits the M1 kimberlite pipe that is located on the farm Marsfontein 91 KS and is situated in the Northern Province of South Africa, approximately 30 km east of Potgietersrus and 70 km south of Pietersburg.

SouthernEra Resources discovered the M1 orebody in 1997. At this time the mineral rights were privately owned. In April of 1998 De Beers entered into a Notarial Prospecting Contract with the mineral rights owners, in terms of which De Beers acquired the right to prospect and an option to purchase the mineral rights. Purchase of the mineral rights was dependent upon verification of warranties provided by the mineral rights owners by means of a due diligence study.

The Marsfontein Joint Venture was set up in mid-1998, between DBCM and SouthernEra Resources, to allow mining and treatment of the M1 kimberlite pipe. De Beers holds a 60% participating interest (of which 40% has been sold to an empowerment partner) and SouthernEra a 40% stake. De Beers maintains managerial control of the operation.

Owing to the very short life of mine, the NOSA grading system is not used in the safety evaluation of the mining environment. However, the safety record of Marsfontein is exemplary, with the mine recording just five lost time injuries during the life of the entire mining operation.

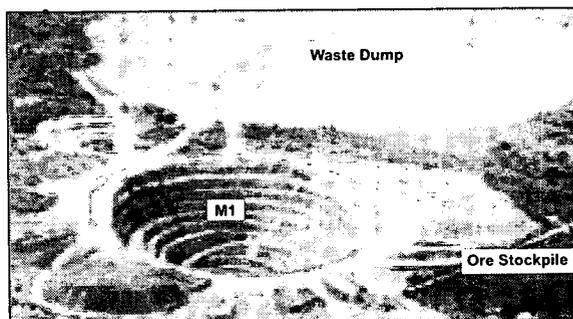
### 6.4.2 Diamond Winning

#### 6.4.2.1 Extraction

Mining of the M1 kimberlite ore body commenced on 31 August 1998 and was completed in November 2000 at a final pit depth of 150m. The mine is a conventional spiral open pit. To the end of December 2000, some 1.08Mt of diamondiferous ore has been treated and 1.83Mcts have been recovered.

Although mining of the pit is complete, the treatment of diamondiferous stockpiles created during mining is continuing and will continue into early 2002.

Potential additional gravel resources exist at Marsfontein, which could extend the mine life. Similarly kimberlite fissures have been identified both at Marsfontein and on neighbouring farms which could further extend mine life. Negotiations are currently underway to extend the existing Joint Venture by bringing the nearby Klipspringer Mine under the umbrella of the Joint Venture. This will add at least another 13 years to the life of the Joint Venture – based on the Klipspringer Mine Feasibility Study.



*Aerial overview of the M1 mining operation*

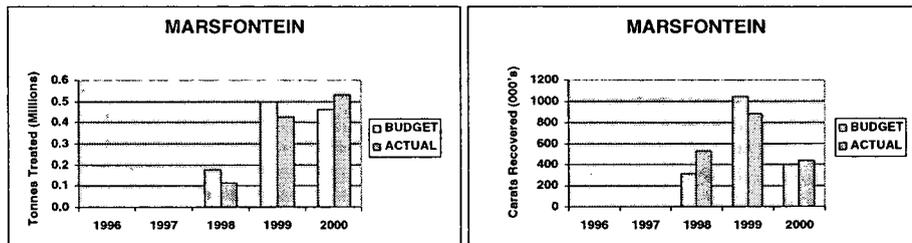
### 6.4.2.2 Treatment

This plant consists of two streams: a 100tph module and a 50tph module. Plant feed is crushed in a gyratory crusher to -75mm. This product is scrubbed and then screened to separate the oversize (+25mm) for secondary crushing. The secondary crusher has a nominal capacity of 80tph and operates at a closed side setting of 25mm.

The DMS has a nominal headfeed capacity of 150tph, and treats a product in the size range 1.5 to 25mm. The float fraction is screened to recover the +8mm material, which is then passed through a short-head cone crusher operating at a closed side setting of 8mm. This material is returned to the feed of the DMS plant.

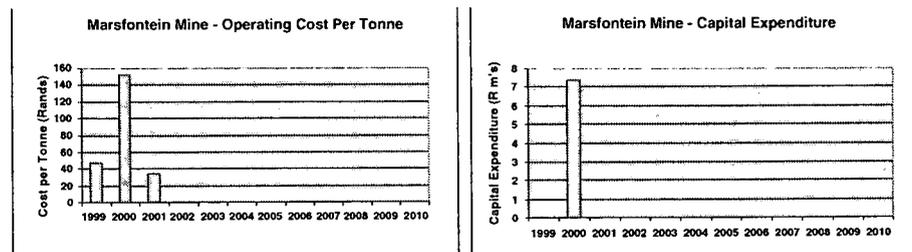
The concentrate reports to a recovery plant that makes exclusive use of x-ray technology for diamond recovery. Final sorting, weighing and packaging takes place in secure glove boxes.

### 6.4.3 Current Production Trends



The Marsfontein joint venture with SouthernEra has been in operation since 1998 and is presently close to exhaustion, with only stockpiles being treated until early 2002.

### 6.4.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms and are depicted as actuals for 1999 and 2000, while 2001 to 2010 are forecasts.

#### 6.4.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Marsfontein</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	0.0	0.0	0.0
Indicated resources	0.0	0.0	0.0
Inferred resources	0.3	12.1	0.04
<b>Total reserves and resources</b>	<b>0.3</b>	<b>12.1</b>	<b>0.04</b>

\*At a bottom cut-off size of 1.5mm, a planning revenue of US\$165 per carat and to a depth of 150m

## 6.5 The Oaks Mine

### 6.5.1 Background

The kimberlite deposit on The Oaks farm, located near Swartwater in the Northern Province, was first discovered in 1988. Further prospecting led to the discovery of diamonds in 1990. The orebody occurs as two kimberlite lobes joined by a connecting breccia and contains both hypabyssal and tuffitic kimberlite. A fast track feasibility study commenced in September 1997, and the first diamond was recovered some 12 months later. Start-up capital was kept low



with the acquisition and relocation of the Venetia bulk sampling plant. Production commenced in January 1999 and annual throughput is expected to exceed 350,000 tonnes as of 2002.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 70%. This factor is based on "mining" which started as a bulk sampling/trial mining exercise with very limited sampling and geological data. A drilling program to generate grade and geological data should be completed by mid-year and the resource will be reviewed.

### 6.5.2 Diamond Winning

#### 6.5.2.1 Extraction

Currently the mine has an estimated life of 8 years to a final open-pit depth of 200m. Good production results achieved in the first full year of production, 1999, were surpassed during the year of 2000. The mine treated a total of 0.21Mt and produced 0.12Mcts.

Mining production is carried out exclusively by contractors, which affords the mine a flexibility, in terms of machinery requirements, that is usually reserved for mines with larger fleets of equipment. This has resulted in the mine being able to operate flexibly without the associated high cost of keeping extra equipment on site.

The Oaks has a 4 star NOSA rating. The mine is planning to obtain ISO14001 accreditation during 2001.

#### 6.5.2.2 Treatment

The Oaks production plant began life as the Venetia Bulk Sampling Plant, and was relocated and commissioned in December 1998. Crushing was upgraded in 2000 to increase throughput to the current level. The plant has a capacity of 52tph and exhibits a high level of conventional automation.

Blasted ore (average 400mm) is hauled from an open pit and reduced to less than 40mm through three stages of Jaw crushing. Secondary crushing is effected by a 3ft cone crusher, providing a minus 25mm feed to the DMS.

Material in the 1 to 8mm size ranges reports to the fines DMS, and the 8 to 25mm fraction to the coarse DMS. Material less than 1mm is pumped to a degrit section.

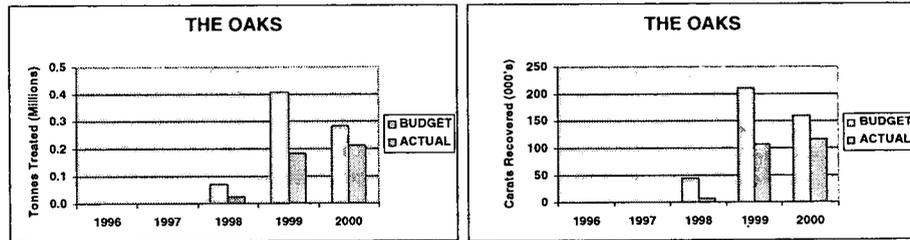
A 400-mm cyclone is used in the separation process and ore is separated into concentrate and tailings. Concentrate is dried and pneumatically conveyed into the recovery plant where it is classified into different size fractions. Tailings are screened and introduced into the recrusher circuit.

The 8 to 25mm coarse DMS tailings are conveyed after screening to a 3ft short-head cone crusher, crushed to <12mm. This product is conveyed to a single-deck screen where the +8mm material is introduced into a roller crusher and crushed down to -8mm. The undersize of the screen as well as the crushed product from the roller crusher is conveyed to the scrubber for washing and screening.

The recovery plant is fitted with three x-ray units. All x-ray concentrate reports to the sorthouse into glove boxes where the final gangue is separated from the diamonds. The final product is weighed and recorded before storage and export.

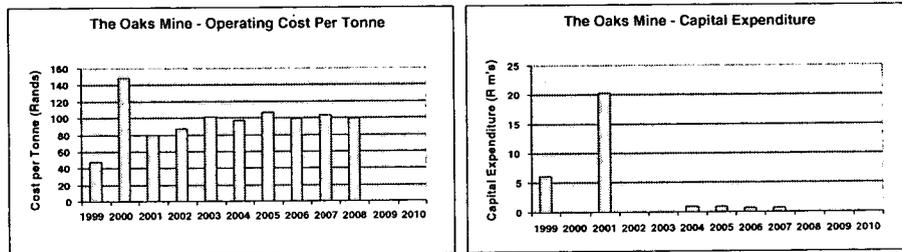
Rehabilitation of the slimes and tailings paddocks is carried out as an integrated part of the mining program. The recovery plant is being upgraded in mid-2001 to improve efficiency. Investigations are in process to evaluate opportunities to increase treatment plant throughput to 65tph.

**6.5.3 Current Production Trends**



Production began at this small operation in 1999 following a short commissioning period in 1998. It has suffered large deficits against budget during its build up as a result of some major problems with the plant. Being a small operation the goal was to keep both the initial capital and the operating cost at modest levels. To this end the Venetia bulk sampling plant was relocated to The Oaks. The suitability of the plant was not as expected, and difficulties were encountered with various sections of the plant.

**6.5.4 Operating and Capital Expenditure**



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure in 2001 is due to enhancements to the recovery plant.

### 6.5.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

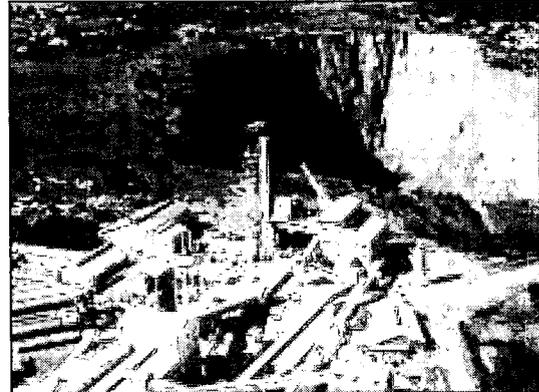
<b>The Oaks</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	0.0	0.0	0.0
Indicated resources	0.0	0.0	0.0
Inferred resources	2.6	53.8	1.4
<b>Total reserves and resources</b>	<b>2.6</b>	<b>53.8</b>	<b>1.4</b>

\*At a bottom cut-off size of 1mm, a planning revenue of US\$127 per carat and to a depth of 200m

## 6.6 Premier Mine

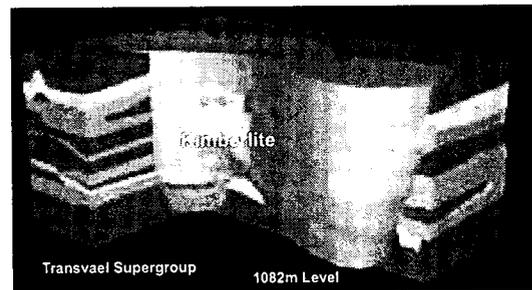
### 6.6.1 Background

The Premier kimberlite pipe, situated 37km north-east of Pretoria, is the largest known kimberlite in South Africa. It produced the largest gem diamond ever recovered, the Cullinan diamond, that weighed 3,106cts. It is one of eleven diatreme-zone kimberlites found in the Cullinan-Rayton area, with the orebody itself consisting of a mixture of tuffisitic kimberlite breccia and hypabyssal facies. Since mining operations started in 1902 a total of 326Mt of ore has been mined yielding 113Mcts (22.6 metric tonnes) of diamonds for an average grade of 35cpht. Since 1961, 68Mt of tailings dump material have been retreated yielding an additional 15Mcts of diamonds. Ore tonnes mined have varied between 7 and 2.4Mtpy, with grades varying between 29 and 60cpht.



*Aerial view of Premier pit and treatment plant*

Between 1902 and 1932 an open-pit mining method was used to mine ore down to a depth of 189m. The mine shut down in 1932 during the great depression and again during the Second world war. In 1945 de-watering of the open pit started in preparation for the development of an underground mine. Two vertical shafts were sunk to access the orebody and develop the sub-level open bench mining method, which is considered the



*Model of the C- Cut kimberlites showing the surrounding country rock*

optimal method for an open-pit to underground transition. In the following years, mining methods and systems were changed to suit differing ground conditions, with cave mining using scrapers in the early 1970s, sub-level open stoping in the early 1980s and mechanised trackless block-cave mining in the early 1990s.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 80%. This factor is based on an established and consistent mining history and a well-developed geological model, albeit with limited sampling data.

### 6.6.2 Diamond Winning

#### 6.6.2.1 Extraction

A mechanised block cave mining method is employed to mine the ore for treatment. The ore, once loaded from the draw points with the load-haul-dump units (LHDs), is tipped into a series of ore passes that direct the ore to a haulage approximately 133m and 31m below the BA5 and BB1E production levels respectively. A conventional rail system is used to draw the ore from the

ore passes and deliver it to either one of two underground crushing stations. The underground crushers crush the ore to -250mm before it is conveyed up two 14 degree winzes to the loading station, prior to being hoisted to the surface. Premier Mine currently produces approximately 2.6Mtpy from two blocks, the first, the BA5 is situated at a depth of 630m below surface and the second, the BB1E at 732m below surface.

Current reserves will be depleted in the year 2008, and in an effort to extend the mine life, an evaluation and feasibility study was conducted using the inferred resource below the current two mining blocks. The project, known as the C-Cut, has increased the mines resource by 170 million tonnes and 85 million carats. It is planned that a mechanised block cave mining method will be implemented, which, at a mining rate of approximately 9Mtpy, extends the operating life of Premier Mine to 2025.

Premier Mine has a 5 star NOSA (National Occupation Safety Association) rating and achieved 1 million hours without a lost-time injury during 2000. The mine has also received ISO 14001 accreditation for environmental management. The mine has also been accredited with the excellence in mining environmental management award for the Gauteng region, that is sponsored by the South African Department of Mineral and Energy affairs.

#### 6.6.2.2 Treatment

The current plant was commissioned in 1947 and has since undergone considerable modifications and additions. The plant is further characterised by a combination of new and old technology and a low level of conventional automation that results in high operating costs.

The main plant treats 850tph through crushers, scrubbers, large diamond x-ray and DMS. Concentrate is transferred to a 40tph recovery plant employing grease belts and x-ray for diamond recovery.

The plant has two sections, a main plant and a recrusher facility. At the shaft headgear there is a facility to divert material to a 60,000 ton stockpile. The stockpile not only serves as a buffer between the mine and plant, but also facilitates the blending of ore.

Primary crushing takes place underground, and a -250mm fraction is sent to the washing plant in 12t skips. A +32mm to -60mm size fraction is fed to the large-diamond x-ray recovery plant. Tailings from the x-ray plant are sent to one of two high pressure roll crushers that facilitate inter-particle crushing, which greatly improves liberation.

The products from the crushing section are scrubbed and screened in preparation for DMS. The 1 to 5mm size fraction is sent to a standard cyclone DMS, whereas the 5 to 32mm fraction is treated through a DMS cones plant with a design capacity of 600tph. The -1 mm fraction from scrubbing reports to two 100-foot thickeners, each with a rated capacity of 90tph. Total underflow pumping capacity is rated at 180tph.

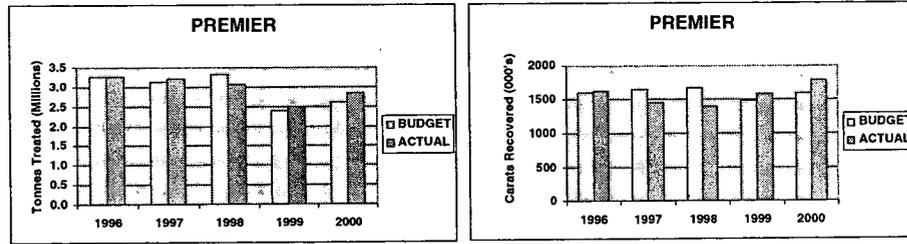
Tailings from the DMS cones plant are sent to the recrusher plant (400tph) for further crushing to -8mm through five cone crushers. The product from the recrusher is then fed through a standard DMS cyclone plant.

Concentrate from each of the DMS processes is treated in one recovery plant in separate streams. The total capacity of this plant is 40tph, and the primary method of concentration is grease. X-ray technology is used for the recovery of +10mm diamonds. The final recovery weighing and grading of the diamonds takes place in a sort-house.

### 6.6.2.3 C-Cut

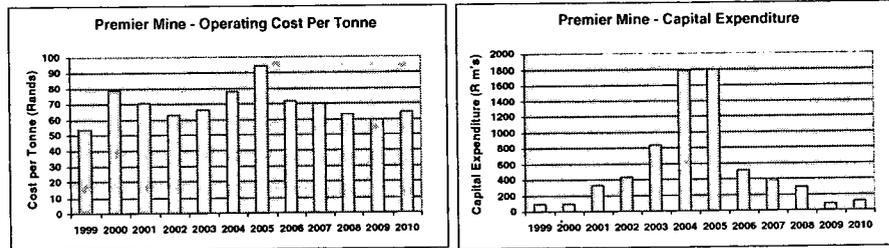
In order to reduce costs and position the mine competitively in a tougher global arena, Premier Mine has designed a mine for the C-Cut orebody that will be based on leading-edge technology. The C-Cut will include two new shafts, a new treatment facility, the underground infrastructure and all associated surface infrastructure necessary to support a 9Mtpy mining operation.

### 6.6.3 Current Production Trends



Premier displays fairly constant tonnage treated until 1999 when the production requirements were reduced in line with market demand. The carats have increased by 28% through 1999 and 2000 due to the higher grades of BB1 East as it becomes the major ore source.

### 6.6.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure fluctuations are due to the establishment of the C-Cut. The operating cost graph shows the positive effect of the C-Cut from 2006 onwards.

### 6.6.5 Mineral Resource and Reserve Classification

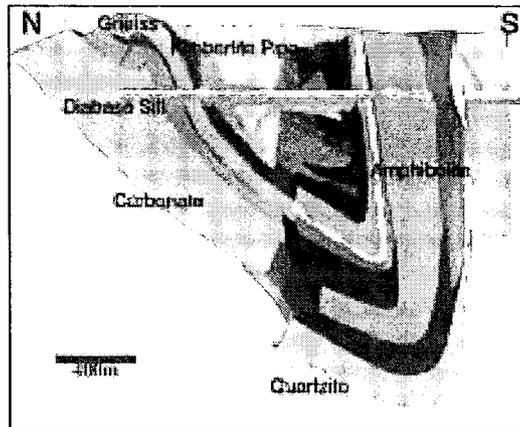
The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

Premier	Metric tonnes (millions)	Grade (cpt)	Carats (millions)
Probable reserves	39.0	53.8	21.0
Indicated resources	180.0	67.8	122.0
Inferred resources	117.0	9.4	11.0
<b>Total reserves and resources</b>	<b>336.0</b>	<b>45.8</b>	<b>154.0</b>

\*At a bottom cut-off size of 1.0mm, a planning revenue of US\$46 per carat and to a depth of 1,000m

## 6.7 Venetia Mine

### 6.7.1 Background



*Simplified cross-section of the Venetia orebody and complex surrounding geology showing the folded nature of the local country rock.*

Venetia, situated in the Northern Province, is the most recent major diamond mine to be opened by De Beers. It was officially opened by Harry Oppenheimer, former Chairman of De Beers, on 14 August 1992. The existence of diamondiferous gravels at Seta, 35km north-east of the mine, has been documented since 1903. In 1969, De Beers initiated an exploration program to locate the source of the Seta diamonds, culminating in the discovery of Venetia in 1980.

Venetia is a conventional open-pit mine, with the primary orebody comprising two adjoining kimberlite pipes with a combined surface area of approximately 13ha and a strike extent of 600m. The largest pipe is composed primarily of a diatreme tuffisitic kimberlitic breccia (TKB), crosscut by a series of later stage hypabyssal intrusions and dykes. The second largest pipe is an irregular elliptical body approximately 5ha in area, consisting of an altered TKB core rimmed by hypabyssal and transitional kimberlite facies. The initial sampling program consisted of a series of bulk samples used to establish the economic potential of the orebodies. Evaluation sampling was carried out utilising surface trenching, pitting, shafts, tunnels and jumper drilling. Core drilling was used to establish the internal geology of the pipes as well as to delineate their geometry. An advance sampling program utilising large diameter drilling was later implemented in order to sample the orebodies to a depth of 400m. Total exploration, delineation and evaluation drilling to date on Venetia exceeds 100km. De Beers acquired the Saturn Partnership which held the right to a royalty of 50% of Venetia's profits from Avmin (87.5%) and by way of ICH (12.5%) at the end of 1999.

Venetia Mine achieved Nascar status in 1996, a status that is still held by the mine. The mine was also granted ISO 14001 certification in 1998.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 80%. This factor is based on an established sampling programme and well-developed geological model. Uncertainties in volume (LDD caliper data) and recovery factors have retained this resource in the Inferred category.

### 6.7.2 Diamond Winning

#### 6.7.2.1 Extraction

Production began in 1992. In 2000, the plant treated a total of 3.7Mt and produced a total of 4.5Mcts. The mining method employed is hard-rock drilling and blasting combined with a shovel and truck load-and-haul operation. The mine operates on a continuous basis, seven days a week.

Currently the open pit is 120m deep, and current planning indicates a potential final pit depth of 420m below surface.

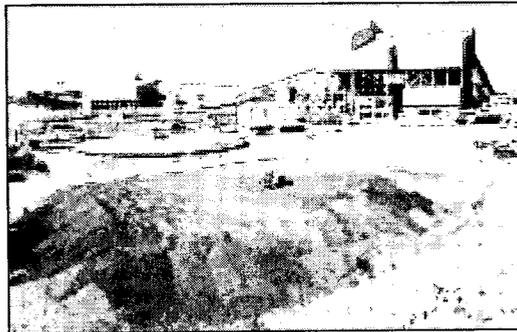
Venetia Mine utilises the latest technology in the mining environment. A large amount of time and effort goes into the development of systems and techniques that are focused on reducing the overall cost per tonne mined, thereby extending the current life of mine. The mine utilises state of the art fleet management technologies that are aimed at continuously improving the utilisation of the earthmoving fleet.

Mine planning at Venetia is of an advanced nature and utilises the latest mine software packages available. The split-shell (phased) mining technique is applied to reduce the peak waste mining rates and advance revenue profiles. The method further enhances NPV by reducing capital fleet requirements and improving operational efficiency in the mining operation. This concept is being migrated to the other open-pit mines within the group.

Currently the life of mine is stated as 2011. However, a fourth major cut is under review which would increase open pit life to 2016. Thereafter, underground mining is possible.

#### 6.7.2.2 Treatment

The 655tph plant was commissioned in 1992. During the last quarter of 2000 the plant at Venetia was converted to run on a continuous operation. The planned throughput in the plant for 2001 is 4.6Mt, which will be the plant throughput for the foreseeable future.



*The Venetia treatment plant*

The plant is designed to treat 655tph through crushers, scrubbers and a DMS section. Concentrate is transferred to a recovery plant employing both x-ray and grease belts for diamond recovery. The plant makes use of a medium level of conventional automation and a comprehensive computerised information system.

The ore delivered to the Primary crusher is below 1m x 1m in size, and a product smaller than 150mm is produced. The primary scrubbing and screening section consists of two identical modules, each designed to treat a maximum of 800tph. This section produces three products: 1) a -1mm fraction that is discarded, 2) a 1 to 25mm that reports to the DMS and 3) a +25mm fraction that is sent to secondary crushing.

Cone crushers are used for secondary crushing. The crushed material is then conveyed to the secondary scrubbers. The product from these scrubbers is split into two fractions: a minus 8mm and a + 8mm for feed to the DMS.

The DMS section is separated into coarse (8 to 25mm) and fines (1 to 8mm) sections. Both sections have two modules designed to treat a maximum of 200tph. The modules also contain sub-processes that are used to recover ferrosilicon from the process and to regulate the operational parameters.

Coarse DMS tails are sent to the re-crush section to liberate any smaller diamonds that are locked up in the coarse float fraction. High-pressure roll crushers, designed to treat 270tph, are used in the re-crush section, to crush the kimberlite without damaging the locked diamonds. The re-crush product joins the secondary crusher product and is fed to the secondary scrubbers.

All concentrate produced in the coarse and fines DMS reports to the re-concentration (recon) plant, that has a rated capacity of 40tph. The recon plant is designed to reduce the quantity of material fed to the recovery section by producing a higher-grade concentrate. The recon plant utilises DMS cyclones in its process. The product from the recon is sent to the recovery section, and the recon tails are sent to the re-crush stockpile.

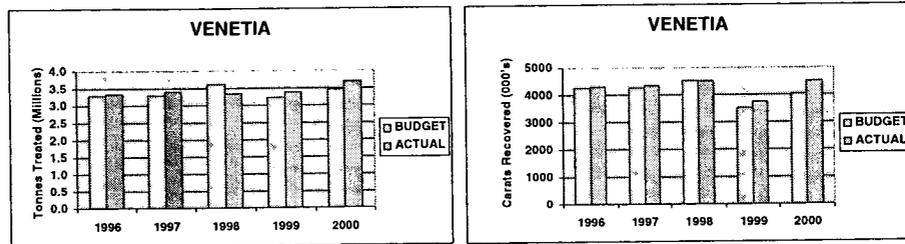
The concentrate from the recon plant is passed through the recovery plant, where the product is recovered using x-ray technology and grease belt technology.

The recovery plant concentrate then passes through the sorthouse, where the product is recovered using magnetic permrolls, x-ray technology, caustic soda and hand-sorting. The product is secured in a safe until it is transported under security to HOH in Kimberley.

The treatment and recovery plant are modern, efficient, highly automated and in excellent operating condition.

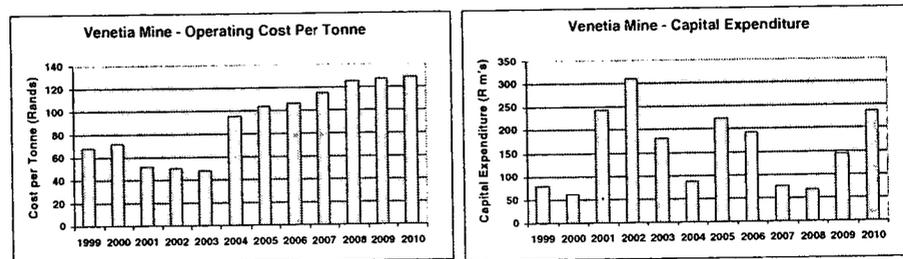
A recovery plant upgrade is currently under investigation. Thickening section capacity is currently being increased. Further upgrading is required to enable the processing of 725tph on a continuous basis.

**6.7.3 Current Production Trends**



Venetia regularly exceeds its tonnage treated budget, except for 1998 when it was originally planned to increase production, but market forces reversed that decision and also caused the reduced budget in 1999. With the renewed strength in the diamond market, the decision was again taken to increase production in 2000, and this target was exceeded due to the early introduction of continuous operations planned for 2001. The carat production has not varied by the same magnitude as the tonnage or always in the same direction. This is due to the variability in grade between different sections of the pit, with the final blend being determined by the mine plan and the scheduling of ore from the different sections.

**6.7.4 Operating and Capital Expenditure**



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure fluctuations are due to upgrading of the plant's red area in 2002 and purchasing of additional earthmoving equipment for the

increasing volumes of waste from 2003. The operating cost graph shows the effect of the increasing volumes of waste stripping from 2004.

#### 6.7.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Venetia</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	43.6	121.6	53.0
Indicated resources	9.8	134.7	13.2
Inferred resources	64.0	77.3	49.5
<b>Total reserves and resources</b>	<b>117.4</b>	<b>98.6</b>	<b>115.7</b>

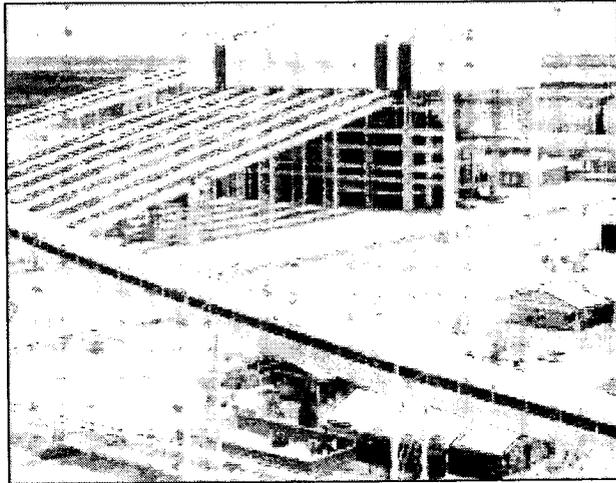
\*At a bottom cut-off size of 1mm, a planning revenue of US\$55 per carat and to a depth of 420m

## 6.8 Debswana - Orapa Mine

### 6.8.1 Background

The Orapa orebody, some 240km west of Francistown, was discovered by De Beers in 1967 after twelve years of prospecting. The De Beers Botswana Mining Company (Pty) Ltd. was incorporated in Gaborone on the 23 June 1969 to develop the mine. The company was restructured in 1992 and the name changed to Debswana Diamond Company (Pty) Limited (a company with a 50:50 partnership between De Beers and the Government of Botswana).

The Orapa kimberlite deposit consists of two intrusive pipes emplaced into basalt and sandstones approximately 93 million years ago. The two pipes coalesce near surface giving a bi-lobate expression to the pipe outlines. The deposit has no overburden, and the pipe in the northern half of the deposit was emplaced prior to the southern pipe. The pipe infill is predominantly crater facies and consists of fourteen geological facies, falling into four major groups: - basalt



*Part of the Orapa treatment plant*

rich units; epiclastic grits, sandstones and shales (containing fossils), talus deposits, and volcanoclastic deposits. Each unit represents a different phase of crater infill. The kimberlitic material is highly altered and contains a high percentage of swelling clays, which can cause material handling difficulties, but also results in high levels of diamond liberation.

The greater than 113ha crater facies kimberlite has been evaluated by a combination of pitting, bulk sampling and large diameter drilling to a depth of 260m.

The Orapa mine opened in 1971 and has been mined by the open pit method to date. The treatment capacity was doubled during 1978 and again in 2000. Continuous mining and treatment operations were introduced in 1997. An automated diamond recovery plant was introduced in 2000. The Orapa treatment plants have recovered 146Mct from the treatment of 199Mt of crater facies kimberlite at an average grade of 73cpht. Mining is expected to continue for at least another 29 years at current treatment rates. The mining lease for Orapa was renewed for a further 25 years in 1996, effective from 1992.

Orapa has a 5 star NOSA (National Occupational Safety Association) rating. The environmental management programme of Orapa mine is based on ISO 14001 accreditation in respect of which full certification has been obtained.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 70%. This factor is based on an established and consistent mining history with a well-developed geological model. The geological model is greatly simplified at the depths associated with inferred resources (Diatreme as opposed to Crater facies). There is limited sampling data in the inferred resource and global facies grades based on micro-diamond data have been used. A sampling program will be

carried out at Orapa prior to the exhaustion of the current probable reserve in 2018.

## **6.8.2 Diamond Winning**

### **6.8.2.1 Extraction**

The Orapa Mine is a conventional open pit mine utilising a shovel and truck fleet that sequentially miners progressive benches. To date no significant waste stripping has occurred. The first waste stripping at Orapa will begin in 2001.

During December 1999 No. 2 plant, part of the Orapa 2000 project, was commissioned, which resulted in Orapa treating a record 14.7Mt, up from 9.6Mt in 1999. The mine produced a total of 12.2Mct for the same period. The open-pit is currently planned to a depth of 540m. There is potential for underground operations following open pit mining that is planned to end in 2030.

The Debswana board granted approval for the development of the Damtshaa Mine (BK9) resource in 2000. Construction of the mine will commence in 2001. The mine will be serviced from the infrastructure around Orapa.

Orapa will soon use state-of-the-art fleet management technology in an effort to improve the equipment utilisation on the mine, thereby driving down unit costs. The mines also make use of the latest technology in the recovery of diamonds in the treatment plant. The diamond concentrate produced at the mines is sent to Jwaneng where it is treated through the FISH (Fully Integrated Sort House) plant.

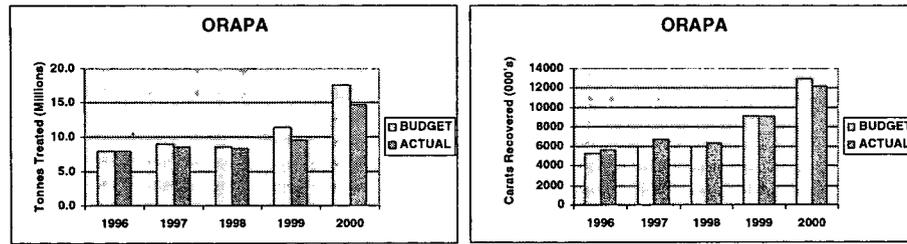
### **6.8.2.2 Treatment**

The additional plant has increased the installed processing capacity by 8.9Mtpy (from 8.6Mtpy for Orapa No. 1 plant), creating a total capacity of 17.5Mtpy. The No. 1 plant is a standard plant of the 1970s without either scrubbing or recrushing facilities, which produces a tailings product in the size range 1.6 to 25mm. The concentrates from this plant are fed to the new Completely Automated Recovery Plant (CARP).

The CARP is a state-of-the-art diamond recovery plant, incorporating modern Debex x-ray machine technology in a high security environment. The CARP treats final reconcentration DMS plant concentrate from the three existing treatment plants namely: Orapa No. 1 plant, Orapa No. 2 plant and Letlhakane plant. Once the BK9 (Damtshaa) mine is on line in 2002, concentrate from this plant will also be treated in the CARP. Excess capacity in the CARP is used to retreat tailings from the old recovery. The CARP is designed to treat 2,500tpm of concentrate and recover 97.5% of all diamonds sent to the plant. A portion of the CARP tailings is recycled back to Orapa no. 2 plant to improve the recovery efficiency above this.

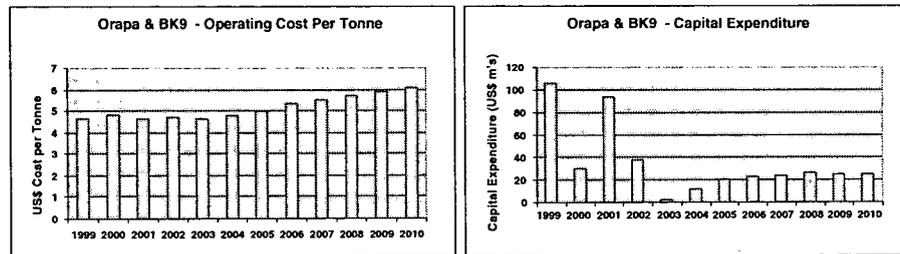
High-quality concentrate is shipped to the Jwaneng Fully Integrated Sort House (FISH) for hands-off final diamond recovery. This aspect is still in a transition phase and some CARP concentrate is hand sorted in the Orapa CARP sort house.

### 6.8.3 Current Production Trends



Orapa shows fairly consistent production until 1999. Thereafter the increase is due to the build up to the Orapa 2000 project that doubled production. The deficits seen in 1999 and 2000 are due to difficulties with the production ramp up.

### 6.8.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure for 2001 reflects the establishment of the new mine at the BK group of kimberlites. The operating cost graph shows the effect of the increasing volumes of waste from 2004 onwards.

### 6.8.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

Orapa	Metric tonnes (millions)	Grade (cpht)	Carats (millions)
Probable reserves	274.0	57.8	158.5
Indicated resources	105.9	34.5	36.5
Inferred resources	273.0	45.8	125.0
<b>Total reserves and resources</b>	<b>652.9</b>	<b>49.0</b>	<b>320.0</b>

\*At a bottom cut-off size of 1.65mm, a planning revenue of US\$47 per carat and to a depth of 660m

\* Note that the above table incorporates BK kimberlites (K9, K1, K12 and K15).

## 6.9 Debswana - Letlhakane Mine

### 6.9.1 Background

The 12ha Letlhakane D/K1 pipe was discovered by De Beers in 1971, and consists of a single intrusive pipe emplaced into basalt and Ntane sandstones at about the same time as the Orapa kimberlites. A smaller 3.6ha satellite pipe D/K2, occurs a few hundred metres to the south east of the D/K1 deposit. The D/K1 orebody consists of multiple tuffisitic kimberlites emplaced into the same vent at different times. A basalt rich breccia can be seen on the southern periphery of the pipe and represents the earliest phase of emplacement. The kimberlite, in contrast to that at Orapa, is a much harder rock and was originally masked by Kalahari sediments.



*View of Letlhakane Mine D/K1 pit*

The D/K1, diatreme facies kimberlite has been evaluated by a combination of pitting, bulk sampling and large-diameter drilling to a depth of 470m below surface.

The Letlhakane mine stage 1, opened in 1976 with the treatment of the ferruginous gravel deposits around the pipes. Stage 2, which saw the first increase in the plant in 1979, was constructed to treat the material from the pipes, which have been mined by open-pit methods to date. The treatment capacity was further increased by 20% in 1987. Continuous mining and treatment operations were introduced in 1997. The Letlhakane treatment plant has recovered 17Mct from the treatment of 63Mt of diatreme facies kimberlite at an average grade of 27cph. Mining is expected to continue for another 13 years at current treatment rates. Thereafter mining may continue through conversion to an underground operation depending on the results of a feasibility study to be undertaken in the next 2 years.

Letlhakane has a 5 star NOSA rating. The mine is planning to obtain ISO 14001 accreditation during 2001.

Letlhakane is owned by Debswana. The Letlhakane mine lease was renewed for a further 25 years in 1996, effective from 1992.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 80%. This factor is based on an established and consistent mining history with a well-developed geological model. Limited reverse circulation drilling for macro-diamonds has been carried out to depths of 400m and below.

### 6.9.2 Diamond Winning

#### 6.9.2.1 Extraction

Letlhakane Mine produced a total of 0.96Mct in 2000, after treating a total of 3.5Mt of ore. The D/K1 and D/K2 open pits have a remaining life of approximately 13 years. The feasibility of mining underground at Letlhakane is being investigated.

### 6.9.2.2 Treatment

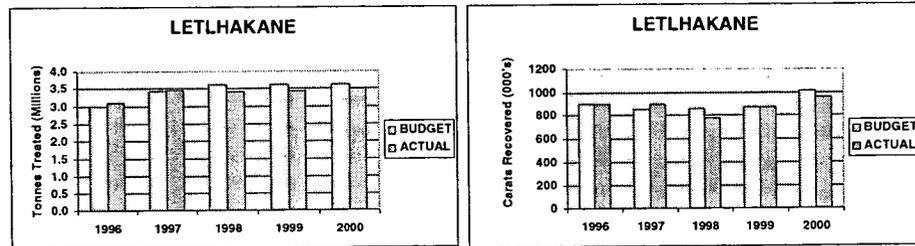
The plant was commissioned in 1975. The primary crusher has a rated capacity of 1000tph and operates with a 127mm gap. The normal feed rate for the plant is 525tph. The plant was fully automated in 1995.

The crushed ore is divided into three size fractions. The screen underflow (-1.25mm) is pumped to a de-gritting section, the middling (1.25 to 25mm) reports to a DMS stockpile and the oversize reports to a secondary crushing stockpile. Both stockpiles have a live capacity of 4,000t.

From the secondary stockpile material is fed to three secondary crushers with a rated overall capacity of 900tph. The crushed product reports to a standard DMS that has two parallel DMS modules, each consisting of two 610mm cyclones.

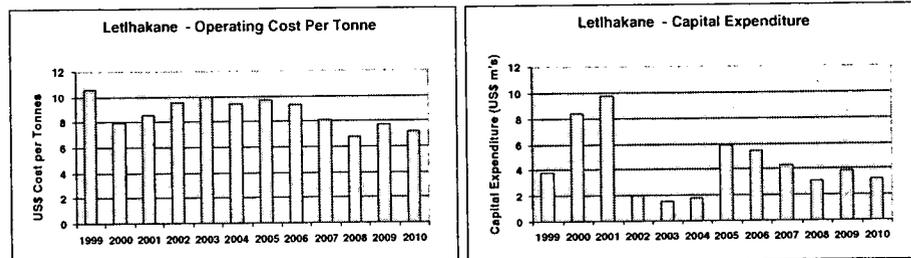
The float fraction (non diamond bearing) is washed in drain and rinse sections in order to recover the dense medium and then disposed of at the tailings dump. The sink fraction reports to a re-concentration DMS Plant for further concentration. Floats from the re-concentration plant are returned to the secondary stockpile for re-crushing and re-treatment. The final concentrate is transported by truck under security escort to the Orapa CARP.

### 6.9.3 Current Production Trends



Production at Letlhakane is at a fairly mature stage and does not vary considerably from year to year, with production being fairly close to budget.

### 6.9.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal US\$ terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure for 2001 and for 2005 onwards is due to major equipment replacement. The operating cost graph shows the effect of the decreasing stripping volumes from 2003 onwards.

### 6.9.5 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Lethakane</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpt)</b>	<b>Carats (millions)</b>
Probable reserves	9.0	21.1	1.9
Indicated resources	6.2	30.6	1.9
Inferred resources	47.4	26.4	12.5
<b>Total reserves and resources</b>	<b>62.6</b>	<b>26.0</b>	<b>16.3</b>

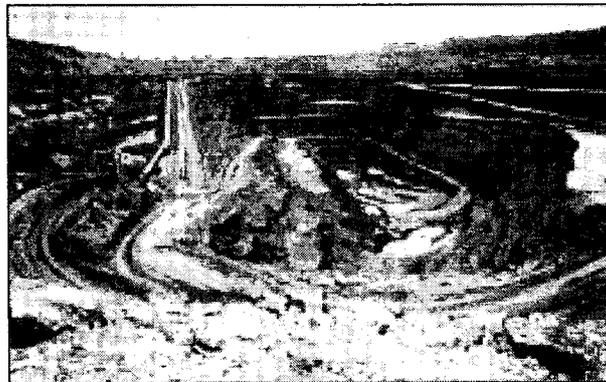
\*At a bottom cut-off size of 1.65mm, a planning revenue of US\$191 per carat and to a depth of 480m

## 6.10 Debswana – Jwaneng Mine

### 6.10.1 Background

Debswana's Jwaneng Mine is the third of the three diamond mines in Botswana owned and operated by Debswana Diamond Company, a company jointly owned by the Government of Botswana and De Beers. The Jwaneng kimberlite, located some 120km west of Gaborone, was discovered by De Beers in late December 1972. An associated deposit lies 8km to the east. The orebody consists of three intrusive pipes emplaced along fault zones within the Transvaal super group some 250 million years ago. The pipes are distinctive units below 150m from surface, but above this depth they coalesce to give a tri-lobate outline. The kimberlites were overlain by up to 50m of Kalahari deposits at the time of discovery.

The central pipe consists of crater facies kimberlitic infill, which contains rare tree fossils and is generally poorly sorted. In common with the northern and southern pipes, the central pipe displays a peripheral zone where an earlier infill, rich in quartzitic material, is preserved as lenses adjacent to the wallrock contact. The crater infill is similar to Orapa's in that the kimberlite is highly



*View of the Jwaneng pit*

altered in the upper levels and contains swelling clays. The southern pipe is similar to the central pipe with regard to infill, but appears to have more phases of infilling. The northern kimberlite consists of a central pyroclastic core, which is surrounded by a well developed peripheral earlier infill, rich in quartzitic material. The northern pipe infill is a more competent rock than that in the neighbouring pipes. This 54ha crater-facies deposit has been evaluated by a combination of samples from shafts, bulk samples and large diameter drilling to a depth of 400m.

The smaller pipe to the east has not been exploited. The deposit consists of two pipes, one of which is a tuffisitic kimberlite breccia and the other a hypabyssal kimberlite. It has been evaluated by a combination of samples from shafts, and large diameter drilling to a depth of 200m. This pipe is planned to be mined from 2010 onwards.

The Jwaneng Mine opened in 1982 and to date the main treatment plant has recovered 171Mcts from the treatment of 123Mt of crater-facies kimberlite at an average grade of 139cpt. A facility to re-crush tailings arising from the main treatment plant was added in 1990, and in 2000 an automated diamond recovery plant was introduced along with a fully integrated sorthouse to sort diamonds from all of the Debswana mines. Mining is expected to continue for at least another 28 years at current treatment rates, and will most probably be continued using underground mining methods.

The current Jwaneng Mine lease expires in 2004.

Jwaneng Mine has a 5 star NOSA rating and was also awarded the ISO 14001 certification at the end of 2000.

#### *Inferred Mineral Resources*

The inferred mineral resources were factored for technical risk using a sliding probability scale from 97% to 80%. These factors are based on the likely impact of

ongoing comprehensive drilling programmes designed to continually upgrade information on grade, geology and recovery factors. The first such programme will be completed in 2001 and upgrade a considerable proportion of the current inferred resources to indicated mineral resources and probable mineral resources is appropriate. The probability factor will reach 80% by 2021, should no additional sampling information be obtained in the interim.

## 6.10.2 Diamond Winning

### 6.10.2.1 Extraction

Production rates in the 1980's were about 5Mtpy, and these were increased by 33% in 1994 upon commissioning of the Fourth Stream Project, whereby a fourth production stream in the main treatment plant was added to the then three streams. Production was further increased by about 14% in 1997 when the mine started continuous operations (CONTOPS) operating 24 hrs a day, seven days a week.

Jwaneng Mine is a conventional open-pit mine utilising a shovel and truck fleet. An in-pit ore crusher was established in 1994 to crush run-of-mine ore to -150mm prior to delivery to the treatment plant. In 2000 Jwaneng treated 9.2Mt yielding 11.5Mcts. The stripping ratio was 3.4t of waste per ton of ore.

The current mine planning work has indicated that it will be economical to mine the kimberlite pipe by open-pit methods to a depth of 720m below surface. At current production rates open pit mining will last until 2028, and thereafter operations may continue from underground.

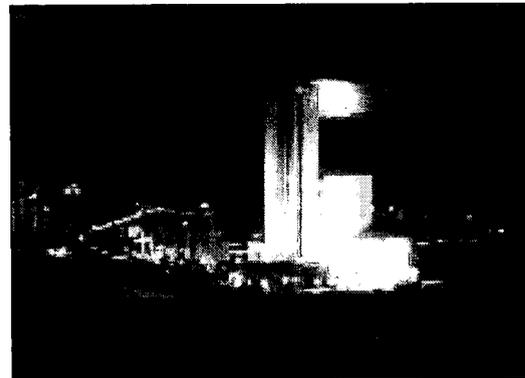
### 6.10.2.2 Treatment

The plant was commissioned in 1982 with a capacity of 1,040tph. An expansion project in 1994 increased the capacity of this plant to 1,400tph. The process control system was fully automated in 1994.

Material crushed in the pit is fed to the main treatment plant where it is cleaned and screened in the scrubbing plant. The fines generated during the scrubbing process are pumped to the slimes dams.

The ore is then sized to -25mm through screening and secondary crushing prior to concentration in the dense media separation (DMS) plant.

The treatment process is divided into a main plant and a re-crush plant. The main plant has a top feed size of 25mm and a bottom cut of 1.4mm. The tailings from the first pass DMS are fed to a re-crush plant. This plant is fitted with five high pressure roll crushers that operate in open circuit to produce a product that has a nominal size of 95% passing 12mm.



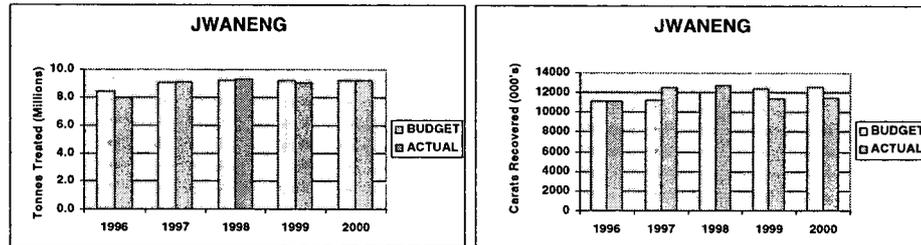
*Jwaneng's Aquarium*

The concentrate from the two plants are further concentrated and sorted in the new fully automated 'Aquarium' plant. This plant consists of an automated

recovery section where x-ray and magnetic separation processes are used to concentrate the product to 50% diamond by weight. The final section in the Aquarium is a fully integrated sorting facility where the product from the recovery section is finally cleaned and sorted by means of single particle sorters and automated acid cleaning processes.

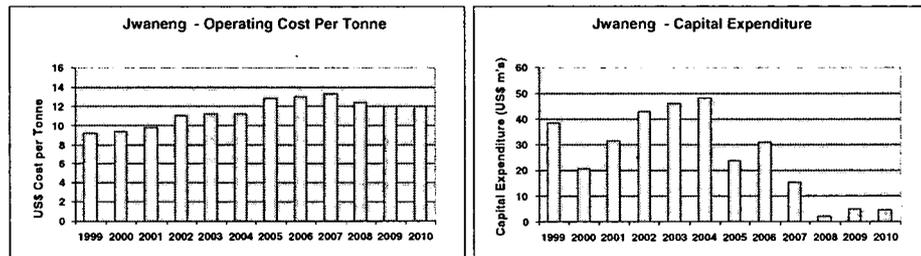
The plant is in good condition. Parts of the control system are approaching the end of their optimal technical and commercial lifecycle and are scheduled to be replaced or upgraded in the foreseeable future.

### 6.10.3 Current Production Trends



Since 1997 the tonnage produced has been consistent. Carat targets have been somewhat more varied due to the mine-planning grade varying from year to year. With increasing depth and the associated hardness of the ground, diamond liberation problems are being and will be experienced. This is one of the major reasons given for applying probability factors with depth as previously indicated.

### 6.10.4 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal US\$ terms with 1999 and 2000 as actuals, and 2001 to 2010 as forecasts. Capital expenditure increases from 2002 are mainly due to the purchasing of additional earthmoving equipment, for the increasing volumes of waste from 2003. The operating cost graph shows the effect of the increasing stripping volumes between 2002 to 2007.

**6.10.5 Mineral Resource and Reserve Classification**

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Jwaneng</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	44.0	90.9	40.0
Indicated resources	14.0	28.6	4.0
Inferred resources	229.6	160.7	369.0
<b>Total reserves and resources</b>	<b>287.6</b>	<b>143.6</b>	<b>413.0</b>

\*At a bottom cut-off size of 1.65mm, a planning revenue of US\$108 per carat and to a depth of 720m

## 6.11 Williamson Diamonds

### 6.11.1 Background

The Williamson Diamond Mine is situated at Mwadui in the Shinyanga district of Tanzania, about 130 km south of the port of Mwanza, on Lake Victoria. Dr. John T. Williamson a Canadian mining geologist discovered the diamond deposits at Mwadui in 1940. A private company, Williamson Diamonds was formed on March 19, 1942 with Dr. Williamson as sole and governing director and general manager.



*View of the Williamson pit*

The Mwadui kimberlite, is considered to be one of the largest diamondiferous kimberlites ever discovered, with a surface area of some 142ha. Mining operations have historically concentrated on enriched superficial deposits within and adjacent to the pipe. Exploration within the pipe to a depth of 500m below surface has confirmed the presence of pyroclastic kimberlite and extensive granite breccias to this depth. The pipe also contains an extensive internal sedimentary basin filled with shales, mudstones and inter-fingered pyroclastic kimberlite. Sampling of the resource has been carried out through trenching, pitting, underground development and focused mining.

Dr. Williamson died in 1958 and in August of that year the then Tanganyika Government and De Beers Consolidated Mines Limited became joint owners of the mine on a 50% basis. In 1974 the Tanzania Government took over the management of the mine until 1994 when De Beers negotiated a further 25% of the shares and assumed operating control.

### 6.11.2 Diamond Winning

#### 6.11.2.1 Extraction

Although this is one of the largest pipes in the world, due to its low grade, the mine has an estimated life of 5 years, to a final open-pit depth of 80m below surface.

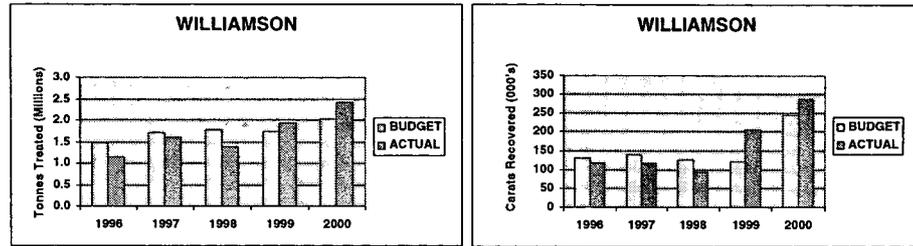
Mining production is carried out exclusively by contractors, which affords the mine a flexibility, in terms of machinery requirements, that is usually reserved for mines with larger fleets of equipment. This has resulted in the mine being able to operate flexibly without the associated high cost of maintaining extra equipment on site.

#### 6.11.2.2 Treatment

The new Williamson Plant has a head-feed capacity of 325tph. Feed material of minus 1,000mm is passed through a 2-stage crushing process, reducing to 150mm. This is followed by scrubbing and screening, producing 3 size fractions. The undersize fraction of minus 1.5mm is rejected to the slimes dam and the oversize fraction of plus 25mm is rejected to the tailings dump along with the DMS tailings fraction. The remaining material at minus 25mm plus 1.5mm is fed to two identical 100tph DMS modules utilising 420mm cyclones with extended barrels. The cyclone separation produces a concentrate and a tailings fraction. The tailings fraction reports to the tailings dump and the

concentrate is dried in a rotary drier before being dispatched to the Final Recovery Plant where it undergoes x-ray recovery treatment and final hand sorting.

### 6.11.3 Current Production Trends



Production recommenced in 1995 following a short commissioning period. Production rates have steadily improved, except during the summer of 1998 when the mine was effectively shut down for a month due to heavy rains. Production commenced with treating alluvial deposits and has moved to the open-pit kimberlites.

### 6.11.4 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

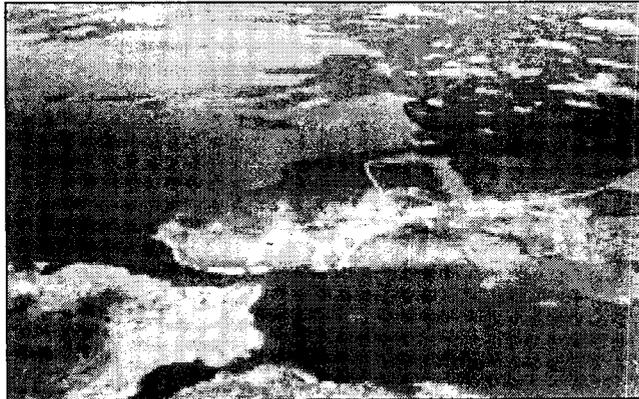
Williamson	Metric tonnes (millions)	Grade (cpt)	Carats (millions)
Probable reserves	0.0	0.0	0.0
Indicated resources	0.0	0.0	0.0
Inferred resources	114.0	5.7	6.5
<b>Total reserves and resources</b>	<b>114.0</b>	<b>5.7</b>	<b>6.5</b>

\*At a bottom cut-off size of 1.5mm, a planning revenue of US\$106 per carat and to a depth of 70m

## 6.12 Snap Lake

### 6.12.1 Background

The Snap Lake deposit is situated in the Northwest Territories of Canada, about 225km north east of Yellowknife. The deposit is described as a dyke but is actually a gently dipping intrusive kimberlite sheet which subcrops on a narrow peninsula located on the western shore of Snap Lake. The dyke extends over a distance of approximately 3.2km north south and 3.1km east west to a depth of 1km and is generally between 2m and 3m thick.



*Aerial view of Snap Lake site*

The Snap Lake dyke was discovered during the mid 1990's. The orebody subcrops beneath 2m to 3m of overburden and was therefore amenable to surface bulk sampling using trenches. Bulk sampling was carried out during 1998 and 1999 along with extensive core drilling to further outline the orebody.

The results of a pre-feasibility study undertaken, by MRDI Canada, consultants appointed by Winspear Diamonds Inc., were released in April 2000 and reflected an indicated and inferred resource of 21.3Mt and some 42Mcts. The pre-feasibility study has focused on the development of an underground mine to extract 3,000tpd with an initial life of mine of approximately 12 years.

In the summer of 2000, Winspear initiated an advanced exploration programme to take underground bulk samples in the orebody. This involved approximately 1,200m of decline development to a depth of 320m below surface and approximately 600m of horizontal development along the strike of the dyke. Processing of these samples is nearly complete and preliminary results are as expected.

De Beers Canada Mining filed for a water license and land-use permit application with the authorities in February 2001 for a 3,000tpd operation, however, an optimisation study is currently underway which considers a larger resource base and the possibility of increasing the rate of extraction.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 70%. This factor is based on sampling carried out on wide grid spacing ( $\pm 200\text{m}$ ) which is insufficient for the two most important variables in this deposit, viz. grade and sill thickness.



*View of the Snap Lake portal*

## 6.12.2 Diamond Winning

### 6.12.2.1 Extraction

A Room and Pillar mining method with backfill paste and high strength concrete placement was selected by MRDI in a scoping study during July 2000, following on from the pre-feasibility study.

The basic process for the room and pillar method is broken down into two phases – primary and secondary stoping. Primary stoping, involves the development of on reef strike drifts, access raises and room development. Secondary stoping is the removal of the pillars between the rooms, once the rooms have been filled with paste backfill.

The Optimisation Study project team is evaluating the mining method, as new information becomes available from on-going drilling.

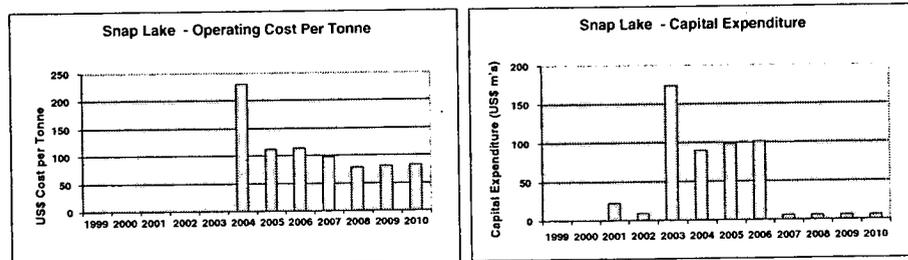
### 6.12.2.2 Treatment

In the April 2000 pre-feasibility study conducted by MRDI, designs were considered for a head feed of 3,000tpd using a traditional diamond treatment plant, taking in consideration that no proper Ore Dressing Studies had been conducted at the time.

The flowsheet includes an underground primary jaw crusher, and an off line covered surface stockpile with a Mineral Sizer to crush frozen ore. The ore is treated via scrubbing, screening and secondary crushing (cone crusher). The crushed ore in the fraction -25/+1mm is concentrated in a Dense Medium Separation plant. The rejects larger than 6mm are further crushed in a High Pressure Roll Crusher and the product recycle in the same DMS unit. The DMS concentrates are treated in a wet recovery section and the dried final concentrate hand sorted. The -1mm rejects are degritted and the slimes thickened. The rejects will either be combined with the coarse (+6mm) tailings to provide backfill material to the mining operations or disposed in a Processed Kimberlite impounding facility.

Ore dressing studies and diamond studies based on both samples taken in the deposit and on the treatment of large bulk samples are in progress. They are the foundation for the optimisation studies, which are presently underway. The flowsheet will be reviewed for optimum efficiency and cost.

## 6.12.3 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal terms with 1999 and 2000 depicted as actuals and 2001 to 2010 as forecasts. Capital expenditure for 2003 and 2004 reflects the establishment of the mine at 3,000tpd. Expenditure in 2005 and 2006 is the expansion to 6,000tpd. The operating cost graph shows the effect of the start up of operations in 2004 and decreases as full production is reached during 2005 and reduces again in 2008 when full production at 6,000tpd is reached.

**6.12.4 Mineral Resource and Reserve Classification**

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

<b>Snap Lake</b>	<b>Metric tonnes (millions)</b>	<b>Grade (cpht)</b>	<b>Carats (millions)</b>
Probable reserves	0.0	0.0	0.0
Indicated resources	12.0	197.5	23.7
Inferred resources	9.3	196.8	18.3
<b>Total reserves and resources</b>	<b>21.3</b>	<b>197.2</b>	<b>42.0</b>

\*At a bottom cut-off size of 1.18mm and a planning revenue of US\$100 per carat

## 6.13 Namdeb

### 6.13.1 Background

Namdeb undertakes mining of diamond placer deposits onshore and offshore along the Namibian coastline. The majority of exploration and mining licenses held by Namdeb extend from the Orange River on the border with South Africa to Douglas Bay, north of the town of Lüderitz. The deposits contained within the southern Namibian licenses represent the greatest known concentration of placer diamonds in the world.



*Aerial view of coastal mining operations*

Namdeb also holds two offshore Exclusive Prospecting Licenses to the south of the Kunene River in northern Namibia.

Diamonds were discovered near Kolmanskop in 1908, and mining operations were widely established by 1912. Sir Ernest Oppenheimer consolidated the operations in 1920 under the Consolidated Diamond Mines of South West Africa (Pty) Ltd. (CDM). Namdeb Diamond Corporation, a 50:50 partnership of the Government of the Republic of Namibia and De Beers was formed to replace CDM in November 1994. The mining is carried out in terms of state mining licences that expire in 2020.

Diamond deposits associated with marine beaches extending to the north of the Orange River were discovered in 1928. A progressive shift in the focus of prospecting and mining occurred as the true enormity of the discovery was recognised. CDM moved its operational base from Kolmanskop to Oranjemund in 1943, when production expansion focused on the area now known as Mining Area One (MA1).

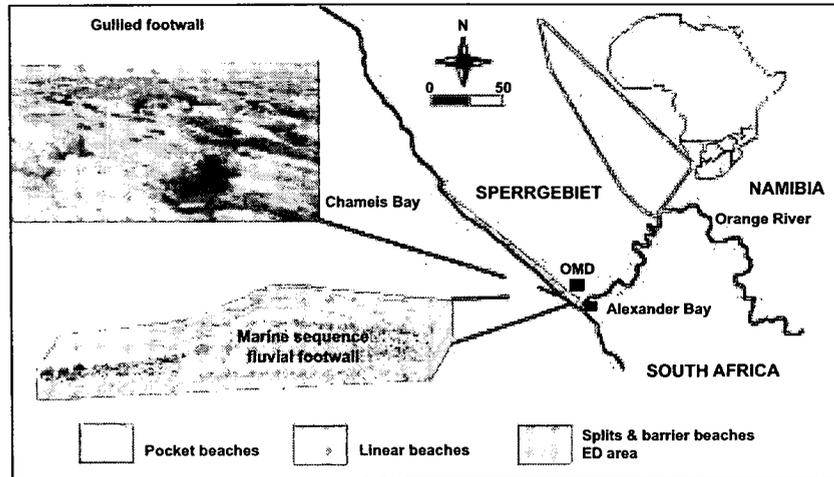
Given the mature state of mining operations in MA1, expansion projects have focused on the establishment of 'satellite' mines. A 100tph mobile plant previously used to evaluate some of the Orange River diamond resources was commissioned at Daberas during September 2000. The new Daberas Production Plant will be commissioned during 2001. Mining operations have been conducted intermittently at Elizabeth Bay since 1926 and most recently and up to the present since August 1991.

Namdeb currently has a business plan spanning 10 years, although prospecting continues, and the possibility of adding to the reserve base is good. Namdeb is currently on the NOSA safety system with MA1 being awarded a 5 star safety rating and the Northern Mining Area at Elizabeth Bay and the Orange River Mines both being awarded Noscar status. MA1 has been awarded the ISO 14001 accreditation for environmental management.

### 6.13.2 Geological Models Sampling and Resource Estimation

#### 6.13.2.1 Mining Area One (MA1)

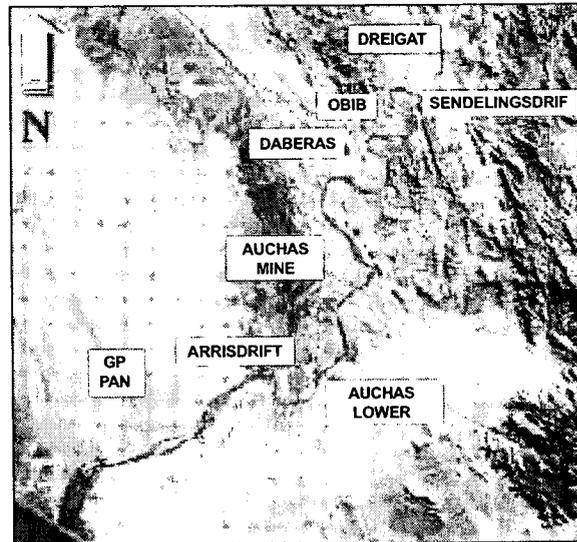
The MA1 geological model has been developed from a detailed understanding of factors that control the development of coarse gravel clastic beaches. In the south, spits and barrier beaches evolved in response to large volumes of material supplied to the coast by the Orange River. The physical character changes progressively to the north in response to less material being available.



*Geological model for onshore beach deposits in MA1*

Diamond concentration in the spit/barrier facies is controlled by the different natural processes that occur in the beach shoreface and back-barrier environments. These deposits are generally of lower grade but contain larger diamonds due to their proximity to the Orange River. Linear beaches are characterised by impressive footwall morphology consisting of wave-cut platforms with cliffs, gullies and potholes eroded in Precambrian schists. These features, called trapsites, locally enhance processes that concentrate diamonds to produce discrete high-grade zones. Pocket Beaches occur as discrete embayments. Diamond concentration within these environments is controlled by a combination of natural longshore transport and the presence of trapsites.

Strong emphasis is placed on the geological model in estimation of diamond resources in linear and barrier beach systems, where geological continuity can clearly be established. A moving average technique is used to interpolate between trenches to estimate the diamond resource. Estimation entails calculating grade (stones/m<sup>2</sup>), diamond size and resource thickness (volume) independently. Payability



*Spatial relationship of Orange River deposits*

and mineability scenarios are considered for conversion of resource to reserve. The only reserve category used on Namdeb mines is probable and in many instances the inferred category of resource is mined. The basic guidelines of the SAMREC code are followed, although the code is still in the process of being fully implemented on all of the Namdeb operations.

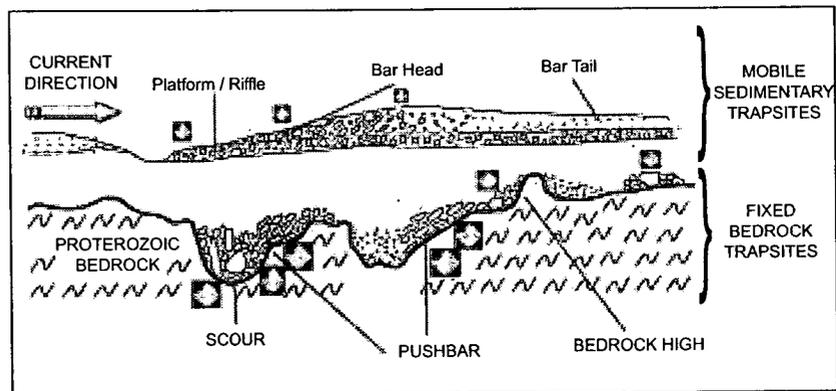
### 6.13.2.2 Inferred Mineral Resources

The inferred mineral resources were evaluated in the financial model using a probability of 60%. This factor is determined from years of mining notoriously difficult deposits due to their highly skewed diamond distributions and low grades. However, these mines have an established mining history and well developed geological models. The marine resources are highly dependent on recovery factors of both treatment and mining technology.

### 6.13.2.3 Orange River Mining Licence

The Orange River has deeply incised a course through the Richtersveld Mountains in response to base-level and climatic changes. Preserved as a number of terraces, the palaeovalleys consist of a series of sinuous reaches and meanders. Namdeb specialists and external consultants have studied the sedimentology and flow dynamics within the palaeovalley-fill sequences in great detail to construct a high-quality geological model.

The ancient Orange River system was characterised by extremely high-energy conditions at times. Two units are recognised in the Miocene-aged remnants. The basal unit consists of high-energy scour pool and riffle facies. The very high-energy conditions produced extremely rugged bedrock topography. Together with very large immobile obstacle clasts formed by slabs of bedrock eroded from valley walls, the irregular topography forms excellent fixed trapsites. Understanding of flow dynamics is important because the energy of the system was sufficient to periodically "flush" gravels out of scour pools, which were later filled by barren sands. The predictive model shows that diamond concentration is optimal in push-bar environments, immediately downstream of scour pools.



*Geological model for Orange River placers*

Reverse circulation drilling is used to define the palaeovalley morphology and to determine facies distribution throughout the sequences comprising the terraces. Strong emphasis is placed on the geological model in the estimation of diamond resources in the Orange River Mining Licence where geological continuity can clearly be established.

### 6.13.2.4 Elizabeth Bay Mining Licence

The Elizabeth Bay placer is contained within a basin that is open to the Atlantic Ocean in the south. Exotic pebbles prove that marine transgression has occurred into the basin in the past. It is possible that this has introduced diamonds supplied originally by the Orange River and carried northwards by

longshore transport. The weathering and erosion of now submerged palaeoshorelines preserved offshore of Elizabeth Bay, would also have provided diamonds for transport by the aeolian system during sea-level regression(s). Elizabeth Bay is the southern limit of the Namib Sand Sea (depositional) Basin. It is an important corridor for aeolian transport to the north, which has enabled the wind system to deposit a large body of aeolian grit containing diamonds within the basin. Periodically, ephemeral streams have operated, reworking the material.

A comprehensive re-evaluation of historical trench sampling data was undertaken between 1989 and 1990 using sample pits excavated with a hydraulic excavator. Samples were treated in a specially designed high-security sample treatment plant utilising dense media separation. Final recovery took place in a high-security prospecting laboratory. Onshore sampling pits in the vicinity of the Elizabeth Bay mine and surrounding deflation deposits are 10m<sup>2</sup> and mostly on a grid spacing of 100m x 100m. This sampling is generally of sufficient accuracy to enable estimation at an Indicated level of confidence. In the marine environment 4m<sup>2</sup> samples taken by divers are used to estimate the diamond content of specific sediment bodies in selected geological environments. In the deeper water (>30m) reverse circulation/percussion drill sampling has been used in a three sample per cluster arrangement making a total of 2.16m<sup>2</sup>. The latter is sufficiently accurate for estimation at an Inferred level and is supplemented by large rotary drill bulk sampling or 10m<sup>2</sup> sampling to increase confidence. No modifying factors are applied at Elizabeth Bay Mine.

### 6.13.3 Diamond Winning

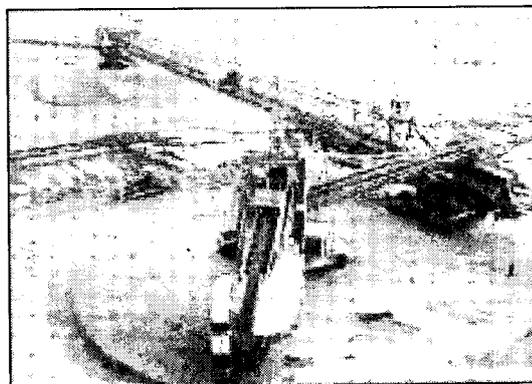
#### 6.13.3.1 Extraction

The mining method is typical of the West Coast on-shore placers in that strip mining is applied using a variety of methods including truck and shovel, bucket wheel excavators and dredging. The overburden is stripped in successive cuts to expose the diamond bearing gravel beneath; once the ore is depleted, the next cut is stripped, with the overburden being deposited in the leftover void.

The upper portion of ore (termed terrace ore) is pushed into piles or windrows by a large excavator or trackdozer and then loaded onto trucks for transportation to the nearest fixed treatment plant. The remainder of the ore in the gullies and potholes of the bedrock is removed by small excavators and manual sweeping crews, accumulated in piles and then also trucked to the nearest plant.

The stripping schedules planned at the mine site ensure that a variety of cuts are exposed at any one time to ensure that a good blend of material is available for the various plants.

Rehabilitation generally takes place concurrently with stripping as the voids are filled during the strip mining process. Dumps and voids that are left at the



*Bucketwheel excavator at Namdeb,  
operating behind a seawall*

beginning and end of a stripping sequence are profiled and smoothed by trackdozer to enhance their appearance and to facilitate re-vegetation. Elizabeth Bay, being a very shallow mine in an extremely windy environment, tends to require very little rehabilitation as it occurs naturally.



*Typical bedrock sweeping operations assisted by vacuum*

The treatment plants produce concentrates, which are transported to one of two main final recovery plants for x-ray separation and hand sorting. The dredge operation, which removes and treats very low-grade overburden while exposing ore, has a floating treatment plant. The small Orange River mines have integral recovery facilities at the treatment plants.

Long-term planning utilises a linear programme to assist in the selection of the stripping sequences and the blending of ore for each plant area. This ensures that the deposit is depleted in a responsible manner.

#### 6.13.3.2 Mining Area One (MA1)

##### **Namdeb Mining Area No 1**

###### *No 2 Main Treatment Plant*

The plant was commissioned in early 1970 and is in a fair condition, treating 620tph ROM through crushers, scrubbers and DMS. DMS concentrate is transported to the recovery plant by road. There is a medium level of conventional automation. The primary crusher section is due to be decommissioned towards the end of 2001, after which only tailings material will be treated.

###### *No 3 Main Treatment Plant*

Originally commissioned in the mid 1970s, this plant has been shut down and re-commissioned several times. It was last re-commissioned in 1987. The plant is in a fair condition, and has capacity to treat 800tph. It has a unique system for separating barren boulders from the ore using a 'boulder bounce plant'. The plant also has 100tph dump treatment facility which treats dump material from screening plants. DMS concentrate is transported to the recovery plant by road. There is a medium level of conventional automation. The remaining life is 2-3 years and a plant closure plan is in place.

###### *No 4 Main Treatment Plant*

This plant was commissioned in 1964 and upgraded in 1973 when a milling complex and boulder bounce were added. The front-end was modified in 1999 to treat only conglomerate-free material received from in-field screening. The plant treats 700tph ROM through screens, scrubbers and DMS (there is no crushing section). DMS concentrate is transferred directly to the recovery plant. There is a medium level of conventional automation. From 2002 onwards only tailings dumps will be treated.

*Recovery Plant*

The plant was commissioned in the early 1970s, and last modified in 1989 when an x-ray plant annex was added. During the early 1990s the control function and surveillance was upgraded to medium-level automation. The plant is in good condition, and treats DMS concentrates from all the plants in MA1 utilising x-ray and permroll technology to produce diamond concentrate for hand sorting in glove boxes. There is a medium level of conventional automation. The final sorting facility is being modified to minimise diamond breakage.

*Dredge and Floating Treatment Plant*

The dredge and floating treatment plant were commissioned in 1997. The floating treatment plant was upgraded in October 2000 through the addition of an elutriator to improve throughput. The dredge has a semi-automated cutter dredge with dredging depth of 15m at 2,500tph. The dredge delivers product to a floating treatment plant for screening and DMS. DMS concentrate is transferred by barge and road to the recovery plant. A medium level of conventional automation exists on this plant. An improvement of trommel screen efficiencies to increase flexibility is currently under investigation.

**Orange River Mining License**

*Daberas Mine Treatment Plant and recovery*

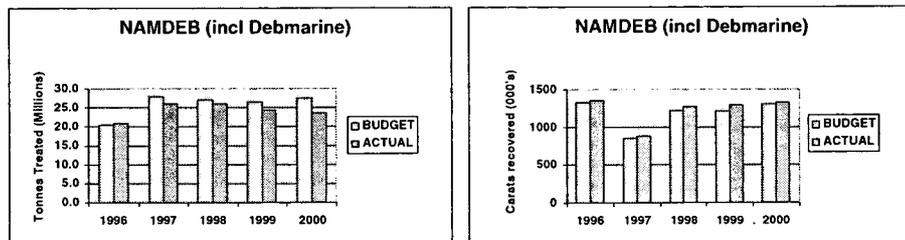
This plant is due to be commissioned early in 2001. It has been designed to treat 600tph ROM through screen, scrubber and DMS. The concentrate generated by this plant will be transferred directly to the recovery plant for x-ray recovery and canning. The plant will be fitted out with a medium level of conventional automation.

**Namdeb Elizabeth Bay Mine**

*Treatment and Recovery plant*

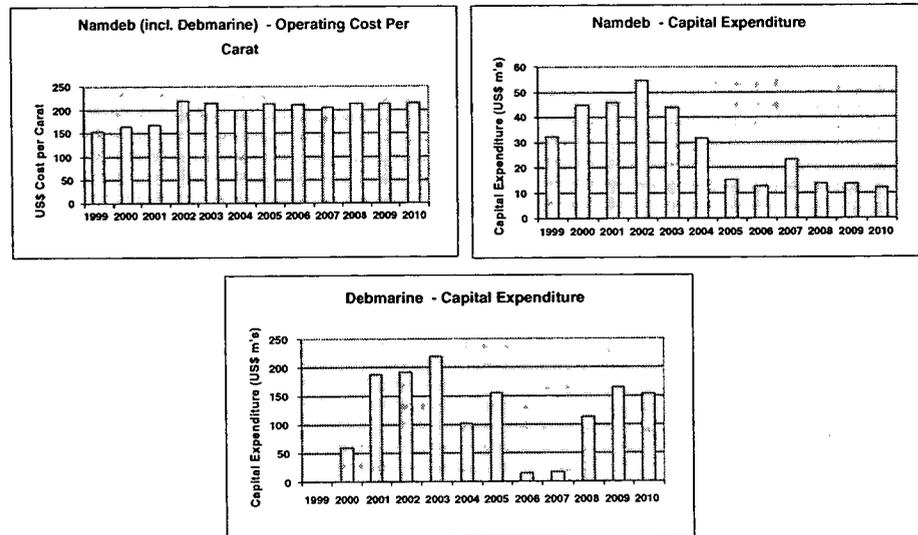
The plant was commissioned in 1990. A Recovery facility was commissioned in 1999, and a primary crushing section was installed in 2000. The plant is designed to treat 666tph ROM through crusher, scrubber and DMS. Concentrate is transferred directly to the recovery for x-ray and canning. There is a medium level of conventional automation. Opportunities to improve crusher efficiency are currently under investigation, and a resource extension evaluation is currently in progress.

**6.13.4 Current Production Trends**



Namdeb increased budget tonnage throughput in 1997 from around 20Mtpy to approximately 27Mtpy with the introduction of the dredge. Actual production has fallen somewhat short of the target due mainly to operational problems with the dredge. However, carat production has consistently achieved targets of approximately 1.3Mcts per annum.

### 6.13.5 Operating and Capital Expenditure



The graphs show the operating cost per carat recovered and capital expenditure for the operation in nominal US\$ terms with 1999 and 2000 depicted as actuals and 2001 and 2010 are forecasted. Capital expenditure fluctuations are due to the establishment of mining and treatment infrastructure at new mining areas, specifically the pocket beaches and overburden dumps in 2002 to 2003 and Sendelingsdrif in 2007. The operating cost per carat increases in 2002 due to a reduction in the overall recovered grade.

### 6.13.6 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mine is contained in the table below. Also shown is the planning revenue for the year 2001.

Namdeb incl. Debmarmine	Metric tonnes (millions)	Metric m <sup>2</sup> (millions)	Grade (cpht)	Grade cts/m <sup>2</sup>	Carats (millions)
Probable reserves	59.4	6.8	1.5	0.19	2.2
Indicated resources	73.6	18.8	2.3	0.20	5.4
Inferred resources	301.7	23.9	1.5	0.17	8.6
<b>Total reserves and resources</b>	<b>434.7</b>	<b>49.5</b>	<b>1.7</b>	<b>0.18</b>	<b>16.2</b>

\*At bottom cut-off sizes up to 3mm, a planning revenue of US\$322 per carat. Mining at Atlantic 1 has a bottom cut-off size of 2mm and a planning revenue of US\$298 per carat. Marine resources and reserves are based on a cut-off grade of 0.1cts/m<sup>2</sup>. Namdeb is still in the process of fully implementing the SAMREC code. At the end of 1999 Namdeb had plans to mine deposits and resources (overburden dumps) which were believed to be payable, but now at best, are regarded as inferred resources, because more sampling is required. Since they are only estimated at inferred and deposit levels, they have been, in accordance with the SAMREC code, removed from probable reserves, and where applicable, added to inferred resources.

## 6.14 De Beers Marine

Namdeb employs De Beers Marine Namibia as its contractor to exploit its Atlantic 1 concession. An overview of the De Beers Marine operations, in a similar format to the other mines, follows.

### 6.14.1 Background

The diamond resources generated through deep-water exploration from 1974 to 1982 led to the formation of De Beers Marine in 1983. Deep-water mining operations commenced in 1991, when 29kcts were produced from Atlantic 1 Mining License. Production expanded rapidly with the development of the mining fleet. Diamond resources are developed annually as part of an ongoing contiguous exploration programme.

The diamonds and clastic gravels comprising the orebody were introduced to the continental shelf during sea-level regression(s) over at least the last 50 million years. High-energy shoreface erosion during repeated regression and transgression of the sea-level across the shelf resulted in the progressive concentration of diamonds. The final period of shoreface incision occurred 20,000 years ago and resulted in the formation of submerged coarse clastic beaches and lag gravel orebodies containing diamonds. The bedrock consists of Tertiary and Cretaceous-aged sequences of clay, sand, sandstone and conglomerate. Overburden consists of Holocene silt and fine-grained sand.

Although trapsites are associated with rocky outcrops formed by shoreface erosion of earlier shelf sequences, trapsites are not developed on the scale seen onshore at Namdeb's operations. Consequently, discrete, high-grade concentrations are less commonly developed, and diamonds are more dispersed. Although preserved beach sequences can be identified using remote sensing techniques such as sidescan sonar, the incorporation of diamonds into sheet-like bodies of lag gravels strewn over wide areas of the shelf produces extensive deposits characterised by lower diamond grade.

Reconnaissance sampling and the development of inferred diamond resources is achieved using a reverse circulation/percussion-type drill system that delivers a sample of 0.72m<sup>3</sup>. Three sample holes are clustered to produce an appropriate sample support size. Sample spacing is varied depending upon the level of confidence required. Inferred resources are generated using samples on a line spacing, which varies from 100m to 200m and a sample spacing of 30m.

Indicated diamond resources are developed using a large bore rotary drill deployed from the *M.V.Coral Sea*. This delivers a 10m<sup>3</sup> sample. Samples are taken on a 50m or 100m grid, depending upon the nature of the orebody being evaluated.

Sample material is airlifted directly to surface and treated under high-security in an onboard treatment plant. Final recovery is effected in a secure onshore prospecting laboratory.

The offshore diamond deposits are locally estimated using geostatistical methods specifically designed for discrete particle distributions. The estimation methodology is based on mapping homogeneous geological domains and geostatistically calculating stone density and stone size independently. All estimation methodologies and techniques have been evaluated and assessed by independent experts to ensure their applicability and correctness. For practical mining purposes, the orebody is assumed to be two-dimensional. The Atlantic 1 diamond resources are classified according to the guidelines specified in the SAMREC code. Standards and criteria for the density and quality of geological and sampling data have been defined to obtain the required confidence level for each resource category. Geostatistical simulation models have been used to confirm the confidence criteria for diamond resource categories.

For the various geological domains within the resource, the associated mining performance is assessed and extraction and recovery factors determined. The mining rate and associated mining costs are also estimated for the mineable portion of the resource. Consolidated mining units or panels (300m x 300m) are then created. The estimated contribution (estimated diamond revenue minus the estimated mining cost) of each panel is determined. An economic cut-off of positively contributing blocks is used. Complex linear programs are used to spatially optimise resources to maximise the diamond contribution from the reserve.

Debmarine operates on the NOSA safety system 5 star rating and has a Noscar award. They have also received ISO 14001 accreditation for environmental management.

## **6.14.2 Diamond Winning**

### **6.14.2.1 Extraction**

The Debmarine Namibian operations are fairly unusual, as diamond-bearing deposits of ancient marine beaches are mined at up to 140m water depth. Debmarine has pioneered these techniques over the last 20 years. The deposits that are currently mined lie off the Namibian coast, and the production is therefore under contract, and credited, to Namdeb. There are also deposits off the South African Coast, for which De Beers holds prospecting permits. However, these have not been prospected and evaluated to the extent of the Namibian deposits and have not as yet been demonstrated to be viable.

The mining methods applied are conducted from a fleet of four ships, mainly adapted from oil drilling and currently two mining techniques are available. These are the vertical and horizontal methods. The vertical method, the original one to be used, consists of a large-diameter drill bit lowered onto the seabed by a drill stem with weight and torque applied through a kelly on the ship, very similar to oil drilling technology. Airlift brings the drill chips and diamonds to surface where they are fed through a diamond recovery plant. The horizontal method involves a crawler mounted mining tool, connected to the ship by an umbilical electrical cable, which is capable of lateral movement along the seabed. The tool mines in strips airlifting the ore to surface via hoses. This method involves less movement of the vessel and is therefore potentially more productive.

Namdeb currently has resources in the main Atlantic 1 concession off the Namibian coast for approximately 10 years of production at current levels. Prospecting work continues in Atlantic 1, the outcome of which is uncertain. Mining of the deposit is complex and although every attempt is made to optimally exploit the deposit, high risk is prevalent as reflected in the low probability assigned in the factor used for evaluating inferred mineral resources.

### **6.14.2.2 Treatment**

Debmarine Namibia owns 4 production vessels that operate in the Atlantic 1 licence area. In addition Debmarine South Africa owns a dual purpose exploration and production vessel and a survey vessel that supply prospecting services to Debmarine Namibia. Each vessel has a process plant aboard that has features to treat specific types of deposit, e.g. clay, sand, or high shell content.

The typical marine flowsheet, with the exception of the MV !Gariep, which has scrubbing prior to DMS, comprises four major sections:

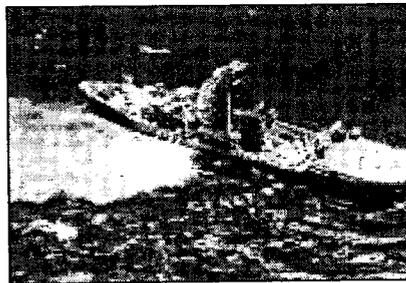
- primary screening;
- low density DMS plant;
- high density DMS plant; and
- recovery.

Material from the seabed is air-lifted to the surface, by the injection of air into the drill string just above the drill bit, for further processing in the vessel-based treatment plants. The airlift deposits the slurry into a de-aerating (DA) bin allowing air to escape to the atmosphere. Material from the DA bin gravitates to a primary screening section having a rated capacity of 400tph. In the primary screening section, fines (-2mm) and oversize removal (+19mm) takes place. The product stream (2 to 19mm material) from the primary section gravitates or is pumped to a de-watering prep screen prior to the Low Dense Medium separation (LDMS) circuit. The LDMS was originally instituted to remove excessive amounts of shell and clay, prior to proper material concentration.

Material from the prep screen is fed directly into a low-density medium sump, from which material is pump-fed to dense medium cyclones. The LDMS circuit has a rated capacity of 50tph. Separation effected by the cyclones splits the feed stream into floats and sinks. Floats material is ejected overboard, either by gravity or by means of conveyors. Sinks material, dependant on composition, will either be routed immediately to the high density medium separation (HDMS) circuit, or be routed to the milling and crushing circuit if a high shell content is observed.

The crushing circuit consists of a 30tph Barmac crusher and a 10tph ball mill. Material from this circuit, following the removal of crushed shell by screening, is routed to the HDMS circuit.

Product from the LDMS and crushing circuit is fed into the mixing boxes of the HDMS circuit that pump-feed smaller dense medium separation cyclones. The HDMS circuits are generally rated at 25tph. Floats material from this circuit is ejected overboard, whilst sinks material passes on to the enclosed recovery plant.



*MV Debmar Pacific*

Inside the recovery plants, rated at 0.6tph, material is dried in either hexagonal drum or pan fed infrared dryers. The dry material passes over a sizing screen separating the feed stream into 2 to 8mm and 8 to 19mm fractions. These fractions are allowed to cool in bins before being separately processed through an x-ray machine. Following one retreatment cycle, tailings from the x-ray machine are ejected overboard. Concentrate from the x-ray machine gravitates to the canning machine, where the final product is sealed in bar-coded cans by an automated canning process.

#### **MV Douglas Bay (Debmarmine SA)**

This vessel was commissioned in 1986 as a deep-water sampling vessel. The process is specifically designed for high efficiency recovery from samples. The equipment is in a fair condition. The vertical mining method is used to generate a headfeed of 300tph through screens, roll crusher, DMS, pan drier and x-ray recovery to canned product. A low level of conventional automation exists within the plant. A project to convert this vessel for mid-water mining is planned to commence in mid 2002.

#### **MV Coral Sea (Debmarmine SA)**

This vessel has the ability to be deployed in either a sampling or production

mode. It was commissioned in 1990 and upgraded in 1997. The vertical mining method treats 400tph through screens, crusher, ball mill, DMS, pan drier and x-ray recovery to canned product. A medium level of conventional automation is installed in the process plant. Process efficiency is good and plant condition is fair. The process plant is due for upgrading in the latter half of 2002.

#### **MV Grand Banks (Debmarine Namibia)**

The MV Grand Banks was commissioned in 1990, and is scheduled for an upgrade during 2001/2002. Even though the plant is old, well-controlled operation has ensured a continued high level of process efficiency. A vertical mining method delivers 400tph, which is treated through screens, crusher, ball mill, DMS, drum drier and x-ray recovery to canned product. A medium level of conventional automation is deployed in the plant. A project is underway to install a ball mill and to upgrade the in line pressure jig during 2002.

#### **MV Debmar Atlantic (Debmarine Namibia)**

This vessel was commissioned in 1995, and has a high process efficiency. The plant is in good condition. The vessel makes use of vertical mining methods and has a capacity of 400tph. The plant equipment includes screens, crusher, ball mill, DMS, drum drier, x-ray recovery and a final product canning machine. A medium level of conventional automation is used to control and operate the plant. Upgrade of the treatment plant for improved liberation and throughput is planned for 2002.

#### **MV Debmar Pacific (Debmarine Namibia)**

This vessel which was commissioned in 1997, has good process efficiency and is in good condition. It is also a vertical mining vessel and has a capacity of 400tph. The onboard plant includes screens, crusher, ball mill, DMS, drum drier, x-ray recovery and a final product canning unit.

Conventional automation is used to monitor and control the process. Given the plant's good condition, an upgrade to improve liberation and throughput is only planned for late 2003.

#### **MV !Gariiep (Debmarine Namibia)**

This vessel was fitted out and commissioned in 1999. The plant is still in very good condition. This vessel uses the horizontal mining method, and has a crawler which is capable of delivering 400tph to the on board plant. The plant equipment includes; screens, crusher, scrubber, ball mill, DMS, drum drier, x-ray recovery and a final product canning unit. Commissioning difficulties led to substantial modification to the underwater crawler and although production had improved there are further major modifications required to the mining tool to achieve the original specification with regard to throughput and carat recovery.

### **6.14.3 Current Production Trends**

De Beers Marine has consistently met budgeted carat production targets. Various improvements in mining technology as well as the introduction of a new mining vessel in 1999 have resulted in the progressive increase in carat production.

## 6.15 Namaqualand Mines

### 6.15.1 Background

Namaqualand Mines is responsible for exploration and mining operations within the mineral prospecting and mining licences held by DBCM from South of Port Nolloth to the Olifants River. The coastal licenses include the surf zone up to 100 cape feet (30.5m) from the high-water mark. Together with diamond placers in southern Namibia, these deposits contribute to the unique economic significance of the diamond placer province represented by the "Diamond Coast" of Southern Africa.

Diamonds were discovered on the Namaqualand coast at Oubeep in 1925. Further discoveries on the farm "Kleyne Zee" in 1927 led to the property being offered to the Government in 1928. This was rejected, and the Cape Coast Exploration Company (CCEC) purchased the property in 1928. Sir Ernest Oppenheimer chaired this company from 1929. Mining has occurred intermittently since 1930.

An aggressive primary exploration programme to locate and develop new diamond resources for Namaqualand Mines realised its first successful delivery in 1998.

The operations have a Chamber of Mines 5 star safety rating and are presently in the process of obtaining ISO 14001 environmental accreditation.

### 6.15.2 Geology and Sampling

#### *Buffels Inland and Marine Complex*

The Buffels River is one of the major Namaqualand fluvial systems supplying clastic material, including diamonds, to the high-energy Atlantic coast. Sedimentological observations indicate that the region has been considerably wetter in the past, when large volumes of material would have been transported to the coast. Discontinuous channel remnants representing different periods of fluvial incision since the Cretaceous period are preserved along the course of the river system. Changes in sea-level contributed to the system alternately aggrading and incising along its course, in addition to any influence of local tectonics.

Large boulders of gneiss derived from erosion of the escarpment form obstacle clast trapsites in the vicinity of Langhoogte on the Buffels River, but clast size diminishes rapidly downstream towards the west. Diamond concentration downstream of the escarpment is controlled by the flow dynamics through the sinuous river course and the presence of irregular bedrock topography, which forms fixed trapsites. Processes associated with the formation of gravel bars contribute to the presence of mobile or transient trapsites.

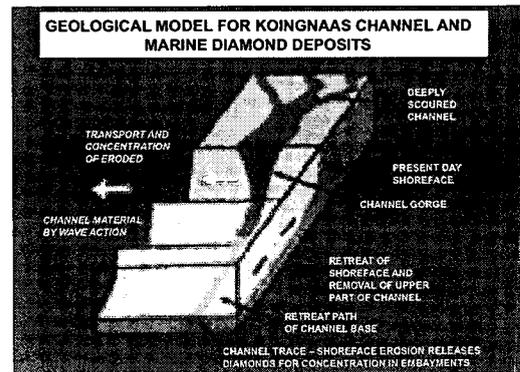
#### *Koingnaas Channel and Michell's Bay*

Fluvial systems in Koingnaas and Michell's Bay differ in character from the Buffels River. These systems are predominantly infilled with clay, but the basal gravels contain diamonds. The channels, which formed in the Cretaceous and early Tertiary periods, contain quartz-rich gravels typical of tropical climatic regimes, and the factors controlling diamond distribution resemble those associated with present-day fluvial systems in Ghana, for example.

Material supplied to the Atlantic coastline has been reworked extensively by the high-energy surfzone conditions and transported predominantly to the north by longshore currents. Fixed trapsites in the form of wave-cut platforms associated with gullies and potholes significantly enhance the capacity of natural processes to concentrate diamonds. Fluvial channels have locally cut through and eroded the

palaeoshorelines preserved onshore, redistributing diamonds out on to the continental shelf to the west.

The marine deposits at Koingnaas and Mitchells Bay are closely associated with the presence of channel remnants. Diamond concentration is upgraded considerably where the high-energy shoreline has been able to erode to the base of the channels, reconcentrating the diamonds within the resulting embayments. Large obstacle clasts derived from the gneissic bedrock form trapsites, further enhancing concentration processes.



#### *Sampling On-shore Deposits*

Remote sensing is used extensively together with probe drilling to locate and delineate palaeochannel remnants of the Buffels River. Historically, large diameter auger systems with a 1 m diameter auger head have been used to sample to 40m. Current targets at 60 to 80m are beyond its capacity. Following tests with a hydraulic grab system, a large diameter bucket auger system (2.5m diameter) is currently being used. Samples are treated in a specially designed sample treatment plant. Final recovery is completed in the high-security Namaqualand Mines Geolab.

Detailed geostatistical studies have demonstrated the criticality of sample support size due to the low grade of remaining marine sequences. Consequently, large bulk samples are used to assess the potential of remaining blocks of ground. The sample treatment plant is currently being upgraded with crushing facilities to improve the integrity of results from marine deposits affected by cementation. Emphasis is placed upon the reliability of knowledge incorporated in the geological model. In view of the high cost of sampling at depth, the geological continuity of facies is an important criterion for assessment of results and the classification of resources.

#### *Marine Deposits*

The fluvial systems preserved on the Namaqualand coastal plain have supplied diamonds to the continental shelf during marine regressions. Substantial erosion of terrigenous continental shelf sequences has released diamonds for concentration by shoreface and shallow-marine transport. Although trapsites are locally developed in outcropping cemented shelf sediments, sand and clay footwalls commonly occur. The region is characterised by a low-grade but widely distributed diamond resource.

Sampling and estimation methodologies applied to the South African Sea Areas are identical to those applied in the Atlantic 1 Mining Licence by Namdeb. Diamond resource classification criteria are also similarly applied.

#### *Inferred Mineral Resources*

The inferred mineral resources were evaluated in the financial model using a probability of 60%. This factor is based on the fact that placers and marine deposits are notoriously difficult to evaluate due to their highly skewed diamond distributions and low grades. However these mines have an established mining history and well-developed geological models which are often highly indicative of grade.

### 6.15.3 Diamond Winning

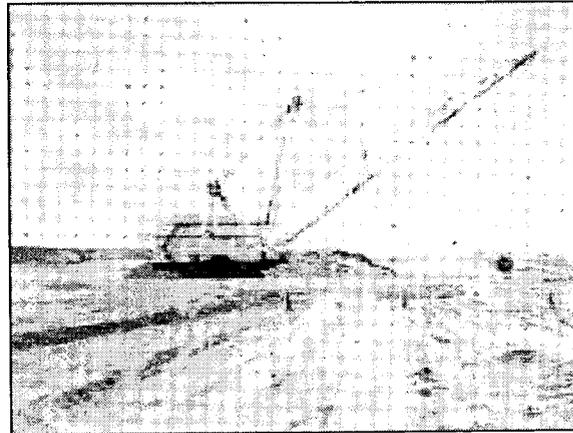
#### 6.15.3.1 Resource Estimation and Production Planning

Namaqualand Mines operates a unique ore resource accounting system which was specially developed to suit the two-dimensional nature of the deposit. It consists of two pieces of software, an off the shelf auditing module called Reserver which is combined with a locally developed graphical module called Shapes. The system combines the ore resource block model as defined by the geology department with a two dimensional graphical map (excavation model) to compute all the ore resource/depletion/rehabilitation information required by legislation.

The basic guidelines of the SAMREC code are followed, although the code has not been fully implemented. Only inferred and indicated resources are delineated, as the extremely erratic nature of alluvial diamond mineralisation makes measured resource delineation impractical. Due to the extremely high "nugget effect" in the deposit as a result of the erratic trap site development on the marine terraces and in the fluvial channels, arithmetic averages have traditionally been used to delineate aerial grade and stone size. Linear geostatistical methods are now being investigated for the new Inferred Resources that were added in 2000. Using these new methods, geological interpretation and additional sampling it is hoped much of this material can be upgraded to indicated resources in 2001.

#### 6.15.3.2 Extraction

The mining method is strip mining. Overburden, ranging in depths from almost zero to 40m, is removed in successive strips, or cuts, to expose the diamond-bearing gravels (ore) which lie on the bedrock and range in thickness from around 0.5 up to 2m. Stripping is conducted by two methods: 1) dragline, and 2) truck and shovel.



*Overburden stripping*

A total of approximately 28Mt is stripped annually. The majority of the ore is gathered into piles by bulldozer and loaded into trucks for transportation to one of 5 main treatment plants. Small excavators and manual sweeping crews remove the remainder of the ore, lying on the bedrock, until the bedrock is completely clean. The bedrock ore is also gathered into piles for transport to the treatment plant. A total of approximately 6Mt of ore is treated annually. Ore is mined from a variety of cuts at any one time to ensure a good blend of material for the plant. Once a cut has been depleted down to the bedrock the next cut can be stripped, with the overburden being deposited into the void of the previous one. A custom-designed linear programme assists in the selection of stripping cuts and the long-term ore blend for each plant area. The process ensures that the deposit is mined efficiently and responsibly.

The plants treat the ore down to a concentrate, which is transported to the final recovery for x-ray separation and hand sorting.

Currently the SBP predicts exhaustion of reserves in 2009. However, prospecting continues both within the current mine area and beyond. Renewed emphasis on areas of prospecting shows promise of replacing reserves within the next five years at a rate exceeding production.

### 6.15.3.3 Treatment

#### *Tweepad Treatment plant*

This plant was commissioned in 1978 and has been shut down and re-commissioned several times. It was last re-commissioned in 1996. This plant uses proven technology and is in good condition. The plant treats 550tph ROM through crushers and DMS. There is a medium level of conventional automation. Investigations are underway to install new crushers to reduce maintenance cost and improve liberation.

#### *AK3 Treatment Plant*

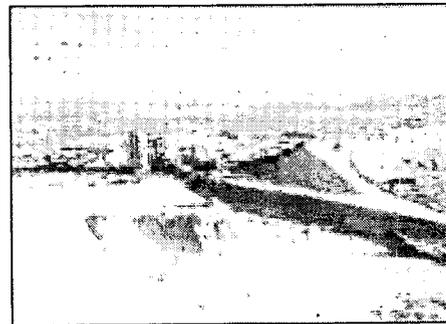
Originally this plant was commissioned 1972 and subsequently de-commissioned between 1982 and 1986. The plant is in good condition and currently treats 500tph ROM through crushers and DMS. There is a medium level of conventional automation.

#### *Langhoogte Treatment Plant*

This inland plant was commissioned in 1967 and utilises pan technology that, although old, is well suited to the wide variety of river sediments that it is required to treat. A DMS section was added in the mid 1990s, and a modern crusher was installed in 1999 to improve liberation. This plant is in good condition and has a headfeed capacity of 80tph. There is a low level of conventional automation.

#### *Koingnaas Treatment Plant*

Commissioned in 1978, this plant uses proven technology. The plant is in reasonable condition and treats 200tph ROM. There is a low level of conventional automation and investigations are currently underway to treat clay-rich ore and improve liberation to increase revenue per tonne treated.

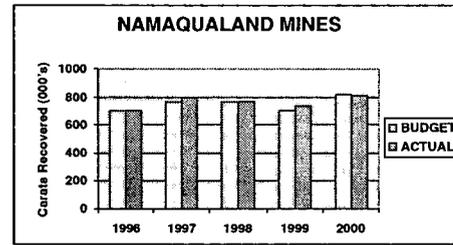
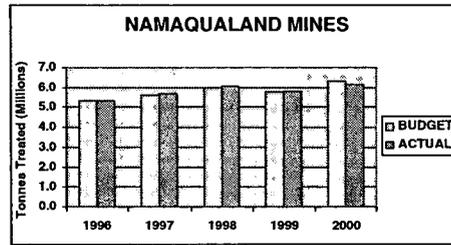


*View of Koingnaas*

#### *Recovery and Sorthouse*

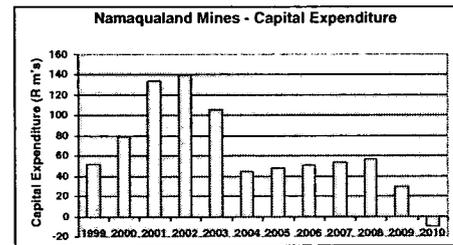
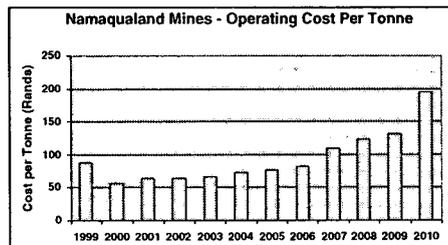
Commissioned in 1978 and modified in 1988 to improve recovery efficiency. In 1999 a new plant supervisory control and data acquisition (SCADA) system was installed. This has resulted in increased diamond recovery efficiency and enhanced product security. The plant treats DMS concentrates from all the plants upstream utilising x-ray and permroll technology to produce diamond concentrate for hand-sorting in glove boxes. A diamond transportation system has been installed in the final sorting section to reduce diamond breakage.

### 6.15.4 Current Production Trends



Improved efficiency and the introduction of infield screening has resulted in a 13% rise in tonnage treated between 1996 and 1998. The budgets were reduced in 1999 due to lower demand for diamonds. However, 2000 saw the tonnage treated target again increased beyond that of 1998. Carat production has also increased.

### 6.15.5 Operating and Capital Expenditure



The graphs show the operating cost per tonne treated and capital expenditure for the operation in nominal Rand terms with 1999 and 2000 depicted as actuals and 2001 to 2010 are forecast figures. Capital expenditure fluctuations are due to the replacement of mining equipment and exploration expenditure. The operating unit costs increase as the mine approaches the planned closure in 2010.

### 6.15.6 Mineral Resource and Reserve Classification

The mineral resource and reserve classification for the mines is contained in the table below. Also shown is the planning revenue for 2001.

Namaqualand Mines	Metric m <sup>2</sup> (millions)	Grade (cts/m <sup>2</sup> )	Carats (millions)
Probable reserves	17.4	0.37	6.4
Indicated resources	18.2	0.06	1.1
Inferred resources	16.1	0.34	5.4
<b>Total reserves and resources</b>	<b>51.7</b>	<b>0.25</b>	<b>12.9</b>

\*At a bottom cut-off size up to 2mm, a planning revenue of US\$127 per carat (including Koingnaas).

## 7. Sales and Marketing (DTC)

### 7.1 Overview

The DTC is the marketing arm of the De Beers Group of companies. It includes The Diamond Trading Company Limited, incorporated in England and Wales, The Diamond Trading Company (Pty) Limited, incorporated in the Republic of South Africa and associated companies within the De Beers Group. It purchases, sorts, values and markets rough diamonds mined by the De Beers Group as well as those from third-party sources.

The DTC operates a selling system known as Sights, which are held ten times a year. The DTC's clients are known as sight holders.

In July 2000, the DTC announced the launch of its Supplier of Choice strategy, aimed at driving growth in demand for diamond jewellery.

### 7.2 Extent of Operations

The DTC comprises a number of companies within the De Beers group that purchase, sort, value and market approximately two-thirds by value of the world's annual supply of rough gem diamonds. The DTC's primary sales outlet is in London; there are additional offices in Johannesburg and Luzern.

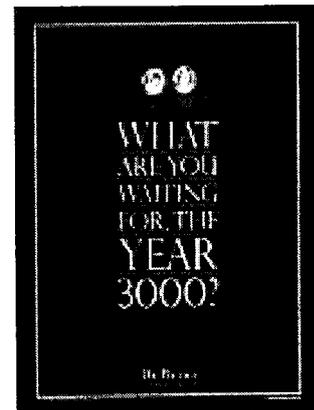
As well as marketing diamonds from the De Beers Group producers, the DTC also purchases and sells rough diamonds from third-party producers on a contractual basis. The most important of these arrangements are a trade agreement with the Russian state producer company, Alrosa relating to Russian production, and an agreement with BHP relating to the Ekati mine in Canada.

Whilst the DTC also used to purchase diamonds on the open market, it ceased all open-market purchases in December 1999 in order to ensure that, in compliance with United Nations Resolution 1173, it did not purchase diamonds from any area in Africa controlled by forces rebelling against the legitimate and internationally recognised governments of relevant countries (so-called 'conflict diamonds'). Furthermore, the DTC guarantees that no diamonds that it sells are in contravention of United Nations Resolutions 1173, 1176 or 1306.

The DTC seeks to implement the best working practices in relation to skills and technology. The company is currently developing a sophisticated stock management system that will increase its ability to monitor the flow of diamonds through its purchasing, sorting and valuing processes.

In addition to its sorting, valuation and sales activities, the DTC has for many years made significant investment in generic diamond marketing and promotional expertise. The De Beers Group began generic diamond advertising and promotional campaigns in 1939. Since then, its activities in this area have been successful in increasing diamond sales, creating new interest in diamond jewellery and developing new markets. This continues today through the DTC, which this year will spend approximately US\$180 million promoting diamond jewellery in 18 languages, in 16 countries around the world.

The Group, through its separately managed Diamdel subsidiaries, also supplies goods on the secondary market to diamantaires including those who wish to purchase smaller quantities of rough diamonds or who require specialist or niche assortments.



*Generic advertising*

### 7.3 Sorting, Valuation and Sales

Before marketing, diamonds are sorted and graded. The DTC has developed a highly skilled and sophisticated sorting process which ensures that a consistent range of products is supplied to its sightholders over time.

The DTC has major sorting offices in Kimberley, Windhoek and London, with additional facilities in Antwerp and Luzern. Debswana's diamonds are sorted in Gaborone by Debswana's diamond sorting subsidiary BDVC. Each month, the DTC's diamond sorters handle many millions of carats of rough diamonds that are sorted by size, shape, colour and quality into some 16,000 categories. Each stone is valued according to its individual characteristics and at the current DTC selling price for that category. Through its Research and Development department in Maidenhead in the UK, the DTC has developed a family of technically advanced machines that perform many of the sorting tasks required.



Once the diamonds have been sorted and graded, and automatically priced according to the DTC's price list, they are blended into a 'selling mixture' in order to give sightholders access to a range of goods which reflect the world-wide nature of the DTC's sources of production. The selling mixtures are divided into 'boxes' which contain specific and appropriate ranges of rough diamonds tailored to an individual sightholder's needs.

In compiling boxes, the DTC balances two imperatives. On the one hand it needs to manage its stock of rough and sell a balanced range of goods. On the other hand, it also needs to develop assortments that meet its sightholders requirements.

### 7.4 Sightholders

Sightholders can be categorised broadly into manufacturers, dealers and preparers. Some sightholders carry on a combination of these functions, and most sightholders are active at more than one level of the diamond pipeline. Rough diamonds are purchased by manufacturers (who cut and polish rough stones) and by dealers specialising in supplying rough diamonds to the secondary market. The majority are based in the traditional cutting centres of Antwerp, Mumbai/Surat, Tel Aviv, Johannesburg and New York. Some rough diamonds are purchased by specialist preparers who partially process the stones by sawing or cleaving them in preparation for the cutting and polishing process.

Most sightholders are represented by their brokers who act as the interface with the DTC. Around 80% of the DTC's sales occur at the London sights; the remainder are split between Johannesburg and Luzern. Only South African sightholders attend the Johannesburg sights.

The DTC is a 'cash' business; sightholders pay for their goods before they are despatched from the relevant Sight office.

### 7.5 Supplier of Choice and the "Forevermark"

De Beers recently announced a fundamental change in its approach to the market and the operation of the DTC. While the DTC was highly successful when it was first established (in enabling the industry to survive the economic crisis of the 1930s), market conditions are now significantly different.

In response to these changes in market conditions, De Beers announced its Supplier of Choice initiative in July 2000. The focus of the initiative is to drive growth in consumer demand for diamond jewellery. One of its aims, therefore, is to develop DTC's business relationships with its sightholders in a manner which will encourage long-term growth at the retail level and will

produce a sustainable increase in rough diamond demand, with a focus on meeting the requirements and expectations of consumers. At the same time, the formalisation of these relationships will result in the introduction of greater transparency and certainty in supply terms.

One of the key aims of Supplier of Choice is to encourage sightholders to take a more proactive role in promoting diamonds as a product at the retail level. Under Supplier of Choice, the DTC will make its marketing expertise available and may provide financial support to assist clients to develop their own marketing campaigns. It will also offer technical support and act as a consultant, exploiting its extensive market research.

The Supplier of Choice initiative, which will be subject to review by the European Commission, will establish a fair and objective basis for the allocation of available supplies of rough diamonds. This will support the investment and development activity required to grow the diamond jewellery business and promote best practice principles thereby enabling diamond jewellery to compete effectively against other luxury goods and to ensure that consumers can rely with confidence on the skill and integrity of the diamond industry.

The long-term nature of the DTC's Supplier of Choice initiative means that the transition from the market perception of the CSO as a traditional 'market custodian' in its role as supplier of last resort will be evolutionary. Since Q4 2000, the gradual downturn in global economic indicators and consumer confidence, especially in the United States, has resulted in a reappraisal of the short-term diamond consumer market, recognising that Supplier of Choice is in a nascent stage.



*The DTC logo  
incorporating the*

As part of the De Beers Group's ongoing review of its operations, it is continually seeking to develop new programmes that are additional to the new Supplier of Choice arrangements. As part of this process, DTC intends to develop a new trademark, the Forevermark, from which it intends its sightholders, and their retail customers, will benefit.

The "Forevermark" will symbolise the De Beers Group's commitment to integrity by the adoption of the highest professional and ethical standards throughout a network of partnerships that will bring the best diamonds to the best retail outlets.

In addition to changes to its supply arrangements, the DTC has developed best practice principles to promote and encourage high industry standards; these principles and standards are a key element to the new supply arrangements. The DTC and its sightholders will be bound to observe principles designed to ensure that customers can rely with confidence on the professional and ethical standards and technical skills of the diamond industry. The following business practices have been defined as being unacceptable:

- buying and trading rough diamonds from areas where this would encourage or support conflict or human suffering;
- the use of child labour;
- practices which intentionally or recklessly endanger or harm the health or welfare of individuals; and
- conduct which conflicts with the highest professional, ethical and technical standards and which would undermine consumer trust and the reputation of the gem diamond industry.

## 7.6 Supply/Demand models and forecasting

### *Methodology*

In order to help plan its strategy for the future, De Beers formed the Supply/Demand Management Committee. One of the tools that it uses is a proprietary model designed to approximate the worldwide diamond business. The Committee is supported by a team that collects the best data available to De Beers and provides the Committee with relevant analysis.

Key data includes estimates of:

- production levels (both De Beers and non-De Beers);
- contractual third-party purchases;
- supply (rough stocking levels);
- pipeline (polished and retail stocking levels); and
- diamond consumer demand in terms of polished wholesale prices and its equivalent in rough diamond value (growth scenarios).

De Beers' production estimates are based on the current SBPs. Third-party group purchase estimates include appropriate probability factors attached to contract renewals where applicable. The model is used to evaluate the impact of various scenarios on the Group, using the combined interaction of the factors listed above.

There are a number of factors outside of general market considerations that need to be taken into account when evaluating output from the Supply/Demand model. Many of the inputs are difficult to measure, such as the level of third-party productions (especially alluvial), and the quality and value of the polished diamond content within a piece of jewellery.

Assumptions are made regarding the optimum stock levels, by category, to be held by the Group, expressed as a percentage of annual sales. Further assumptions are made, such as the level of pipeline industry stock cover, how these ratios might be affected by changes in consumer demand, and how third-party suppliers may react under varying market conditions.

Other factors, such as country risk, technical risk, and the provability of resources are taken into account in the financial model discussed in Section 11.

After computing the data for a given scenario, a process is undertaken whereby the output and the implications of the data produced are subjected to reasonableness tests, and a consensus view on the appropriate levels of production, stocks, sales and pricing is generated by the team and Committee, for recommendation to the De Beers Executive.

The model is therefore an indicator of the theoretical DTC sales figure that may be achieved under a given scenario, identifying where production constraints may affect sales, and where imbalances between supply and demand may exist.

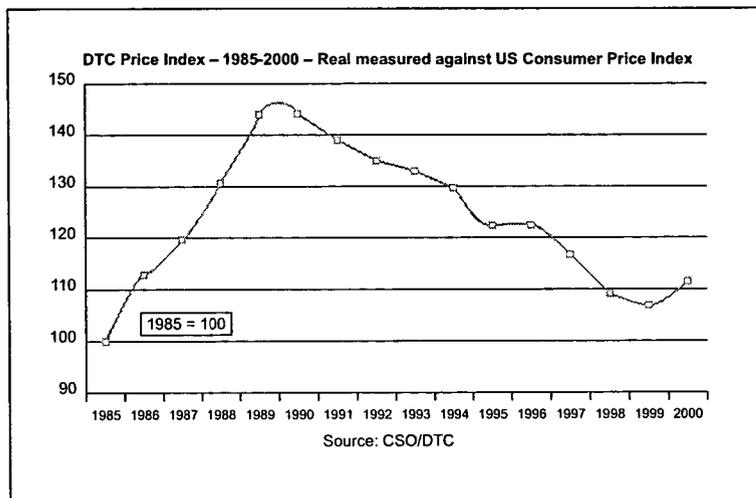
By measuring any potential imbalance in the pipeline, the model can then be used to estimate the level of price increases or decreases that would be required to restore market equilibrium under certain price elasticity assumptions. An estimate is then made of the implied price changes applicable to worldwide rough diamond supply, which will bring supply and demand back into balance.

De Beers has used output from the Supply/Demand model to indicate, for the period 2001 to 2010, where imbalances in supply and demand are expected to occur, and what adjustments to price levels of worldwide rough diamond supply are indicated. This is discussed in more detail in Section 11.3.2.

### Rough Diamond Prices

Rough diamond prices have always been exposed to the effect of changes in macro-economic factors.

The graph shows the overall level of price changes applied to the DTC rough diamond price book in real terms (deflated by the US Consumer Price Index) from 1985 to 2000. Prices rose as the global economy and consumer demand expanded in the latter part of the Eighties. Substantial incremental consumer demand



was experienced in Japan between 1985 and 1989 with the cost of diamonds steadily decreasing in Japanese Yen as a result of the strengthening of the currency against the US Dollar. There was a steady decline in diamond prices in real terms throughout the Nineties, caused, *inter alia*, by Russian de-stocking, unregulated supplies from Angolan alluvial areas, the Asian financial crisis, and a fall in consumer demand in Japan.

There has been an upturn in 1999/2000, brought about by a buoyant US economy and the effect of exceptional consumer demand for the Millennium. During 1999 growth in global diamond jewellery consumption was over 10%, compared to a global GDP growth, weighted towards the countries where diamond jewellery is consumed, of approximately 5%. This exceptional upturn has resulted in an increase in rough diamond prices during 2000.

With increasing competition in the diamond industry, it is reasonable to assume that the prices of rough diamonds will be subjected to the effects of market forces, both positive and negative, to a higher degree than has been witnessed in the past. This may lead to more frequent revisions to DTC prices. In addition, certain types of goods may experience a wider range of price fluctuations than has previously been the case. Furthermore, consumption in Japan, accounting for as much as 28% of the world-wide diamond jewellery market in 1991, continues to decline and recent macro-economic data gives further cause for concern.

The overall predicted year on year rough diamond price increases indicated by the Supply/Demand model will be a reaction to the need to bring industry supply and demand into equilibrium should the need arise. The predicted increases are estimates of the prevailing market price changes as shown by the model.

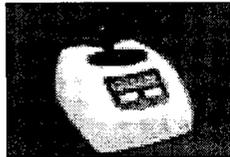
The Supply/Demand model, when considering the 'consensus' scenario, produces an estimated compound annual growth rate in nominal rough diamond prices of 4% between 2001 and 2010 (see section 11.3.2).

### 7.7 DTC Research Centre

The DTC Research Centre, based in Maidenhead in England, is a unique facility providing a world-class gem diamond research capability for the De Beers Group. The laboratory has a breadth of expertise spanning fundamental research through to applied research and development and equipment manufacture. It is responsible for the scientific aspects of the gem defensive programme, for the development of sorting and valuing equipment for rough gem diamonds, for technologies for cutting and polishing and for various branding technologies.

Integrity of natural, untreated diamonds and consumer confidence in De Beers' product is of paramount importance. As a consequence, highest priority activities are:

- researching discrimination characteristics for synthetic diamonds and diamond treatments;
- developing detection techniques and instruments; and
- ensuring that the diamond trade and gem grading laboratories world-wide are briefed on any issues that might affect consumer confidence in natural diamonds.



A 'Diamondsure' tester

Substantial progress has been made in developing new generations of discrimination instruments to identify synthetic diamonds, simulants and diamonds artificially treated to change their appearance (gem defensive programme). Should the need arise, these instruments can be rapidly deployed to the trade to maintain consumer confidence.

Production versions of a new generation of rough diamond sorting machine capable of high speed sorting of small diamonds for quality and colour are being installed in DTC sorting operations. Advanced technology equipment for sorting larger diamonds more accurately has been successfully developed, and production design has commenced. Weighing machines for sizing diamonds continue to be manufactured, and increased numbers of advanced sorting and weighing machines have been deployed in De Beers' Southern African sorting offices.

The Research Centre maintains an extensive intellectual property portfolio comprising a substantial suite of patents, trademarks and design registrations. This portfolio protects the investment made by DTC in its technology, but it is also available for commercial exploitation.

## 8. De Beers/LVMH Branding Initiative

### 8.1 Overview

On 16 January 2001, the De Beers Group signed an agreement with LVMH Moët Hennessy Louis Vuitton ("LVMH"), the world's leading luxury products group company to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

The new independent company will have the global rights to use the De Beers name in consumer markets and will position itself as a premium jewellery and associated luxury goods brand. The immediate focus will be on premium diamond jewellery and it is anticipated that, subject to regulatory approval, the business will commence within the next 12-18 months with a small number of flagship retail stores located in the world's most prestigious cities.

De Beers and LVMH will invest equal amounts of capital to establish the independent company, that they will own equally.

The expertise of LVMH both in developing luxury brands and rolling out premium retail concepts, combined with technical diamond expertise from a one-off transfer from the De Beers Group will help realise the value inherent in the De Beers brand and is expected to act as a catalyst for brand competition in the sale of jewellery products.

### 8.2 Evaluation

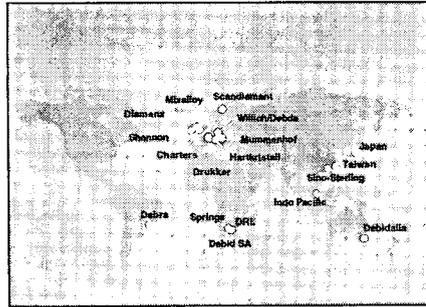
Although De Beers/LVMH has not yet fully developed the business plan, De Beers has prepared initial and preliminary estimates for the venture which may or may not correspond to the finally agreed upon business plan. The net present value range of the initial and preliminary estimates of the future cash flows is approximately US\$200 million to US\$500 million for De Beers' 50% interest in the company, and is based on the following assumptions and factors:

- The total global retail market for diamond jewellery (i.e. jewellery pieces containing at least one diamond) is currently estimated at approximately US\$56 billion and is estimated to grow over the next 10 years at an average annual rate of 2.5% in real terms. Of this total market, approximately two-thirds is represented by the United States and Japan.
- It will take the new company up to 10 years to achieve a share of 1.4% of the global retail market for diamond jewellery.
- Its principal markets will be in the United States and Japan and diamond jewellery sold by the joint venture will command a premium of 25% to 30% over diamond jewellery sold by unbranded, high-end independent diamond jewellery retailers.
- A probability factor has been applied to the preliminary estimate of future cash flows to reflect the fact that regulatory approvals has not been obtained, a business plan has not yet been fully developed and, at this stage, the new enterprise represents a concept yet to be launched as opposed to an ongoing business.
- A real discount rate of approximately 9% has been used reflecting the weighted average cost of capital of luxury goods companies.

## 9. De Beers Industrial Diamonds

### 9.1 Profile

De Beers Industrial Diamond Division (“Debid”) is one of the world’s leading manufacturers and suppliers of industrial diamond materials, including synthetic and industrial-grade natural diamonds used in industry for their unique and extreme properties.



*Debid has global presence*

De Beers’ interests in industrial diamonds was spearheaded by former De Beers Chairman, the late Sir Ernest Oppenheimer in 1946. Shortly thereafter, the Diamond Research Laboratory (“DRL”) was established in South Africa to support the use of diamonds in industry.

Debid has been central to the evolution from conventional abrasives to more cost effective diamond solutions, and provides the basis for continual developments in diamond technology.

### 9.2 Applications and End Markets

The application and major end-markets for Debid’s products is set out in the table below.

	Grit	Polycrystalline Diamond Cutting Tool Inserts	Polycrystalline Diamond Drill	Polycrystalline Boron Nitride	CVD
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Saws and grinding wheels</li> <li>• Micron powders for fine grinding</li> </ul>	<ul style="list-style-type: none"> <li>• Diamond cutting inserts for non-ferrous cutting</li> </ul>	<ul style="list-style-type: none"> <li>• Diamond drill bits</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting tools</li> </ul>	<ul style="list-style-type: none"> <li>• Non-abrasive applications using the thermal and optical properties of diamonds</li> </ul>
<b>Major End Markets</b>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Stone</li> <li>• Automotive</li> <li>• Aerospace</li> </ul>	<ul style="list-style-type: none"> <li>• Automotive</li> <li>• Wood</li> </ul>	<ul style="list-style-type: none"> <li>• Deep sea oil and gas drilling</li> </ul>	<ul style="list-style-type: none"> <li>• Automotive</li> <li>• Aerospace</li> </ul>	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Lasers</li> <li>• Other</li> </ul>

Debid’s Chemical Vapour Deposition (“CVD”) diamond film products development is oriented towards high-technology applications which use the unique advantages of diamonds, particularly diamond’s optical and thermal properties. Success in introducing diamond film products into the market in demanding application areas involving lasers and high powered optics, as well as thermal management, have demonstrated the commercial viability of these materials in different forms.

### 9.3 Financial Information

Selected historic financial information for Debid for the years ended 31 December 1998 to 2000 is set out in the table below:

<b>US\$m nominal</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Sales	249	272	248
Diamond Account	50	55	19
Own earnings	32	32	7
Total net earnings	32	32	7
Headline earnings	28	32	7

Increasing price pressure from low cost entrants and continuing product commoditisation in most markets is expected to result in declining profit margins. In light of this trend, Debid is taking steps to reduce its costs. It has recently announced consolidation of synthesis operations into three plants and closing the press shop in Shannon. In addition, there are plans to move the Charters Research & Development Centre to a new lower cost location.

## 10. Corporate Services

### 10.1 Human Resources

#### 10.1.1 Introduction

De Beers and its partner companies across the world employ over 23,000 people.

De Beers' leadership in the diamond industry has been achieved largely as a result of its people. De Beers places high value on the attraction, development and retention of human capital, which will drive and shape the business in the years ahead. To this end, active strategies are in place to develop core competencies in a variety of technical, support and leadership disciplines which, when combined, will enable De Beers to remain at the forefront of exploration, mining, extraction and marketing of diamonds.

However, there are a number of current and potential challenges, which De Beers is addressing. These include:

- competition for talent;
- retention and development;
- provision of equal opportunities;
- HIV/AIDS; and
- the development of transformational leaders.

#### 10.1.2 Competition for Talent

A strategic intervention has been initiated with the primary purpose of attracting and retaining talent to meet operational and strategic objectives. A dynamic approach is used to attract and retain skilled people – particularly those with strategically competitive competencies. Proactive recruitment methods such as internal talent-scouting exercises, referral systems and the Internet are being enhanced.

#### 10.1.3 Retention and Development

Employment turnover (excluding transfers and secondments) within the skilled and managerial levels is relatively stable within De Beers. During 2000, turnover in South Africa, Botswana and Namibia ranged from 4.8% to 8.9% at the skilled/professional levels, from 5.3 % to 8.9% at the middle management levels, and from 0 to 8.3% at the senior management levels.

At the core of retaining and developing talent are systems to quickly and effectively match employee aspirations with organisational needs. Group development and succession programmes are the major components of human resources management. Employees are able to develop their core competencies through deployment to projects and assignments that will add value to the organisation, or are seconded/transferred to other parts of the business to acquire broader technical, management and/or leadership experiences.

The extent to which De Beers is operating across the globe provides an additional dimension to personnel deployment and development. Transfers and secondments to other parts of the business are important cornerstones of meeting organisational needs, and addressing developmental opportunities.

Significant levels of investment are channelled across a variety of training and development activities. Total training-spend during 2000 amounted to over R93 million in South Africa, R64.7 million at Debswana, and R21.3 million in Namdeb. These activities include bursary schemes, apprentice and artisan training, technician

development, and initiatives relating to employment equity (South Africa), affirmative action (Namibia) and localisation (Botswana). Formal development programmes at junior, middle and executive management levels provide further opportunities for the retention and development of people. During 2000, over 50 current and prospective middle managers attended appropriate management development programmes, and 10 senior managers attended a global executive development programme. Capacity is being further developed during 2001 with the targeting of over 65 managers to participate in a De Beers and partner companies programme, and 35 senior managers participating in various executive development programmes.

Succession review processes are also important to gauge the relative "health" of the various disciplines or functions and to develop proactive human resources strategies to address problems identified.

A strong performance culture, supported by reward and recognition systems, provide a further stimulus to employees at a variety of levels making meaningful contributions to operational and strategic objectives.

#### **10.1.4 Equal Opportunities**

De Beers is sensitive to the different environments in which it conducts its business. Whilst core competencies and skills have been developed over many years, active strategies have been implemented to develop the skills profiles within the employee base of the host countries and regions within which De Beers operates. Deployment or secondment of core skills from the corporate centres are therefore supplemented by local training and development initiatives. Localisation programmes in Debswana, affirmative action initiatives in Namdeb, and employment equity plans in South Africa, are examples of employment strategies and practices being adapted to local conditions. Similarly, equal opportunities policies and practices are applied in other organisational settings such as the UK, Canada and Australia.

Remuneration and reward structures are fairly and equitably administered, and employee benefits are in place to address the health and retirement needs of employees via medical assistance, and pension plans.

De Beers complies with all forms of employment legislation in the countries where De Beers operates. Constructive relationships have been forged with recognised employee representative bodies to negotiate wages and conditions of employment, and to engage employees in workplace change and improvement strategies.

#### **10.1.5 HIV/AIDS**

Active HIV/AIDS programmes have been in place for many years. HIV/AIDS is an increasingly serious threat, particularly in Southern Africa. A high-level project team has been formed to develop active strategies to manage and minimise its impact. Best practice guidelines are being developed, and prevention and management strategies are being pursued. With the impact of HIV/AIDS expected to continue to increase over the next few years, determined measures to reduce further infections across workforces are being taken. A policy framework to ensure that HIV sufferers are treated fairly and equitably is being finalised.

#### **10.1.6 Transformational Leadership**

Strong and dynamic leadership at a number of levels has been responsible for De Beers' growth and development and adoption of leading technologies: both have required transformation of De Beers business practices and organisation. Continued growth will require development of operations in new countries such as Canada hand-in-hand with modernisation and expansion at existing operations such as the Premier C-Cut, and increasing production from the sub-sea environment. Recently, the new Supplier of Choice strategy was developed to increase value for all of De Beers'

shareholders. All of these initiatives have required capable leaders that can make the organisational changes needed to implement them and to realise their benefits. Strategies to develop and sustain a pipeline of transformational leaders continue to be implemented. During 2000, over 50 current and prospective middle managers built further their competencies through appropriate management development programmes, and over 10 senior managers were exposed to global executive development programmes. Capacity is being further developed during 2001 with the targeting of over 65 managers to participate in a De Beers and partner companies programme, and 35 senior managers participating in various executive development programmes. A development programme targeted at De Beers' future leaders - the De Beers Achiever Programme - was launched in 2000 with 50 employees attending. During 2001, a total of 150 achievers will be trained to further develop critical mass.

## 10.2 Legal and Environmental

### 10.2.1 Legal

#### 10.2.1.1 Ownership and the right to mine

De Beers' operating mines in South Africa include mines discovered as far back as the late 19th century (such as Kimberley Mines) through to The Oaks in the Northern Province which was discovered in the 1980s. The De Beers mining portfolio, therefore, spans various historical legal regimes, e.g. from pre-Union of South Africa statute law, (in the form of various Acts and Ordinances of the old Transvaal, Orange River and Cape colonies), through to the Precious Stones Acts of 1927 and 1964 and the current Minerals Act of 1991. The legal format and content of De Beers' portfolio of mining rights is therefore a faithful representation of the evolution of the law relating to mining and mineral rights in South Africa. Although De Beers' rights to mine were granted under different laws, all of these rights are recognised as valid rights to mine in terms of current legislation.

The De Beers portfolio includes mines in respect of which the underlying mineral rights are held by the State, as well as mines in respect of which the rights to diamonds are held by De Beers. In those cases where the underlying mineral rights are held by the State (Finsch, Namaqualand (with the one small exception of Michell's Bay, where the rights to diamonds are held by De Beers) and the Oaks Mines), De Beers is obliged to make lease payments to the State. Namaqualand pays about 25% of taxable income, Finsch and the Oaks pay according to sliding scale formulae, that approximate 27% and 5% of taxable income respectively. Because these payments are not imposts on gross revenue or on working costs, they have no impact on pay limits.

A draft Minerals Development Bill, which will revoke the current Minerals Act of 1991 and vest all mineral rights in the State, has been published by the South African Government for public comment by 31 March 2001. It is expected that the new legislation will be enacted in either 2002 or 2003 and that there will be a five year window period during which holders of old order mining rights will need to apply for new forms of licence, which will be granted for a maximum period of 25 years and upon such terms as the Minister may determine. The Bill makes provision for royalties on mining rights and export duties on diamonds, both at unspecified rates. The contentious issues of the Bill are the subject of discussions between the industry and the Ministry and it is not advisable to speculate on the outcome thereof.

The laws of Botswana and Namibia do not recognise private mineral ownership. The rights of Debswana and Namdeb to mine in these countries are constituted by Mining Licences issued by the government for periods of twenty-five years, renewable for further terms of similar duration.

### **10.2.1.2 Legal Risk**

De Beers has managed its business so as to avoid any undue legal risk arising out of US antitrust laws in the United States since its business policies have not required systematic contacts with the United States. De Beers is therefore not aware of any material exposure to its business under the laws of the United States. However, in 1994 the United States District Court for the Southern District of Ohio issued an indictment alleging that DBCAG and the General Electric Company conspired to fix the prices of industrial diamonds for a nine month period between 1991 and 1992. While the indictment has never been served upon DBCAG, the case against General Electric was dismissed. There have also been two private class action lawsuits filed in the US District Court for the Southern District of New York relating to the same claims. De Beers believes that with respect to both the indictment and the private suits that the US courts lack jurisdiction over the company and that therefore these suits do not subject De Beers to significant legal risks. Except as referred to De Beers is not aware of any material litigation or material pending litigation.

### **10.2.1.3 Taxation**

For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing. De Beers has answered all questions promptly and has responded to and supplied all requests for information, and has no reason to believe that any material exposure exists in this regard.

## **10.2.2 Environmental**

### **10.2.2.1 Introduction**

In caring for the environment and the communities in which it operates, De Beers requires all of its mines to attempt to meet the ISO 14001 Environmental Corporate Governance Management System. This covers the legal obligation to have a governmental approved environmental management programme (EMP) that covers construction, operating and closure phases of the mine. The issuing of a South African mining authorisation is subject to an approved EMP report (EMPR).

The EMP includes the bio-physical and social environments and would include land disturbance, water management, mining waste (waste rock, tailings and slimes), industrial and domestic waste disposal, infrastructure and associated (access, power supply) impacts.

### **10.2.2.2 Environmental risk and liability**

The approval of the EMPR (RSA mines) and issuing of a Mining Authorisation are subject also to the ability to undertake rehabilitation of surface disturbances, and the financial provision for the rehabilitation of such disturbances after closure of the mine. Chapter 6 of the EMPR requires that a closure plan be formulated, costed and that a financial guarantee for this amount be lodged with the DME.

The requirements for closure and pecuniary provisions for all South African mines are reviewed and updated annually and the provision adjusted accordingly. In addition, environmental management and rehabilitation are being addressed continually under annual operating and capital budgets. This covers staffing, consultants, pollution control, water and energy management, waste management and rehabilitation.

Closure provision is not a legal requirement in Namibia or Botswana. However, estimates for closure have been determined for Namdeb operations and are being prepared for Debswana operations.

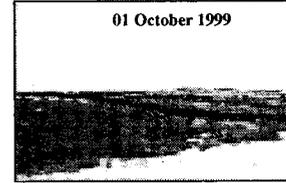
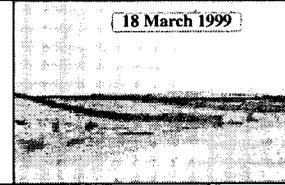
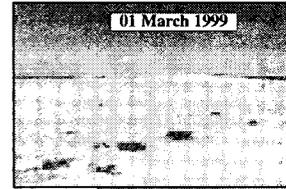
### 10.2.2.3 Rehabilitation

The goals for closure are to leave a safe, stable and self-sustaining post-mining environment ("zero aftercare") and restore the land to a productive land use. The major challenges are making safe the open-pits and rehabilitating and revegetating mining residues and disturbances.

Towards these goals at every mine a number of initiatives are in progress. For example:

- At Kimberley Mines redundant treatment plant has been removed; concrete structures have been demolished; and the slopes of the slimes dam wall are being flattened, topdressed and vegetated. Most of the old kimberlite tailings dumps will be removed, retreated in the CTP and the residues deposited in the open pits. This will reduce considerably the environmental liability and risk.
- At Koffiefontein, the Eskom dump has been regraded and topsoiled. The slopes of the waste rock dump are being flattened, topsoiled and revegetated.
- At Finsch Mine redundant treatment plant has been removed. Special attention has been given to improving industrial waste management. The slopes of the waste rock dump are being regraded, and the entire dump will be topsoiled and revegetated.
- At The Oaks Mine, innovative dump development makes use of waste rock to establish paddocks into which the processed kimberlite is deposited. This method enables a stable pollution-free slope to be constructed which is easily revegetated and allows for rehabilitation and revegetation concurrent with mining operations, reducing the closure cost and liability.
- At Premier Mine the focus has been on formulating an emergency response strategy in the unlikely event of a failure of No. 7 dam. The stability of the dam is carefully monitored and subject to independent external audit. The probability of such a failure is extremely low.
- At Venetia, special attention has been given to topsoil requirements for life of mine. Topsoil is pre-stripped within the footprint of future waste and tailings dumps and stockpiled for later use. Water is a precious resource, and storage of flood water from the Limpopo River ensures the sensitive Limpopo riparian system is not damaged during periods of no surface flow in the river.

- At Namaqualand Mines special attention has been given to addressing previously unmanaged disturbances as well as managing current mining operations. Topsoil resources are very limited and considerable effort has been given to determining and mapping available topsoil resources so as to ensure their efficient use.
- In the BMC mining area dragline overburden dumps are flattened, and areas of previously exposed bedrock have been backfilled.
- At Koingnaas impressive results have been obtained with rehabilitation of disturbed areas. Topsoil is carefully removed and stockpiled for later reinstatement, and stripped overburden is replaced immediately into the adjacent mined block. On completion a nursery oats crop is sown which provides shelter for the return of indigenous vegetation.



#### 10.2.2.4 Staffing and Accountability

Corporate environmental policy and practice is co-ordinated by the Manager, Environmental Services (Support Services). Environmental responsibility at each operation ultimately rests with the General Manager/Mine Manager. However, at all major operations there are one or more environmental specialists responsible for implementation of environmental management programmes.

## **11. Finance and Economic Evaluation**

### **11.1 Assets**

The following assets have been valued in this report:

- the core gem diamond mining and marketing business;
- exploration activities or projects;
- the industrial diamond business (Debid);
- the De Beers/LVMH branding initiative;
- the listed investment portfolio; and
- working capital (including stocks and cash) and other assets.

### **11.2 Valuation Methodology**

The methodology used to value the various assets of De Beers is set out below.

#### **11.2.1 General Principles**

De Beers' core diamond business has been valued on a going concern basis, with all the mines in which De Beers has an interest, the DTC and their related capital assets and working capital assets being treated as an integral and non-divisible part of that core business.

The nature of De Beers' core diamond business and factors such as pre-emption rights and marketing rights relating to various parts of the business deem it inappropriate to value the business on a break-up basis.

The valuation has been prepared as at 31 December 2000 and, where appropriate, cash flows have been discounted back to this date.

#### **11.2.2 Operating Mines and DTC Sales**

De Beers' operating mines have been valued using discounted cash flow methodology. A financial model has been constructed which incorporates the life of mine cash flows for each mine and extends out to the year 2030. The production rates and costs for the mines have been based on the SBPs, as refined by De Beers' three-year rolling forecasts.

DTC sales, which include sales of diamonds produced from De Beers' and its partners' mines as well as sales of diamonds purchased under third party contracts, and changes in diamond prices have been estimated using the De Beers Supply/Demand forecasting model, capped by forecast limits on the availabilities of certain ranges of goods. Three supply/demand scenarios have been computed; 'upside', 'downside' and 'consensus'. A detailed description of these scenarios is set out in Section 11.3.2.

It should be noted that the De Beers Supply/Demand model seeks to forecast DTC sales and changes in diamond prices over a 10-year period but not specifically on a year by year basis. Accordingly, this impacts on the financial projections set out in this report which are not therefore intended to be year by year specific but intended to cover a period of years. The financial projections have been prepared by De Beers on the basis of current assumptions and have not been reported on independently.

### **11.2.3 Exploration**

A valuation range of between US\$0 and US\$100 million has been placed on De Beers' exploration activities. The range indicated takes account of the three scenarios computed in this report. A maximum value of US\$60 million was assumed for advanced exploration projects and a maximum of US\$40 million for all other assets.

### **11.2.4 De Beers/LVMH Branding Initiative**

Although the venture has not yet received regulatory approvals or fully developed a business plan, it has been valued using discounted cash flow methodology on the basis of initial and preliminary cash flow projections estimated by De Beers. Given the current conceptual nature of the venture, the cash flow projections have not been incorporated into the financial model and a separate, standalone NPV has been estimated.

### **11.2.5 Debid**

Debid has been valued using discounted cash flow methodology. The estimated future cash flows for Debid have been incorporated into the financial model.

### **11.2.6 Listed Investments**

De Beers' interest in listed investments (other than its investment in Anglo American) have been valued based on market values as at 31 December 2000.

### **11.2.7 Other Assets**

With the exception of adjusted net cash, De Beers' working capital, including diamond stocks and cash, has been valued on the basis that it is an integral part of De Beers' gem diamond and industrial diamond businesses and has therefore been incorporated into the financial model. De Beers' current diamond stocks are considered strategic and necessary for the ongoing conduct of its business as is its cash (other than adjusted net cash).

The adjusted net cash has been estimated having regard to the current level of De Beers' working capital and its future needs (and includes cash resulting from the exercise of options).

De Beers' other diamond industry investments have been valued on the basis of future estimated dividend streams and such dividend streams incorporated into the financial model.

### **11.2.8 Discount Rates**

NPVs have been calculated using real discount rates ranging between 10% and 15% having regard to De Beers' weighted average cost of capital ("WACC") for its diamond business, (adjusting for the impact of its shareholding interest in Anglo American) the estimated WACCs of other mining companies, implied discount rates estimated for comparable transactions and academic papers on the estimation of discount rates.

## **11.3 Assumptions**

### **11.3.1 Economic Assumptions**

- The US consumer price index (CPI) has been forecast to grow at a rate of 2.5% per annum from 2001 onwards, and the RSA CPI has been forecast to grow at a rate of 7.0% per annum from 2001 onwards.

- The exchange rate forecast assumes purchasing power parity rules from a base of US\$/ZAR = 7.90 for 2001. Therefore, the US\$/ZAR exchange rate has been depreciated at the differential between the US and RSA CPIs on an annual basis.

### 11.3.2 DTC Sales and Diamond Price Assumptions

Future DTC sales and price changes have been estimated using, *inter alia*, the De Beers Supply/Demand model. For the purposes of this section, GDP growth is defined as consensus forecasts of GDP growth, weighted for diamond jewellery consuming countries. The following broad scenarios have been evaluated:

- 'Consensus' – based on consensus forecasts of GDP growth, and the historic relationship between the economy and demand for diamonds. Consensus economic forecasts currently assume a slowdown, but not outright recession, this year, with some recovery in 2002. Appendix III contains a combined estimated cash flow and income statement based on this scenario.
- 'Upside' – based on the same economic forecasts as the 'consensus' scenario but with more optimistic market expansion targets. These targets result in significantly higher prices, increasing at a compound annual nominal growth rate of almost 6% over the next decade. This scenario also assumes a more optimistic view for contract third-party purchases by the DTC, modelling these in perpetuity, and lower costs involved in mining lease renewals.
- 'Downside' – based on a more negative economic outlook, with recession in the US during 2001/2 and correspondingly lower growth in the rest of the world, with a further cyclical slowdown in 2007/8. The compound annual growth rate in prices from 2001-2010 is a nominal 2%. Similar assumptions are made regarding third-party contractual purchases and mining lease renewal costs as with the 'consensus' scenario.

Of the three scenarios, the 'consensus' case shows the most probable outcome assuming GDP grows as consensus economic forecasts. Alternative outcomes currently tend towards the 'downside' case given the present position of the US economy, while the 'upside' scenario is regarded as very much a stretched target.

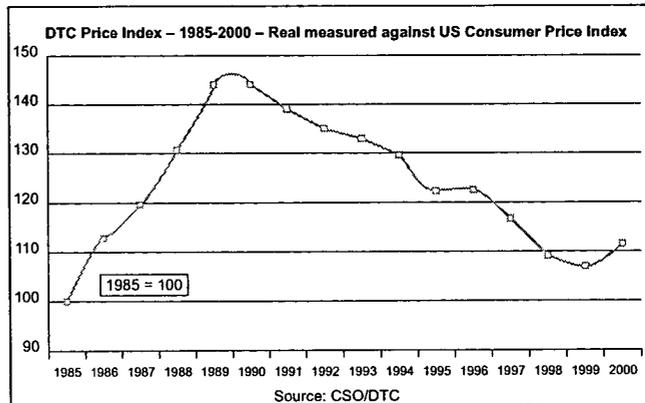
De Beers has announced a 2001 DTC sales target of US\$4.8 billion, subject to the world economy following consensus projections. This target, 15% lower than 2000, is driven largely by the impact of slowdown in the US, the current stock overhang at retail level caused by the disappointing Christmas season in 2000, and a slight increase in third-party supply during the year. Under the 'consensus' scenario, as generated by the De Beers Supply/Demand model, demand for polished diamonds is assumed to grow at 5.7% CAGR for 2001-2010, with DTC rough sales growing at 4.5% CAGR for the same period. However, due to the limits on the availabilities of certain ranges of goods, this indicative percentage growth in DTC sales does not flow into the valuation model in which DTC sales have been capped at levels commensurate with forecast diamond availabilities.

In considering a 'downside' scenario, previous experience has indicated that DTC sales could fall sharply if a fall in retail demand is accompanied by pipeline destocking. Limited experience of the effect of the Supplier of Choice initiative suggests that under this scenario sales in 2001 and in subsequent years should not fall as low as historical levels. Accordingly, US\$4.1 billion is regarded as being a more likely sales floor unless the economic recession is unduly severe. Growth in polished demand would be assumed to rise at 3.5% CAGR for 2001-2010.

### Rough Diamond Prices

Rough diamond prices have always been exposed to the effect of changes in macro-economic factors.

The graph shows the overall level of price changes applied to the DTC rough diamond price book in real terms (deflated by the US Consumer Price Index) from 1985 to 2000. Prices rose as the global economy and consumer demand expanded in the latter part of the Eighties. Substantial incremental consumer demand



was experienced in Japan between 1985 and 1989 with the cost of diamonds steadily decreasing in Japanese Yen as a result of the strengthening of the currency against the US Dollar. There was a steady decline in diamond prices in real terms throughout the Nineties, caused, *inter alia*, by Russian de-stocking, unregulated supplies from Angolan alluvial areas, the Asian financial crisis, and a fall in consumer demand in Japan.

There has been an upturn in 1999/2000, brought about by a buoyant US economy and the effect of exceptional consumer demand for the Millennium. During 1999 growth in global diamond jewellery consumption was over 10%, compared to a global GDP growth, weighted towards the countries where diamond jewellery is consumed, of approximately 5%. This exceptional upturn resulted in an increase in rough diamond prices during 2000.

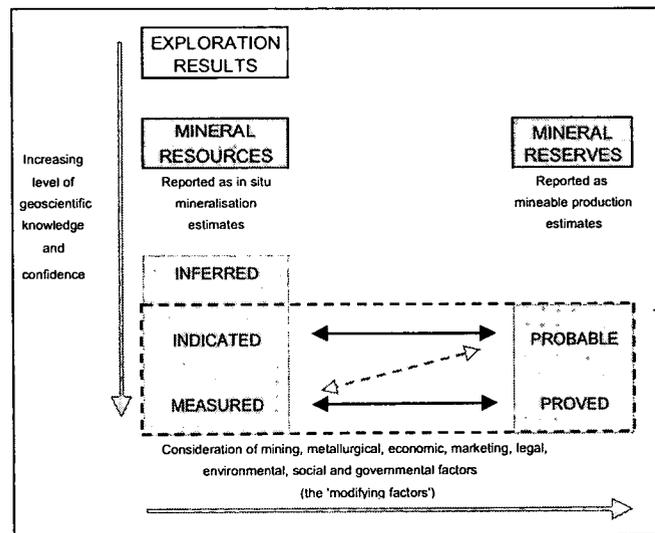
With increasing competition in the diamond industry, it is reasonable to assume that the prices of rough diamonds will be subjected to the effects of market forces, both positive and negative, to a higher degree than has been witnessed in the past. This may lead to more frequent revisions to DTC prices. In addition, certain types of goods may experience a wider range of price fluctuations than has previously been the case. Furthermore, consumption in Japan, accounting for as much as 28% of the world-wide diamond jewellery market in 1991, continues to decline and recent macro-economic data gives further cause for concern.

The overall predicted year on year rough diamond price increases indicated by the Supply/Demand model will be a reaction to the need to bring industry supply and demand into equilibrium should the need arise. The predicted increases are estimates of the prevailing market price changes as shown by the model. Rough diamond prices in the 'consensus' scenario are assumed to grow by 4% CAGR reflecting the projection that there will be an excess of demand over supply during 2001-2010.

### 11.3.3 Mineral Resource Assumptions

De Beers' methodology used in estimating mineral resources and reserves is as follows: –

- When a potentially economic deposit is discovered, an in-situ mineralisation resource estimate is developed using appropriate sampling techniques and sampling density. Empirically derived conversion factors are applied to the estimated grades to allow for the bottom or lower diamond size cut-off which might be used in a commercial scale metallurgical plant, also taking into account the difference in the degree of diamond liberation between the sampling and commercial recovery processes.
- The baseline category for resource classification, which requires a minimum level of geological knowledge and confidence, is the inferred mineral resource. Increased sampling of the resource will lead to an improved level of geoscientific knowledge and confidence, and upgrading of the resource to an indicated category and ultimately to a measured status. However, diamond resources rarely achieve this level of classification because of the complex nature of diamond deposits and the large expenditure that would be required to achieve the high level of confidence as stipulated in the SAMREC Code.
- Mineral reserves are a modified sub-set of indicated and measured resources where mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors are applied as appropriate to define that part of the resource that is economically mineable.



*Framework for classifying tonnage and grade estimates reflecting different degrees of geoscientific confidence and technical and economic evaluation.*

- It is assumed for modelling purposes that probable mineral reserves are mined first, followed by indicated mineral resources and then inferred mineral resources.
- No account has been taken of any residual or in perpetuity value attributable to any mineral resources after the last year of the DCF model (being 2030) due to the inherent uncertainties associated therewith.

### 11.3.4 Operational Assumptions

- The SBPs have been used as the basis for the key mine operating assumptions, being:

- treatment plant throughput (ore tonnes);
  - production costs;
  - capital expenditure; and
  - capital recoupments (sale of obsolete plant and equipment).
- The latest three-year rolling forecast, as presented at the November 2000 De Beers board meeting, refines the SBPs for years 2001 to 2003 inclusive.
  - Although annual projections for the period 2001 to 2010 have been shown, the financial model extends to 2030. Post 2010, income and cash flow projections based on the remaining lives of De Beers' mining operations have been evaluated.
  - Operating costs for research and development, prospecting and all other relevant overhead costs have been included in the financial model.
  - It is assumed that all capital expenditure is funded on a 100% equity basis.
  - Estimates of future levels of marketing expenditure, sorting and selling costs, exploration, research and new business development costs, and corporate overheads are based on 2000 actual figures adjusted by appropriate factors to take into account both anticipated inflation and changes in overall activity levels. Marketing expenditure has been limited to 4% of DTC sales.
  - Trade investment income comprises De Beers' estimated future share of its financial interests in Debswana, Namdeb and Sibeka.
  - Other income comprises De Beers' estimated future share of Debmarine contracting revenue and sundry income.

#### **11.3.5 Mineral Lease Renewals**

- For South African mines the assumption has been made that the mining leases will be extended in perpetuity for the life of the mines.
- In the case of Debswana, the Jwaneng mining lease expires in 2004. Although no application has been submitted yet to renew the lease and the Botswana Government will consider a renewal application on its merits at the time of its submission, it has been assumed that the lease will be renewed but a risk weighting has been introduced and applied to future cash flows to reflect the appropriate degree of commercial uncertainty. The Orapa and Letlhakane mine leases were renewed in 1996, effective from 1992.
- For other operations, the consequences of the loss of leases is considered to be not material.

#### **11.3.6 Contractual Agreements**

- A diamond purchase agreement with Russia obliges De Beers to buy from Russia diamonds with a value up to 26% of the DTC sales, subject to a minimum off-take of just over US\$500 million per annum. This agreement expires on 31 December 2001. A diamond purchase agreement also exists with BHP's Ekati mine, whereby 35% of the output is sold via the DTC. This agreement expires at the end of 2002. In the case of both contracts, a probability factor has been applied against cash flows to reflect the commercial uncertainties involved.
- Open market purchases of diamonds by De Beers ceased in late 1999. It has been assumed that these purchases will not re-commence.

- Sales agreements exist with Namdeb and Debswana which commit them to sell their output through the DTC at prices that are determined with reference to the DTC price book. These contracts are renewed every five years. The present Namdeb agreement expires in 2004, while the Debswana agreement expires in 2005. These contracts have been treated as being evergreen, and their terms have not been changed.

### 11.3.7 Diamond Stockpile Assumptions

A minimum working capital diamond stock level of 50% of DTC sales has been assumed. Excess diamond stocks have been assumed to be sold to the extent that production and outside purchases in the relevant year are effectively less than estimated demand. The final stockpile value at 2030 has been assumed to be sold in 2031, and such value discounted back for purposes of calculating NPVs.

### 11.3.8 Adjusted Net Cash

As at 31 December 2000, De Beers' net current assets amounted to approximately US\$1.6 billion. After taking account of long and medium term liabilities of US\$570 million and the final combined dividends payable for the year ended 31 December 2000 of US\$400 million and cash inflow from the exercise of options of approximately US\$150 million, adjusted net cash is estimated at approximately US\$750 million.

### 11.3.9 Taxation

The following tax rates have been used:

- South Africa : Company tax of 30% and STC of 12.5%.
- South African mine lease formulae : Finsch : 30.5% - (244/x)  
Namaqualand : 27.0% - (135/x)  
The Oaks : 5.0% - (40/x)  
*Where X = profit to revenue ratio*
- Botswana : Company tax of 15%. Additional Company tax of 10%, royalty of 10% of gross revenue and withholding tax on dividends of 15%.
- Namibia : Company tax of 35%, diamond mining tax of 55%, royalties of 10% of gross revenue and withholding tax on dividends of 10%.
- Canada : Federal tax 28% plus 4% surcharge, NWT taxes 14%, NWT royalty as a percentage of profit on a sliding scale from 0% - 14%  
  
0% of first C\$10,000  
5% of C\$10,000 to C\$5M  
6% of C\$5M to C\$10M  
7% of C\$10M to C\$15M  
8% of C\$15M to C\$20M  
9% of C\$20M to C\$25M  
10% of C\$25M to C\$30M  
11% of C\$30M to C\$35M  
12% of C\$35M to C\$40M  
13% of C\$40M to C\$45M  
14% above C\$45M
- United Kingdom : Corporation Tax of 30%.

### 11.3.10 Industrial Diamond Business (Debid)

The projections for Debid incorporated in the financial model assume that Debid continues as a full product supplier and grows in line with all of its respective markets (estimated to be in the order of 4.5% per annum for most grit products). However, increasing price pressure from low cost entrants and continuing product commoditisation in most markets is expected to continue to result in flat overall revenues and declining profit margins. Initiatives which De Beers anticipates will be undertaken in the near future, including changes in press type and replacement raw materials, near net sizing and improved capsule utilisation, are expected to result in cost reductions.

## 11.4 Strengths, Opportunities and Risks

Strengths, opportunities and risks with respect to De Beers' diamond business are set out below.

### 11.4.1 Strengths and Opportunities

*General:* De Beers and its partners are the largest diamond producer by value in the world. The DTC is the world's leading marketer of rough diamonds.

De Beers benefits from a sound operating base, efficient use of assets, good relationships with its major stakeholders, and a management team aimed at growing the diamond business to a value of US\$10 billion by the year 2004, in line with a carefully considered strategy.

As a fully integrated group focused wholly on the diamond business, De Beers believes it possesses the strengths required to maximise the opportunities that present themselves, while being aware of the risks that exist.

*Workforce:* De Beers has a dedicated and loyal workforce which takes great pride in its work, De Beers and De Beers' company values. This workforce is motivated and capable of growing the company, and has contributed significantly to the increase in profits realised over the last three years and to the strategic transformation of the company. De Beers continues to invest in the development of staff at all levels.

*As Is Plus:* As a result of the strategic review started in 1998, De Beers has implemented a number of initiatives that have reduced unit costs and improved efficiencies. Further progress in this area continues to be made in the Southern African operations. The threat of AIDS and the employment equity issue, and their associated financial costs do, to an extent, limit the potential gains from these initiatives.

*Technical Ability:* De Beers has invested heavily in research and development of new, leading edge technology in many areas of the diamond business. For example, this has led to the successful implementation of deep-water mining of marine placer deposits off the coast of Namibia. De Beers is the only mining company involved in large-scale underground mining of kimberlite pipes and has unrivalled expertise in large, block cave excavations. Ongoing research and development has resulted in cutting edge plant design with a high degree of automation. The newly commissioned Aquarium Plant at Jwaneng contains the completely automated recovery plant ("CARP") for the recovery of diamonds from x-ray concentrate and the fully integrated sort house ("FISH") where the sorting and acid cleaning processes have been automated.

*Exploration:* De Beers has an extensive exploration programme both on existing mines and in extensive greenfield sites on five continents and is committed to securing new sources of supply through exploration on its own and in joint ventures with others.

*Resource Base:* De Beers and its partners have a large mineral resource base, unrivalled by any other diamond mining company, currently standing at approximately 2.6 billion tonnes amounting to some 1.2 billion carats. The majority of these resources

occur in large scale, low cost mines where the current life of mine expectation is in excess of 20 years.

*Supplier of Choice:* In July 2000, De Beers announced the launch of the DTC's Supplier of Choice initiative, a move away from the market perception of the CSO as custodian of the market in its role as supplier of last resort. The focus of the initiative, which will be subject to review by the European Commission, is to drive long-term growth in consumer demand for diamond jewellery by developing the DTC's business relationships with its sightholders. Successful implementation of this long-term strategy will result in a sustainable increase in rough diamond demand. An important component of Supplier of Choice is the subscription of the DTC and its sightholders to a set of best practice principles to promote and encourage high industry, ethical and business standards.

*Client base:* The DTC sells its goods to approximately 120 client companies or sightholders. These companies represent the highest levels of expertise in diamond manufacture and distribution, in addition to proven financial strength. The Supplier of Choice initiative is designed to enable clients to grow their own businesses through successful marketing strategies. Supplier of Choice will also ensure that sightholders subscribe to the highest professional and ethical standards.

*Brand Power:* De Beers recognises the latent power of branding, and is encouraging the development of a competitive multi-brand jewellery consumer market. It believes that this will significantly increase consumer choice and re-invigorate the diamond jewellery category.

In January 2001 De Beers signed an agreement with LVMH Moët Hennessy Louis Vuitton, the world's leading luxury goods company, to establish an independently managed and operated company to develop the global consumer brand potential of the De Beers name.

#### 11.4.2 Risks

*Mining Titles:* Currently, De Beers owns or leases from the state all of its South African mineral rights in perpetuity. However, the South African government has publicised its intention to take all mineral rights into state ownership. The resulting uncertain issues of tenure and fiscal regime may have an influence on the viability of present and future operations and new projects. De Beers is actively involved in discussions with the South African government to provide sound minerals legislation and to ensure that the economic viability of its future investments in operations is not jeopardised.

In Botswana and Namibia, the Debswana and Namdeb mining rights are held by way of 25-year mining leases. Upon lease expiry, there is no obligation on these states to renew the existing licenses on similar terms. The Jwaneng mining lease falls due for renewal in 2004.

*Political:* All of De Beers' current producing mines are situated in Southern Africa. Accordingly, De Beers is subject primarily to Southern African political risk and to risk of disruption as a result of localised events. This would also include ongoing differences of opinion and interpretation with various authorities with regard to the valuation and export of De Beers' diamonds from South Africa.

*Dependence on Botswana:* A substantial proportion of De Beers' production and profits is sourced from Debswana's mines located in Botswana, exposing De Beers to any actions which impinge upon Debswana's ability to recover and deliver diamonds to the DTC.

*Legal:* An indictment, issued in 1994 by the United States District Court for the Southern District of Ohio, remains unserved upon DBCAG. Two related private class action lawsuits have been filed in the Southern District of New York. De Beers believes

that these suits do not subject it to significant legal risks and, having managed its business so as to avoid undue legal risk arising out of US antitrust laws, is not aware of any other material exposure to its business under US law.

*Investment Portfolio:* In the past, De Beers has raised debt finance to finance stocks and to exploit opportunities at difficult times in the diamond market. The raising of this debt finance has been facilitated by the existence of De Beers' shareholding in Anglo American. Without the portfolio, De Beers' ability to raise capital could be restricted and growth prospects limited.

*Earnings Cyclicity:* Retail demand in the diamond business responds to changes in economic activity. The lag in the diamond pipeline's response to changes in consumer demand has tended to accentuate the cyclical nature of the rough diamond business. The single product nature of De Beers' business and the volatile nature of the rough diamond business has been cushioned to an extent by the investment in Anglo American and the income stream relating thereto.

*Health:* HIV/AIDS is prevalent in Southern Africa. De Beers has developed education and prevention programmes.

*Workforce:* There has been a steady emigration of skilled personnel from Southern Africa in recent years. De Beers has developed innovative programmes to recruit, train and retain personnel. Parts of the diamond industry require advanced technological skills, and De Beers has developed an aggressive development and remuneration strategy, directly tied to individual performance, in order to retain core competencies. The retention of people will be dependent on the financial, economic and political stability of the region.

*Contractual Agreements:* De Beers' diamond purchase agreements with Russia and with BHP (in respect of the Ekati mine in Canada) expire in December 2001 and December 2002 respectively and are therefore subject to negotiated renewal. In addition, sales agreements with Namdeb and Debswana are subject to five-yearly negotiated renewal.

As is usual in mining industry practice, pre-emption rights and change of control clauses exist between De Beers and its joint venture partners. De Beers' joint venture agreements provide for sharing of expenditure. These agreements tend to limit choices available to De Beers while introducing uncertainty as to the terms of contract renewal.

*Additional Diamond Supply:* As evidenced in 1992 in Angola, additional unexpected supply of diamonds has the capacity to disrupt the industry. Additional diamond supply from African alluvial sources could occur as a result of the exploitation of new deposits and changes in the socio-political climate in certain of these countries.

*Market:* The market for diamonds, a high-fashion luxury product, is sensitive to changes in the global economic climate, affected particularly by the US economy. The US currently accounts for approximately half of world-wide consumer consumption of diamond jewellery in value terms. In 2001 De Beers, through the DTC, plans to spend approximately US\$180 million world-wide on generic diamond advertising.

*Conflict diamonds:* De Beers has taken a strong stance on this issue to ensure that the diamonds it markets are conflict-free. It has adopted a code of practice that also requires its sightholders to adopt the same policy. In the future, the DTC Forevermark may be used to distinguish diamonds as being sourced from conflict-free areas.

*Cuttable Synthetic Diamonds:* Synthetic diamonds, particularly industrial grit products, have been produced since the late 1950s. The technology to manufacture synthetic diamonds of sufficient size and quality for cutting and polishing has existed since 1970. However, production costs are high and it is only in the last few years that cuttable synthetics have been produced in commercial quantities albeit small: a few

thousand carats (cf 30Mcts per annum of polished natural gem diamonds). Nevertheless, any suggestion of synthetic diamonds being fraudulently sold as natural diamonds could have a disproportionate effect on consumer confidence. For this reason the DTC has an on-going research programme investigating the characteristic features of synthetic diamonds that can be used for identification and communicating this information to leading gem grading laboratories.

*Exchange Controls:* De Beers' operations in South Africa and Namibia fall within the Common Monetary Area ("CMA"). Although the South African government has committed to easing exchange controls, restrictions remain in force and any movement of funds outside the CMA remains subject to South African Reserve Bank approval. As a result, surplus cash flows from the South African and Namibian operations are not freely available for use in growing the business internationally.

*Taxation:* For over a year, the revenue authorities in South Africa and the UK have been engaged in general enquiries into the tax affairs of De Beers in their respective jurisdictions. These enquiries are general and wide ranging and include matters such as deductibility of expenses and transfer pricing.

## **11.5 Discount Rates**

### **11.5.1 Weighted average cost of capital**

De Beers has calculated its weighted average cost of capital ("WACC") for its diamond business adjusted to reflect the impact of its investment in Anglo American. As the level of gearing in the business is currently low, this calculation is heavily weighted by the cost of equity. The calculation utilises the Capital Asset Pricing Model ("CAPM") and assumes a global equity market risk premium of 6%.

De Beers' level of risk (beta) when compared to the market as a whole is statistically derived for the listed De Beers Linked Unit. However, as De Beers' investment in Anglo American makes up a substantial proportion of De Beers' market capitalisation, a 'diamond beta' must therefore be derived in order to remove the impact of the Anglo American investment in the De Beers beta. On this basis, De Beers estimates that its 'diamond beta' ranges between 1.3 and 1.5.

### **11.5.2 Mining company discount rates**

The recommended real discount rate for an operating base metal mine mid-life is 8% in an environment deemed to have little or no country risk (L. D. Smith: 'Discounted cash flow analysis methodology and discount rates'; CIM - PDAC Mining Millennium, 2000). It is felt that where discount rates are concerned, a base metal mine can be used as a proxy for a diamond operation.

### **11.5.3 Country risk premium**

Country risk can be assessed in a number of ways, such as through the analysis of bank forfaiting rates, and through surveys of persons involved in international mineral economics and project assessment. L. D. Smith conducted such a survey of Canadian Institute of Mining and Metallurgy Mineral Economics Society members for his 2000 paper. He found consensus for a 6% country risk premium for South Africa, and a 10% country risk premium for Africa in general.

A country risk premium should be added to discount rates used for investments in environments considered to have little or no country risk. Assuming the correct country risk premium for a mining company with most of its producing assets in Southern Africa is 6%, and adding the accepted discount rate for mid-life mining operations of 8%, a discount rate of 14% is derived.

#### 11.5.4 Discount rate range for valuation

Estimated WACCs for other mining companies comparable to De Beers and the implied discount rates estimated for comparable transactions have been considered.

On the basis of the above and for the purposes of presenting a valuation for the De Beers diamond business, a range of real discount rates of 10%, 12.5% and 15% has been used.

### 11.6 Results of Financial Analysis

#### 11.6.1 Income and Cash Flow Projections

Income and cash flow projections for De Beers for the period ending 2030 have been prepared on the basis of three supply/demand scenarios as follows:

- A 'consensus' case based on the consensus supply/demand scenario including a proportional amount of inferred mineral resources;
- A 'downside' case based on the downside supply/demand scenario including a proportional amount of inferred mineral resources; and
- An 'upside' case based on the upside supply/demand scenario including a proportional amount of inferred mineral resources.

These projections for the 'consensus' scenario are set out in Appendix III and are shown in nominal (money of the day) terms, and the net cash flow is converted into real (today's money) terms. These tables have been provided in both US dollars and South African Rands.

#### 11.6.2 Net Present Values and Asset Valuations

##### 11.6.2.1 Diamond Business

The NPVs, at real discount rates of 10%, 12.5% and 15% of the estimated future cash flows generated by De Beers' core diamond business, industrial diamond business and other assets incorporated into the financial model are set out in the table below. The NPVs have been prepared on the basis of the 'consensus', 'upside' and 'downside' supply/demand scenarios and appropriately factored inferred mineral resources.

REAL DISCOUNT RATES	10%		12.5%		15%	
	US\$M	RM	US\$M	RM	US\$M	RM
'Consensus' scenario	7,159	55,352	6,117	47,296	5,329	41,204
'Downside' scenario	4,967	38,403	4,246	32,829	3,699	28,598
'Upside' scenario	8,736	67,547	7,355	56,869	6,321	48,877

**11.6.2.2 Other Assets**

With respect to assets not incorporated into the financial model and valued separately, the estimated value of these assets is as follows:

Assets	US\$M
Exploration Properties	0-100
De Beers/ LVMH Branding Initiative	200-500
Listed Investments	300
Adjusted Net Cash	750
<b>TOTAL</b>	<b>1,250-1,650</b>

**11.6.2.3 Aggregate Asset Evaluation**

The aggregate values of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American on the basis of the various scenarios are as follows:

Scenario	Value Range	
	US\$M	RM
'Upside' scenario at 10%-15% real discount rate range	7,971-10,386	61,912-80,582
'Consensus' scenario at 10%-15% real discount rate range	6,779-8,609	52,659-66,807
'Downside' scenario at 10%-15% real discount rate range	4,949-6,217	38,473-48,278

On the basis of a real discount rate of 10.5% to 11.5% which Rothschild independent financial adviser to the Independent Committee, has advised is an appropriate basis on which to value the gem and industrial diamond businesses, the value of the gem and industrial diamond businesses and De Beers' other assets excluding its shareholding interest in Anglo American is as follows:

	US\$M	RM
Gem and Industrial Diamond Businesses	6,498-6,925	50,239-53,545
Other Assets	1,450-1,450	11,455-11,455
<b>TOTAL</b>	<b>7,948-8,375</b>	<b>61,694-65,000</b>

**11.6.2.4 Sensitivity Analysis**

The NPVs stated in Section 11.6.2.1 above are not particularly sensitive to variations in mine operating costs, capital expenditure and exchange rates. Sensitivity of the NPVs to diamond pricing, diamond production and demand is reflected in the scenarios in the table in Section 11.6.2.1.

On the basis of the 'consensus' scenario comprising only probable mineral reserves and indicated mineral resources, the NPV at a 10% to 15% real discount rate range amounts to US\$4,460 million to US\$5,638 million (or ZAR34,483 million to ZAR43,597 million).

**12. Conclusion**

A copy of the report has been provided to the committee of independent directors of De Beers and the committee's independent financial advisors, Rothschild. A copy of the financial model together with supporting working papers and relevant documentation has also been provided to Rothschild, which has used this report and the financial model as part of the basis of the preparation of its fair and reasonable opinion prepared in relation to the offer by DBI for De Beers.

## APPENDIX I

### Responsible Persons

#### Dr W.J. Kleingeld

Dr W.J. Kleingeld holds a doctor's degree in Mining Engineering from the Grand Ecole Nationale Superieure Des Mines De Paris. He is a member of SACNASP and is registered as a Competent Person in the evaluation of mineral resources and reserves. He is also Chairman of the Diamonds Sub-Committee for SAMREC. His title is Group Manager Mineral Resources and is responsible for Mineral Resource Management in De Beers.

#### Mr M.L.S. De Sousa-Oliveira

Mr M.L.S. De Sousa-Oliveira is Head of De Beers Corporate Finance and a member of the De Beers Executive Committee. Mr De Sousa-Oliveira is both a Chartered Accountant and a Chartered Management Accountant and has extensive experience in mergers, acquisitions, new company flotations and project financing. He was appointed Head of De Beers' newly established Corporate Finance Department in January 1998.

#### Mr G.P.H. Penny

Mr G.P.H. Penny has assumed the role of Responsible Person for DTC Sales and Marketing issues discussed in this report. Mr Penny was a Rhodes Scholar at Oxford where he obtained an MA in Philosophy, Politics and Economics. He is a 'director' of the DTC and a member of the De Beers Executive Committee, and will assume overall responsibility for De Beers' worldwide sales and marketing activities with effect from July 2001.

#### Mr W.F. McKechnie

Mr W.F. McKechnie obtained a B.Sc (Hons) degree in Geology from the University of Aberdeen in 1974. He is a member of the Geological Society of South Africa and South African Council for Natural Scientific Professions (SACNASP). He has 26 years experience covering most aspects of diamond exploration, evaluation and mining and holds the position of Group Manager Exploration responsible for De Beers' global exploration and associated laboratory support activities.

#### Mr A.P. Guthrie

Mr A.P. Guthrie obtained a National Higher Diploma (Metalliferous Mining) from the Witwatersrand School of Mines in 1982. He is a member of the Association of Mine Managers, the South African Institute of Mining and Metallurgy, a Director of the Mine Rescue Services Pty (Ltd) and was the previous Chairman of the Northern Cape Association of Mine Managers. He is the General Manager Mining responsible for mining practices, mine planning, mining projects, surveying practices, safety, health and environmental practices within De Beers and has 25 years experience of a variety of mining methods.

#### Mr A.C. Rowan

Mr A.C. Rowan is the General Manager Metallurgy and is responsible for metallurgical discipline. He obtained a M.Sc (Organic Chemistry) from UOFS in 1970. He has held several senior positions including that of General Manager (DebTech) from 1994 to 1996. He is a member of the Advisory Board of the Engineering Faculties of both the Stellenbosch and Pretoria Universities.

#### Mr G.D. Scott

Mr G.D. Scott obtained a BSc in Electrical Engineering in 1986. He is currently the Manager Engineering and has held several senior positions in De Beers. He is a member of the Chartered Engineers Institute (MIEE).

#### Mr J.G. Hughes

Mr J.G. Hughes manages Southern African producer relations at De Beers. He obtained a BSc. in Civil Engineering from the University of Cape Town and an M.Phil. in Management Studies from Oxford as a Rhodes Scholar. He has 16 years experience in the mining industry with Anglo American and De Beers. He

is a member of the Executive Committee, he chairs the Administrative Committee and he oversees the Legal Services Department.

**Mr L.J. Gatherer**

Mr L.J. Gatherer is the Group Manager Human Resources. He obtained a BA (Hons) in Psychology 1972, an advanced Diploma in Personnel Management/Training Management in 1975, and completed a certificate program in Industrial Relations in 1984. He is a member of the South African Board for Personnel Practice and is an associate member of IPM (1974). He has 26 years experience in the field commencing at Anglo American's gold division then joining De Beers in 1989. From 1995 to 1999 he was Training Consultant at Maccauveli Training and Conference Centre and was appointed Group Manager, Human Resources in August 1999.

**Dr M. Berry**

Dr M. Berry has a BSc in Biological Sciences, a MSc in Wildlife Management and a PhD in Resource Ecology. Mark Berry was appointed in 1992 as ecologist responsible for formulating and directing environmental management programmes at all De Beers' Southern African mining operations, including Botswana and Namibia. Presently he holds the position of Manager Environmental Services responsible for corporate environmental policy and practice consulting to De Beers' diamond mining operations world-wide. Areas of expertise include wildlife management, environmental impact assessment and management of diamond mining, and restoration ecology.

## APPENDIX II

### Definitions, Terminology and Abbreviations

Unless otherwise defined in this report, capitalised terms referred herein shall have the same meaning as ascribed to them in the Circular.

#### 1. Definitions

“Competent Person”	A person who has a minimum of five years experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which that person is undertaking, as defined under the SAMREC Code for reporting of mineral resources and reserves.
“Debid”	De Beers Industrial Diamonds Division
“DTC”	The marketing arm of the De Beers Group, now known as the Diamond Trading Company, previously known as the Central Selling Organisation
“Responsible Person”	For the purposes of this report, a person who is a delegated head of a technical, financial, or legal discipline with responsibility for the information contained in this report.
“TFR”	This Technical and Financial Report as prepared by Dr W.J. Kleingeld, Mr M.L.S. De Sousa-Oliveira and Mr G.P.H. Penny

#### 2. Units

°	degree (measurement of angle)
%	percent
°C	degrees Celsius
c, ct	carat (5ct = 1 g)
cm	centimetre
cpcm	carats per cubic metre
cpsm or cts/m <sup>2</sup>	carats per square metre
cpht	carats per hundred tonnes of ore treated
g	gram
h,hr	hour
ha	hectare
kg	kilogram
km	kilometre
km <sup>2</sup>	square kilometre
m	metre
M	million
m <sup>3</sup>	cubic metres
Ma	million years ago
mamsl	metres above mean sea level
mLs	metre levels
mm	millimetre
ppm	parts per million
R or ZAR	South African Rand
t	tonnes
tpa	tonnes per annum
tph	tonnes per hour
tpm	tonnes per month
tpy	tonnes per year
US\$	United States dollar
US\$/ct or US\$/ct	United States dollar per carat

**3. Terms**

Aeolian	Erosion features and deposits which are due to the action of wind and transporting action of wind
Aggradation	To build up sequence of sediment through deposition
Arena	Simulation package – used to simulate mining processes
Audit	Check or procedure to see if events have been conducted orderly
Bedrock	Term for rock, usually solid, that underlies soil or other unconsolidated, superficial material
Bottom cut-off Screen Size	The size of the screen used to separate the product to be treated for diamond recovery from undersize material
Bulked	Material not insitu – has been excavated and has expanded by a bulking factor
Carat	Unit of weight for diamonds, pearls and other gems. Metric carat or international carat = 0.2 g
Clastic	Sedimentary particles consisting of fragments of rock
Coarse discard	Discard material from the processing plant that is greater than the bottom cut off size and less than the top cut off size
Comminution	Size reduction of ore by means of crushing, milling, scrubbing to liberate minerals
Concentrate	Material that has been separated from an ore and which has a higher concentration of mineral values than the mineral values originally contained in the ore
Contribution	Revenue less the cost per unit of resource
Cost	Cost of activity per unit of resource
Cretaceous	65 to 135 Ma
Cut-off grade	i) The lowest grade of mineralised material considered economic to extract; used in the calculation of the ore reserves in a given deposit ii) Grade used to maximise NPV against a specific set of economic criteria (eg. planning, operational, breakeven)
Density	Measure of quantity of mass in unit volume – kg/m <sup>3</sup>
Deflation	Erosion and removal of particles by transporting action of wind
Diamond footprint	An assortment of diamonds required to depict consistent trends in diamond characteristics (e.g. size, quality)
Diamond Grade	the content in carat weight per unit volume of resource or per unit weight of reserve
Diamond Mass	the carat weight of a diamond, one carat being equivalent to 0.2gram
Diamond Resource	Mineral Resource, for the purposes of this report
Diamond Reserve	Mineral Reserve, for the purposes of this report
Diamond value	The estimated average value of the diamonds in the deposit expressed in terms of US\$ or US\$/ct at a stated bottom screen cut-off size

Dilution	Impact on mined grade through the contamination of non ore species entering the extracted rock
Dumps	Heap or pile of treated material – should be barren or of low value
Estimation	Quantitative judgement of worth (eg. grade, size, revenue)
Exotic	Derived from beyond a local area and introduced from afar
Exploration	Exploration entailing prospecting, sampling, mapping, diamond drilling and other work involved in the search for mineralisation
Facies	Term used to distinguish part or parts of a single geological entity
Factorised grade	Grade which has been modified by applying relative factors like dilution, liberation and recovery
Feasibility study	A comprehensive engineering estimate of all costs, revenues, equipment requirements and production levels likely to be achieved if a mine is developed. The study is used to define the technical and economic viability of a project and to support the search for project financing
Fluvial	Of or pertaining to rivers, produced by the action of rivers
Gangue	The unwanted or waste material, minerals or rock, in which diamonds are contained
Garnet	A group of silicate minerals which are used as a gem and as an abrasive, reddish brown in colour, of formula : $A_3B_2(SiO_4)_3$ , where A = Ca, Mg, $Fe^{+2}$ and $Mn^{+2}$ , and B = Al, $Fe^{+3}$ , $Mn^{+3}$ and Cr
Gemcom	Geological modelling/mining software package
Geometric crushing	This mode of crushing occurs in most crushing devices where the volume of space around a particle is reduced to cause uniaxial stress and subsequent breakage
Geostatistics	Development and application of mathematical and statistical models which take specific account of the spatial structure of a regionalised variable
Grade	The concentration of diamonds in the ore, or stream in the processing plant, typically measured in carats per hundred tonnes
Granulometry	Pertaining to a distribution of particle sizes eg. tailings
Grease belt	A device that exploits the hydrophobic properties of diamonds to separate it from the other mineral components found in the concentrate
Grit	Particles ranging in size from 2mm to 4mm in diameter
Grizzly	A robust form of sizing screen designed to remove oversize boulders from crusher feed, some are static and others are vibrated to improve efficiency when there is a lot of material that is near the size of the apertures in the grizzly
Gulley	Linear erosional feature created by fluid flow and aligned with current direction worn into rock or consolidated sediment
Hanging wall	The overlying side of an orebody or underground mine opening
Hardness	The resistance of a rock to indentation. Several tests exist to determine this property, as it is a primary determinant of the energy requirement in comminution

High Density DMS	Usually a secondary process to a low density DMS, whereby excessive quantities of concentrates are reduced by using a high/medium density between 3.8g/cm <sup>3</sup> and 3.9g/cm <sup>3</sup> to float-off diamonds whilst sinking the heavier minerals (mainly zircons and garnets)
Holocene	Recent (10,000 years or less)
HPRC	High Pressure roll crusher
Incision	Cut down into, as a river cuts into a plateau or valley floor
Indicated Mineral Resource or Indicated Resource or Indicated Diamond Resource	That part of a Diamond Resource for which tonnage, densities, shape, physical characteristics, grade and diamond value can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed and sufficient diamonds have been recovered to allow a confident estimate of average diamond value
Indicator minerals	Garnet, chrome spinel, ilmenite, chrome diopsides
Inferred Mineral Resource or Inferred Resource or Inferred Diamond Resource	That part of a Diamond Resource for which tonnage, grade and diamond value can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified by geological and/or grade continuity and a sufficiently large diamond parcel is not available to ensure a reasonable representation of the diamond assortment. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited or of uncertain quality and reliability
In situ	In its original place ie in unblasted or unbroken rock
Inter particle crushing	A mode of crushing where the ore particles are subjected to multiaxial stress in order to create a stress boundary around minerals of value and improve their liberation
Kimberlite	A porphyritic alkalic peridotite containing abundant phenocrysts of olivine and phlogopite and possibly geikielite and chromian pyrope in a fine grained groundmass of calcite and second generation olivine and phlogopite and with accessory ilmenite, serpentine, chlorite, magnetite and perovskite
Kriging	A mathematical statistical method of estimating the value of a regionalised variable at a point or in a block in space, using observations of the variable in and around the point or block. Various forms of kriging include – normal, ordinary, dis-junctive, iso-factorial etc
Lag Gravel	Residual accumulation of coarser particles from which finer material has been removed
Lerch-Grossmann	Lerch-Grossmann algorithm used in the Whittle and NPV-Scheduler software package which is an approximation to an optimum economic pit shell given revenue, costs and slope angles
Level	The workings or tunnels of an underground mine which are on the same horizontal plane. Level numbers usually designate depth below the shaft collar
Liberation	Freeing of mineral from gangue material

Low Density DMS	Also deemed as a normal DMS process used to eliminate low density constituents such as organic material. Ferrosilicon medium having a density of 2.2g/cm <sup>3</sup> and a cut-off of 2.65g/cm <sup>3</sup> is used to float-off the light density material allowing approximately 50% of the heavy density material to sink to the bottom forming a concentrate
Macro-diamonds	Diamonds not passing through 0.5mm square mesh
Marine Regression	Relative fall in sea-level
Marine Transgression	Relative rise in sea-level
Measured Resource	That part of a mineral resource for which tonnage, densities shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are paced closely enough to confirm geological and grade continuity
Mechanised mining	Mining operations which are partly or fully conducted using machines powered by electricity or diesel fuel
Metallurgy	The process whereby minerals of value are extracted from host ore for marketing
Micro-diamonds	Recovered diamonds less than 0.5mm
Middle Cut-off Screen Size	The size of the screen used to separate oversize material to be re-crushed prior to re-treatment for diamond recovery
Mining Licence	An authorisation issued by the department of Minerals and Energy Affairs in terms of section 9 of the Minerals Act 50 of 1991, allowing the holder of the common law rights to mine to exercise some rights
Mining Area	The geographic area in respect to which a mining licence is granted
Models	An accurate simulation, by means of description, statistical data or analogy of a thing or process that cannot be observed directly
Multivariate discriminant analysis	The simultaneous measurement of a large number of geochemical variables in order to classify and interpret rocks of the same nature
Nominal terms (values)	The value of money quoted in money of the day, i.e. adjusted to compensate for inflationary changes
Open-pit	Surface mining in which the ore is extracted from a pit. The geometry of the pit may vary with the characteristics of the orebody
Optimisation	Creating the best scenario (eg. money, profit) against a given set of physical constraints
Ore	Implies an accumulation of gravels (placers) and/or kimberlite material comprising a quantifiable portion/or concentration of diamonds. According to the SAMREC Code, it implies that a technical feasibility study has been conducted resulting in economic viability. (In a diamond context)
Orebody	A continuous well defined mass of material of sufficient mineral content to warrant investigation
Overburden	Waste material overlying the ore body
Palaeoshoreline	Fossil shoreline or coast

Palaeo-valley	Fossil river valley
Placer deposits	Aeolian, eluvial, fluvial, beach or marine
Pothole	Circular erosional depression caused by fluid flow worn into rock or consolidated sediment
Price book	Price per diamond size, colour, shape and quality drawn up by the DTC
Primary deposit	Kimberlite pipes, dykes, blows or fissures, lamproites
Probable Mineral Reserve	The economically mineable material derived from a Measured and/or Indicated Diamond Resource. It is estimated with a lower level of confidence than a Proven Diamond Reserve. It is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified
Prospecting Permit	An authorisation issued by the department of Minerals and Energy in terms of section 6 of the Minerals Act 50 of 1991 to the holder of a mineral right or to a person who has obtained the consent to prospect from the mineral rights holder, allowing such person to prospect on the land to which the permit relates
Proven Mineral Reserve	The economically mineable material derived from a Measured Diamond Resource. It is estimated with a high level of confidence. It is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, including consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified
Real terms (values)	Costs and revenues given in constant money terms, i.e. established at a given point in time, then kept constant for the life of the project
Reconciliation	Show compatibility by argument or in practice
Recoverable grade	Grade with modifying factors applied (eg. dilution, liberation, recovery)
Recovery	Final separation process of diamonds from non-diamonds in the concentrate
Recrush size	Size of material used to separate oversize material to be re-crushed prior to re-treatment for diamond recovery
Refractory ore	Any ore that does not respond to conventional mineral processing to produce acceptable product recoveries without an intermediate step to address its refractory attributes
Reserve	The reserve is that part of the measured or indicated mineral resource which can be mined, inclusive of dilution, and from which valuable minerals could be recovered economically under conditions realistically assumed at the time of reporting
Resource	Is a concentration or occurrence of material of intrinsic economic interest in or on the earth's crust (in-situ and bulked eg. stockpiles), in such a form or quantity that there are reasonable prospects for eventual economic extraction
Resource grade	In-situ, unfactorised grade of a diamond resource

Revenue	Revenue in US\$/ carat
Sample	Individual part taken from something (eg. orebody, dump) illustrating something about the qualities
Sample chips	Samples that have been broken by percussion or other means
Sample core	Solid core from down-hole samples
Sampling	Taking small pieces of rock at intervals along exposed mineralisation for assay (to determine the mineral content)
SAMREC	South African Mineral Resource Committee under the auspices of the South African Institute of Mining and Metallurgy
SAMREC Code	South African Code for Reporting of Mineral Resources and Mineral Reserves, prepared by the SAMREC
Sand Sea	Large agglomeration of sand dunes formed by wind action
Scour Pod	Overdeepened section of a river valley
Scrubber	A drum-like device lined with rubber that rotates the charge in order to remove mud and fine ore from the surface of the rock
Sea Wall	Barrier built with overburden sands to create access to submerged deposits for diamond winning
Secondary mineralisation	Mineralisation resulting from the weathering of primary ore, usually leading to an increase in the concentration of the mineral of interest
Sedimentary	Formed by the deposition of solid fragmental material that originates from weathering of rocks and is transported from a source to a site of deposition
Sedimentology	The study of sediments
Shaft	A mine-working (usually vertical) used to transport miners, supplies, ore, or waste
Simulation	Representation of a physical system by a device (eg. computer, model) that imitates the behaviour of the system
Size distribution	An array of the instances of the size variable arranged by classes according to their value
Slime	Discard material from the processing plant that is less than the bottom cut off aperture
Slimes dam	A dam used to create an impoundment basin within which to deposit fine slurry like tailings
Spit	A small point of land or narrow shoal projecting into a body of water from the shore
Stockpile	A store of unprocessed ore or marginal grade material
Stockpiles	Piles of broken or bulked ore which contains grade and value
Stone size	Size of a stone measured as ct/stn
Stripping	Mechanical removal of overburden

Sub Level Caving	A mining method whereby ore is allowed to cave into drifts located on sub-levels from which the ore is extracted
Sub Level open stoping	A mining method whereby ore is blasted from horizontal workings placed at intermediate levels (sub-levels) into drawpoints located on main levels, from which the ore is hauled away
Tailings	That portion of the ground ore from which valuable minerals have been extracted and is rejected or floated during concentration, changes in technology or economic circumstances can sometimes make the tailings economic to reprocess at a later date
Tectonic	Pertaining to or designating the rock structure and external forms resulting from deformation of the earth's crust
Tertiary	2 to 65 Ma
Thickener	A mineral processing unit for water reclamation that works by settling out the contaminant fine ore and hence "thickening" it
Three Halves	An approach to design in which the team drives towards halving the key resources consumed in the design and operation of a process e.g. half the time half the cost and half the size for the same throughput
Title to mine	The underlying common law right to mine coupled with the necessary mining authority, issued by way of a mining licence, to mine the deposit to which the right to mine relates
Top cut-off	The size of the screen used to separate oversize material to be crushed prior to treatment for diamond recovery
Top Cut-off Screen Size	The size of the screen used to separate oversize material to be crushed prior to treatment for diamond recovery
Tracer	Substance used in a process to trace its course
Trap site	A feature in a palaeochannel that leads to the concentration of dense minerals and rocks
Un-factorised grade	Grade with no modifying factors
Waste	Country rock that does not contain economic mineralisation grades
Whittle	Open Pit optimisation package using the Lerch-Grossmann algorithm
Winze – HIVIS	The blasted material from a one-metre advance in the winze that was treated through the HMS
X-Ray Machine	A unit that separates diamonds from gangue utilising the luminescent characteristics of diamond
Yield	Amount yielded or produced through a process as a function of input

#### 4. Abbreviations

ADT	Articulated Dump Truck
BHOS	Blast Hole Open Stopping
BHP	BHP Limited
CARP	Completely Automated Recovery Plant

CHQ	De Beers' corporate headquarters in Johannesburg
CMA	Common Monetary Area
CMMI	Council of Mining and Metallurgical Institutions
CTP	Combined Treatment Plant in Kimberley
DCT	Diamond Control Team, a multidisciplinary audit team that carries out annual visits to each operation to evaluate the status of security control systems
DMS	Dense Media Separation, usually using a medium of water and ferrosilicon to achieve an apparent medium density of 3.1 g/cm <sup>3</sup>
DRL	De Beers' Diamond Research Laboratory
DTM	Digital Terrain Model
DVM	Diamond Value Management, a strategic initiative to optimise the recovered value of diamonds
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPR	Environmental Management Programme, a document setting out the company's plans to rehabilitate the surface of land disturbed during mining operations, as required by the Minerals Act 50 of 1991
FISH	Fully Integrated Sort House
FY	Financial Year
G2	Simulation software package used to simulate mining and treatment processes
GDP	Gross Domestic Product
GPM	Group Production Model
GSC	De Beers' GeoScience Centre
GSPS	De Beers' Geological Sample Processing Services Laboratory
JORC	Joint Ore Reserve Committee (Australia)
ISO	International Standards Organisation
KPA	Key Performance Areas, the principle components and areas of responsibilities of an employee's function
KPI	Key Performance Indicators, standards and targets against which employees are measured on a quarterly basis
LARA	Lower Acquisition Recovery Automation
LHD	Load-Haul-Dump Units
LDD	Large Diameter Drilling
LOM	Life of Mine
LP	Linear Programming

LTIFR	Long Time Injury Frequency Rate
MCF	Mine Call Factor (volumetric, tonnage, areal)
MINRAS	Mineral Resource Auditing System
MRIM	Mineral Resource Information Management
MRM	Mineral Resource Management
NOSA	National Occupational Safety Association
NPV	Net present value
NPV-Scheduler	Optimised scheduling software package
ODS	Ore Dressing Studies – define characteristics of different ore types that could occur in an ore body
PEP	Project Execution Plan
PLC	Programmable Logic Controller
RDBMS	Relational Database Management System
ROC	Required Operating Capability, a document which details the functional performance of a unit process or platform
ROM	Run-of-mine; ore feed from mine which includes mining dilution
SACNASP	South African Counsel for Natural and Scientific Professions
SADC	The Southern African Development Community
SAIMM	South African Institute of Mining and Metallurgy
SBP	Strategic Business Plan per operating mine, herein reference is made to the SBP compiled in mid-2000
SCADA	Supervisory Control and Data Acquisition
WACC	Weighted Average Cost of Capital

## APPENDIX III

## De Beers' Diamond Business Combined Forecast Income and Cash Flow Statements attributable to De Beers' Linked Units

## Consensus Scenario

US\$ millions - nominal terms	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 to 2015	2016 to 2020	2021 to 2030	2001 to 2030
<b>Diamond Business Forecast Income Statement</b>														
Sales	5,155	5,329	5,110	4,987	5,117	5,328	5,105	5,247	5,405	5,590	25,038	20,347	34,411	132,170
Trade investment income	461	434	512	487	481	515	512	541	574	572	2,575	2,226	3,687	13,578
Other income	125	124	130	139	141	155	156	163	167	170	883	941	453	3,745
	5,741	5,887	5,752	5,613	5,739	5,998	5,773	5,951	6,146	6,332	28,497	23,514	38,550	149,493
<i>Deduct:</i>														
Purchases	3,330	2,971	3,145	3,106	3,162	3,269	2,727	2,830	2,963	2,969	13,811	12,474	21,439	78,197
Depreciation and amortisation	117	142	156	189	234	232	239	208	202	187	842	541	266	3,555
Production costs	470	470	485	606	688	718	757	774	814	829	4,236	3,312	4,921	19,080
Decrease (increase) in stocks	378	660	153	30	(57)	(82)	107	(30)	(51)	(51)	355	355	1,366	3,133
Marketing expenditure	175	180	184	186	189	194	185	187	192	198	877	711	1,158	4,615
Sorting and selling costs	235	241	247	253	260	266	273	279	286	294	1,295	1,016	1,627	6,572
Exploration/Prospecting	63	64	66	67	69	71	73	74	76	78	345	271	434	1,752
Research and new business development	46	47	48	50	51	52	53	55	56	58	254	199	319	1,289
<b>Net Diamond Account</b>	<b>927</b>	<b>1,111</b>	<b>1,268</b>	<b>1,125</b>	<b>1,145</b>	<b>1,278</b>	<b>1,359</b>	<b>1,573</b>	<b>1,607</b>	<b>1,769</b>	<b>6,480</b>	<b>4,636</b>	<b>7,022</b>	<b>31,300</b>
<i>Add:</i>														
Investment income	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest income	71	70	70	70	70	70	70	70	70	59	295	295	515	1,798
Surplus on realisation of fixed assets and investments	(2)	0	0	0	0	0	0	0	0	0	0	0	0	(2)
<i>Deduct:</i>														
Interest payable	94	86	80	77	73	72	71	70	69	49	233	215	321	1,510
Corporate overhead	39	40	41	42	43	44	45	46	47	48	214	168	269	1,085
<b>Net income before taxation</b>	<b>864</b>	<b>1,055</b>	<b>1,217</b>	<b>1,077</b>	<b>1,099</b>	<b>1,232</b>	<b>1,314</b>	<b>1,527</b>	<b>1,561</b>	<b>1,731</b>	<b>6,328</b>	<b>4,549</b>	<b>6,947</b>	<b>30,501</b>
Taxation	302	297	329	331	486	375	415	460	507	559	1,935	1,263	1,747	9,007
<b>Net income after taxation</b>	<b>562</b>	<b>758</b>	<b>888</b>	<b>746</b>	<b>613</b>	<b>857</b>	<b>898</b>	<b>1,067</b>	<b>1,054</b>	<b>1,172</b>	<b>4,393</b>	<b>3,286</b>	<b>5,200</b>	<b>21,494</b>
Attributable to outside shareholders in subsidiaries	8	12	10	7	6	4	2	0	2	2	13	15	36	119
<b>Total net earnings</b>	<b>553</b>	<b>746</b>	<b>879</b>	<b>739</b>	<b>606</b>	<b>853</b>	<b>896</b>	<b>1,067</b>	<b>1,052</b>	<b>1,169</b>	<b>4,380</b>	<b>3,271</b>	<b>5,164</b>	<b>21,375</b>
<b>Diamond Business Forecast Cash Flow Statement</b>														
<b>Operating activities</b>														
Net income before taxation	864	1,055	1,217	1,077	1,099	1,232	1,314	1,527	1,561	1,731	6,328	4,549	6,947	30,501
Non cash items (add back depreciation and amortisation)	138	159	171	194	251	248	256	225	204	203	775	480	173	3,477
Dividends and interest	(439)	(418)	(502)	(481)	(478)	(514)	(511)	(542)	(576)	(582)	(2,637)	(2,306)	(3,881)	(13,865)
(Increase) decrease in diamond stocks	356	643	138	25	(75)	(97)	90	(47)	(53)	(67)	423	416	1,458	3,211
(Increase) decrease in working capital	(1)	(2)	(2)	(2)	(1)	(3)	(2)	(4)	(5)	(2)	(13)	(15)	(21)	(74)
<b>Cash generated by operations</b>	<b>919</b>	<b>1,437</b>	<b>1,022</b>	<b>813</b>	<b>796</b>	<b>866</b>	<b>1,146</b>	<b>1,160</b>	<b>1,132</b>	<b>1,283</b>	<b>4,876</b>	<b>3,123</b>	<b>4,677</b>	<b>23,250</b>
Dividends received	461	434	512	487	481	515	512	541	574	572	2,575	2,226	3,687	13,578
Net interest received (paid)	(23)	(16)	(10)	(6)	(3)	(2)	(1)	0	1	10	62	80	194	287
Taxation (paid)	(272)	(289)	(331)	(345)	(345)	(374)	(406)	(418)	(488)	(617)	(2,136)	(1,379)	(1,744)	(9,143)
<b>Cash available from operating activities</b>	<b>1,086</b>	<b>1,566</b>	<b>1,193</b>	<b>949</b>	<b>929</b>	<b>1,006</b>	<b>1,252</b>	<b>1,283</b>	<b>1,220</b>	<b>1,248</b>	<b>5,377</b>	<b>4,050</b>	<b>6,814</b>	<b>27,972</b>
<b>Investing activities</b>														
Property, plant and equipment	416	227	412	361	382	230	99	96	85	93	377	302	373	3,453
Investments											0	0	0	0
<b>Cash utilised in investing activities</b>	<b>416</b>	<b>227</b>	<b>412</b>	<b>361</b>	<b>382</b>	<b>230</b>	<b>99</b>	<b>96</b>	<b>85</b>	<b>93</b>	<b>377</b>	<b>302</b>	<b>373</b>	<b>3,453</b>
Distributions to minorities	0	(13)	(12)	(10)	(7)	(6)	(3)	(3)	(4)	(4)	(23)	(26)	(57)	(168)
Net cash flow attributable to linked unit holders from the diamond business	669	1,326	769	579	540	769	1,150	1,185	1,131	1,151	4,976	3,722	6,384	24,351
Ending cash balance													732	732
Net cash flow attributable to linked unit holders from the diamond business plus ending cash balance	669	1,326	769	579	540	769	1,150	1,185	1,131	1,151	4,976	3,722	7,116	25,083
<b>Net cash flow attributable to linked unit holders from the diamond business (real terms)</b>	<b>661</b>	<b>1,278</b>	<b>723</b>	<b>531</b>	<b>483</b>	<b>672</b>	<b>980</b>	<b>984</b>	<b>917</b>	<b>910</b>	<b>3,668</b>	<b>2,425</b>	<b>3,809</b>	<b>18,041</b>

## Real terms NPVs with base date 1st January 2001

Discount rate	Including inferred resources	Excluding inferred resources
10.0%	7,159	5,638
12.5%	6,117	4,977
15.0%	5,329	4,460

Note: The De Beers Supply/Demand model seeks to forecast DTC sales and changes in diamond prices over a 10-year period but not specifically on a year by year basis. Accordingly, this impacts on the financial projections set out in this report which are not therefore intended to be year by year specific but intended to cover a period of years. The financial projections have been prepared by De Beers on the basis of current assumptions and have not been reported on independently.

## APPENDIX III

## De Beers' Diamond Business Combined Forecast Income and Cash Flow Statements attributable to De Beers' Linked Units

## Consensus Scenario

ZAR millions - nominal terms	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 to 2015	2016 to 2020	2021 to 2030	2001 to 2030
<b>Diamond Business Forecast Income Statement</b>														
Sales	40,728	43,950	43,994	44,818	48,003	52,178	52,188	55,995	60,215	65,013	330,709	332,869	770,041	1,940,700
Trade investment income	3,646	3,579	4,408	4,377	4,514	5,046	5,231	5,776	6,397	6,650	34,026	36,442	82,404	202,496
Other income	984	1,022	1,119	1,246	1,321	1,518	1,595	1,738	1,860	1,974	11,722	15,467	10,175	51,740
	45,357	48,550	49,521	50,441	53,839	58,742	59,014	63,508	68,472	73,638	376,457	384,778	862,619	2,194,935
<i>Deduct:</i>														
Purchases	26,311	24,505	27,076	27,914	29,662	32,016	27,879	30,205	33,013	34,532	182,493	204,588	477,000	1,157,193
Depreciation and amortisation	922	1,170	1,346	1,699	2,191	2,271	2,448	2,222	2,252	2,171	11,146	8,713	5,722	44,273
Production costs	3,712	3,878	4,175	5,444	6,450	7,033	7,734	8,265	9,066	9,645	56,186	53,944	111,785	287,317
Decrease (increase) in stocks	2,984	5,445	1,314	269	(534)	(798)	1,091	(322)	(567)	(589)	4,750	5,792	36,509	55,343
Marketing expenditure	1,385	1,482	1,585	1,673	1,770	1,897	1,889	1,991	2,136	2,307	11,579	11,633	25,770	67,096
Sorting and selling costs	1,857	1,987	2,127	2,275	2,435	2,605	2,788	2,983	3,191	3,415	17,099	16,603	36,219	95,584
Exploration/Prospecting	495	530	567	607	649	694	743	795	851	910	4,558	4,425	9,654	25,477
Research and new business development	364	390	417	446	478	511	547	585	626	670	3,353	3,256	7,103	18,746
<b>Net Diamond Account</b>	<b>7,327</b>	<b>9,163</b>	<b>10,913</b>	<b>10,113</b>	<b>10,739</b>	<b>12,513</b>	<b>13,897</b>	<b>16,783</b>	<b>17,904</b>	<b>20,578</b>	<b>85,294</b>	<b>75,824</b>	<b>152,858</b>	<b>443,905</b>
<i>Add:</i>														
Investment income	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest income	561	579	605	631	659	688	718	750	783	686	3,911	4,849	11,756	27,176
Surplus on realisation of fixed assets and investments	(16)	0	0	0	0	0	0	0	0	0	0	0	0	(16)
<i>Deduct:</i>														
Interest payable	741	712	690	689	689	704	724	745	766	573	3,087	3,522	7,553	21,196
Corporate overhead	307	328	351	376	402	430	460	492	527	564	2,822	2,741	5,978	15,777
<b>Net income before taxation</b>	<b>6,824</b>	<b>8,702</b>	<b>10,477</b>	<b>9,680</b>	<b>10,307</b>	<b>12,066</b>	<b>13,431</b>	<b>16,296</b>	<b>17,394</b>	<b>20,128</b>	<b>83,295</b>	<b>74,410</b>	<b>151,082</b>	<b>434,092</b>
Taxation	2,386	2,450	2,830	2,972	4,557	3,676	4,246	4,910	5,651	6,504	25,472	20,626	37,583	123,863
<b>Net income after taxation</b>	<b>4,438</b>	<b>6,252</b>	<b>7,647</b>	<b>6,708</b>	<b>5,749</b>	<b>8,391</b>	<b>9,184</b>	<b>11,386</b>	<b>11,743</b>	<b>13,624</b>	<b>57,823</b>	<b>53,784</b>	<b>113,500</b>	<b>310,229</b>
Attributable to outside shareholders in subsidiaries	66	101	84	64	61	42	21	1	26	28	174	244	824	1,737
<b>Total net earnings</b>	<b>4,372</b>	<b>6,151</b>	<b>7,564</b>	<b>6,644</b>	<b>5,688</b>	<b>8,349</b>	<b>9,164</b>	<b>11,385</b>	<b>11,716</b>	<b>13,596</b>	<b>57,649</b>	<b>53,540</b>	<b>112,676</b>	<b>308,492</b>
<b>Diamond Business Forecast Cash Flow Statement</b>														
<b>Operating activities</b>														
Net income before taxation	6,824	8,702	10,477	9,680	10,307	12,066	13,431	16,296	17,394	20,128	83,295	74,410	151,082	434,092
Non cash items (add back depreciation and amortisation)	1,090	1,311	1,472	1,740	2,356	2,426	2,617	2,404	2,274	2,355	10,291	7,755	3,379	41,470
Dividends and interest	(3,465)	(3,446)	(4,323)	(4,319)	(4,484)	(5,030)	(5,226)	(5,781)	(6,413)	(6,763)	(34,850)	(37,769)	(86,607)	(208,476)
(Increase) decrease in diamond stocks	2,816	5,304	1,189	227	(699)	(954)	922	(504)	(589)	(773)	5,605	6,751	38,851	58,146
(Increase) decrease in working capital	(5)	(19)	(17)	(22)	(13)	(29)	(25)	(39)	(52)	(29)	(175)	(245)	(529)	(1,199)
<b>Cash generated by operations</b>	<b>7,260</b>	<b>11,852</b>	<b>8,797</b>	<b>7,307</b>	<b>7,466</b>	<b>8,480</b>	<b>11,719</b>	<b>12,377</b>	<b>12,613</b>	<b>14,918</b>	<b>64,167</b>	<b>50,901</b>	<b>106,177</b>	<b>324,034</b>
Dividends received	3,646	3,579	4,408	4,377	4,514	5,046	5,231	5,776	6,397	6,650	34,026	36,442	82,404	202,496
Net interest received (paid)	(180)	(133)	(85)	(58)	(30)	(16)	(6)	5	16	113	824	1,327	4,203	5,980
Taxation (paid)	(2,148)	(2,385)	(2,850)	(3,097)	(3,236)	(3,660)	(4,150)	(4,464)	(5,431)	(7,170)	(28,104)	(22,414)	(37,511)	(126,622)
<b>Cash available from operating activities</b>	<b>8,576</b>	<b>12,913</b>	<b>10,270</b>	<b>8,529</b>	<b>8,714</b>	<b>9,849</b>	<b>12,795</b>	<b>13,694</b>	<b>13,595</b>	<b>14,511</b>	<b>70,912</b>	<b>66,257</b>	<b>155,272</b>	<b>405,888</b>
<b>Investing activities</b>														
Property, plant and equipment	3,285	1,869	3,547	3,241	3,585	2,255	1,009	1,021	952	1,080	4,984	5,005	8,497	40,331
Investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Cash utilised in investing activities</b>	<b>3,285</b>	<b>1,869</b>	<b>3,547</b>	<b>3,241</b>	<b>3,585</b>	<b>2,255</b>	<b>1,009</b>	<b>1,021</b>	<b>952</b>	<b>1,080</b>	<b>4,984</b>	<b>5,005</b>	<b>8,497</b>	<b>40,331</b>
Distributions to minorities	(3)	(106)	(101)	(86)	(67)	(59)	(26)	(31)	(47)	(50)	(310)	(435)	(1,270)	(2,591)
<b>Net cash flow attributable to linked unit holders from the diamond business</b>	<b>5,288</b>	<b>10,938</b>	<b>6,622</b>	<b>5,202</b>	<b>5,063</b>	<b>7,535</b>	<b>11,760</b>	<b>12,642</b>	<b>12,596</b>	<b>13,381</b>	<b>65,618</b>	<b>60,817</b>	<b>145,506</b>	<b>362,966</b>
Ending cash balance	0	0	0	0	0	0	0	0	0	0		20,108		20,108
<b>Net cash flow attributable to linked unit holders from the diamond business plus ending cash balance</b>	<b>5,288</b>	<b>10,938</b>	<b>6,622</b>	<b>5,202</b>	<b>5,063</b>	<b>7,535</b>	<b>11,760</b>	<b>12,642</b>	<b>12,596</b>	<b>13,381</b>	<b>65,618</b>	<b>60,817</b>	<b>165,614</b>	<b>383,074</b>
<b>Net cash flow attributable to linked unit holders from the diamond business (real terms)</b>	<b>5,112</b>	<b>9,882</b>	<b>5,592</b>	<b>4,105</b>	<b>3,734</b>	<b>5,194</b>	<b>7,575</b>	<b>7,611</b>	<b>7,087</b>	<b>7,036</b>	<b>28,362</b>	<b>18,750</b>	<b>29,454</b>	<b>139,493</b>

## Real terms NPVs with base date 1st January 2001

Discount rate	Including inferred resources	Excluding inferred resources
10.0%	55,352	43,597
12.5%	47,296	38,486
15.0%	41,204	34,483

Note: The De Beers Supply/Demand model seeks to forecast DTC sales and changes in diamond prices over a 10-year period but not specifically on a year by year basis. Accordingly, this impacts on the financial projections set out in this report which are not therefore intended to be year by year specific but intended to cover a period of years. The financial projections have been prepared by De Beers on the basis of current assumptions and have not been reported on independently.

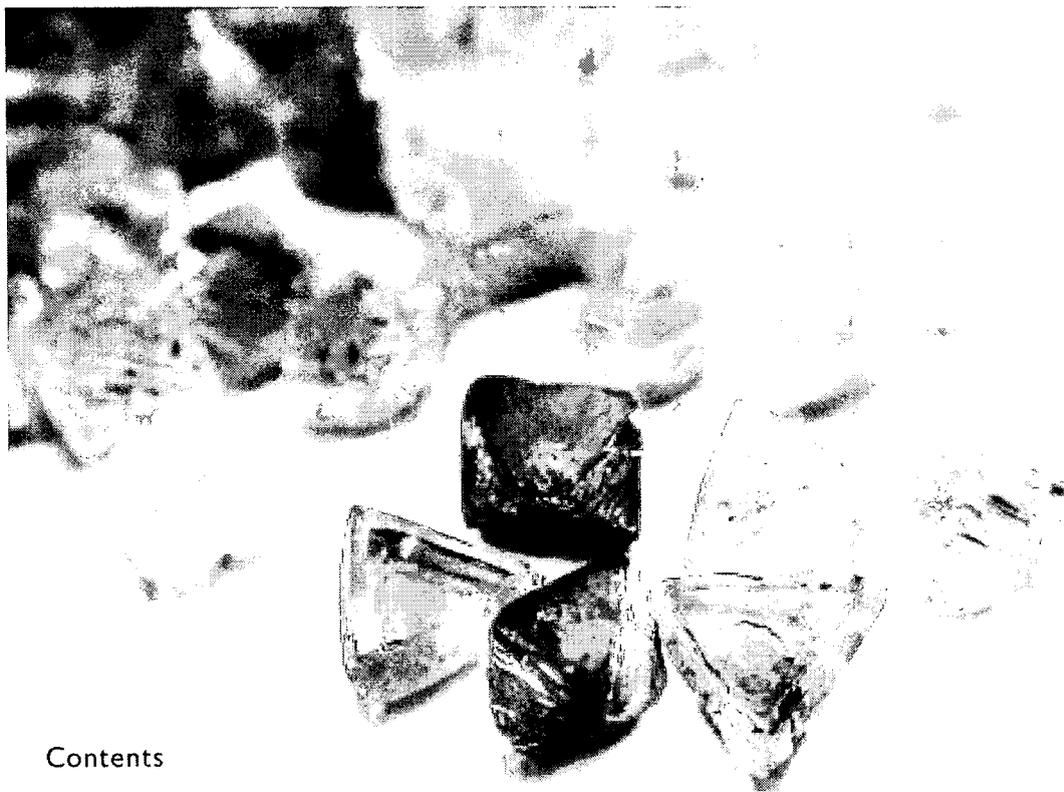


DE BEERS  
A DIAMOND IS FOREVER

annual review 2003



Natural diamonds...  
strong partnerships



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# annual review 2003

## DE BEERS

A DIAMOND IS FOREVER

### Cover:

De Beers believes that by managing biodiversity it can make a significant contribution to the communities in which we operate. The butterfly became our symbol for biodiversity in an advertising campaign for the 2003 World Parks Congress in South Africa. This is just one of a series of corporate advertisements that highlight the company's commitment to sustainability, which is at the heart of our approach to business.

De Beers Société Anonyme (DBSA) is the holding company of De Beers Consolidated Mines Limited and De Beers Centenary AG.

The following shortened forms are used throughout this review:

De Beers	De Beers Société Anonyme
DBCM	De Beers Consolidated Mines Limited
DBCAG	De Beers Centenary AG
DTC	Diamond Trading Company

More information is available on our website (see site map on page 64)

[www.debeersgroup.com](http://www.debeersgroup.com)

# Partnerships are key to our growth

Our partnerships run deep.

These connect all aspects of our business and continue to be a key to growth and sustainable development. Partnerships tell a story about our company, which is the reason why we have woven this theme, together with that of the mining and marketing of our natural product, into this review.

Just as it is important to continue to transform ourselves and to strive to continue to retain our leadership in the diamond industry, it is equally vital that we remain committed to the fundamentals that saw us develop as a world leader more than a century ago.

Our passion for diamonds, as well as a commitment to the communities close to our operations, remains as strong now as when, many years ago, our former chairman, Sir Ernest Oppenheimer, dedicated this company to making a real and sustainable contribution to the socio-economic development of those countries and areas in which we operate.

This philosophy continues in southern Africa where we have our mining operations and has extended to new frontiers, like Canada, where we will soon produce diamonds, as well as to wherever we are prospecting around the world.

The policies underlying these symbiotic partnerships with governments and communities alike extend throughout what we call the diamond pipeline – to our clients, who are among the world's leading diamantaires, and to consumers, who should enjoy the experience of buying nature's most treasured gift of love.

As a responsible employer, we partnered with the National Union of Mineworkers in South Africa to launch our anti-retroviral treatment (ART) programme as a holistic HIV/Aids workforce strategy that seeks to prevent new infections while providing a continuum of treatment, care and support for those infected and affected by the scourge of this pandemic. In Botswana and Namibia employee representative unions have also supported the rollout of programmes initiated by our partners Debswana and Namdeb.

On the environmental front our partnership with the South African National Parks, which was showcased at the World Parks Congress in South Africa last year, will ultimately contribute to the ecologically important Limpopo Shashe Transfrontier Conservation Area.

Our dedication to just one product has in recent years focused our energies on becoming the leading employer, miner and supplier in the rough diamond business. We believe that this "troika of excellence" is not only vital for our growth in an increasingly competitive industry, but also key to our existing and future partnerships.



**Nicky Oppenheimer**  
Chairman



**Gary Ralfe**  
Managing Director

## De Beers at a glance



# Sustainability

Adding stakeholder value  
through our employer, miner and  
supplier of choice strategies

---

- In only our second full year as a privately owned company we achieved record sales of US\$5.5 billion, enabling us to increase own earnings before debt redemption by 17% to US\$465 million and headline earnings by 18% to US\$676 million
- Our strong cash flow enabled us to replace in two years the five-year US\$3.5 billion loan, which helped finance the privatisation of De Beers, with a US\$2.5 billion revolving credit facility
- De Beers showcased its successful public/private sector partnership in conservation with the South African National Parks at the World Parks Congress
- In keeping with our corporate and social responsibility, millions of dollars were again distributed to a wide range of social, educational and environmental causes
- We are committed to legal compliance in all jurisdictions in which we operate. In South Africa, we are preparing for the objectives of the new mining legislation

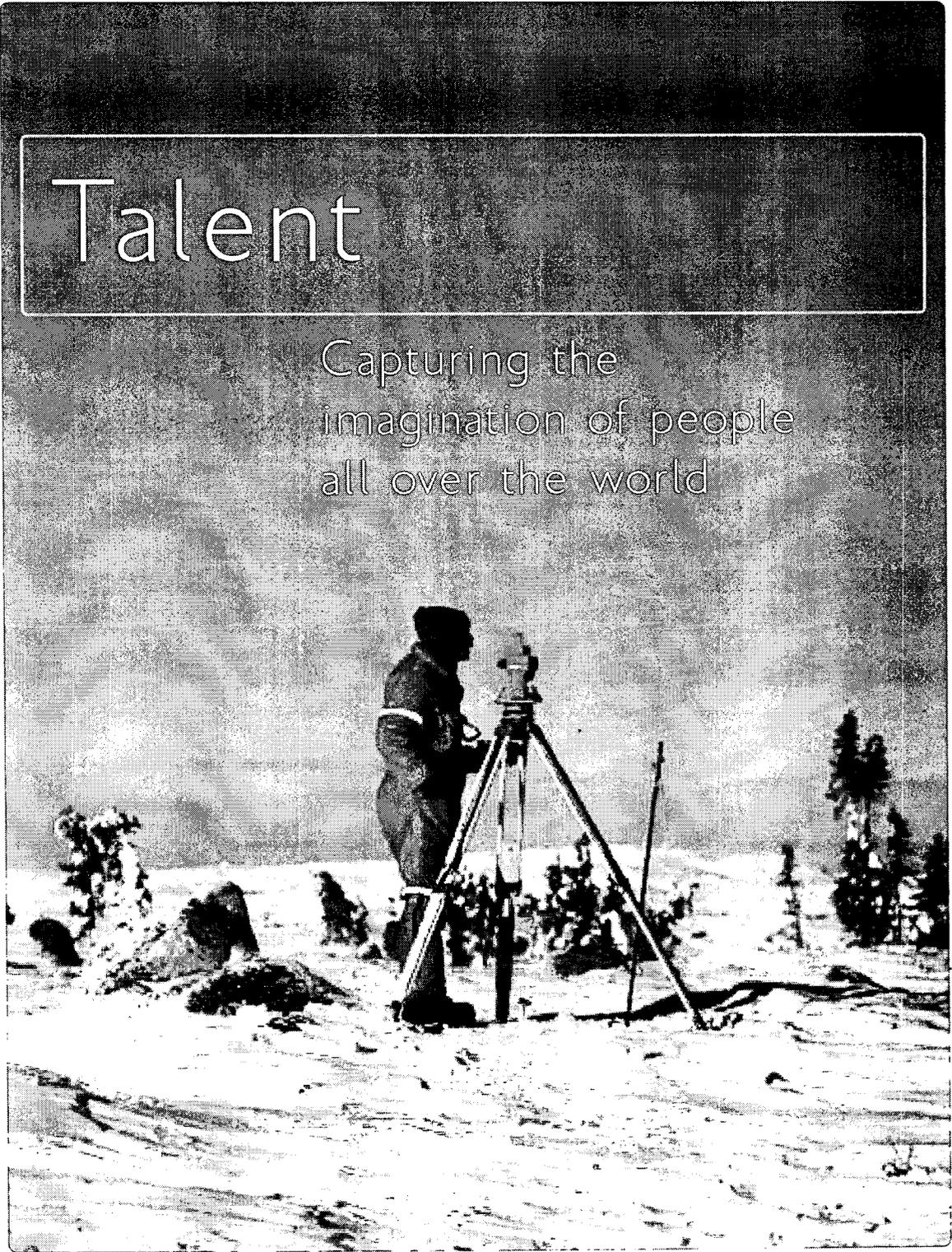
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Employer of choice

# Talent

Capturing the  
imagination of people  
all over the world



- We aim to attract, retain, nurture as well as fulfil the aspirations of vibrant, innovative people who possess unique skills and talents and will lead De Beers in the future. We encourage diversity through the rich mixture of different cultures and values
- De Beers employs about 24 000 people in 19 countries
- We are deeply saddened that we had six fatalities in 2003 – two in Botswana, three in South Africa and one in Zimbabwe. Behavioural based safety programmes are being introduced to address this disturbing situation
- DBCM and partner companies Debswana and Namdeb provide ART for all permanent employees and a spouse/life partner. We are increasingly recognised as a leader in HIV/Aids workplace management
- In depth succession planning and leadership development continues throughout the group. More than R93 million was spent in South Africa alone on training and skills development of the workforce
- We develop skills and provide job opportunities for our employees as well as members of adjacent communities
- The company has piloted a holistic and comprehensive wellness programme at three operations to encourage employees to live a balanced life and manage stress

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## Miner of choice

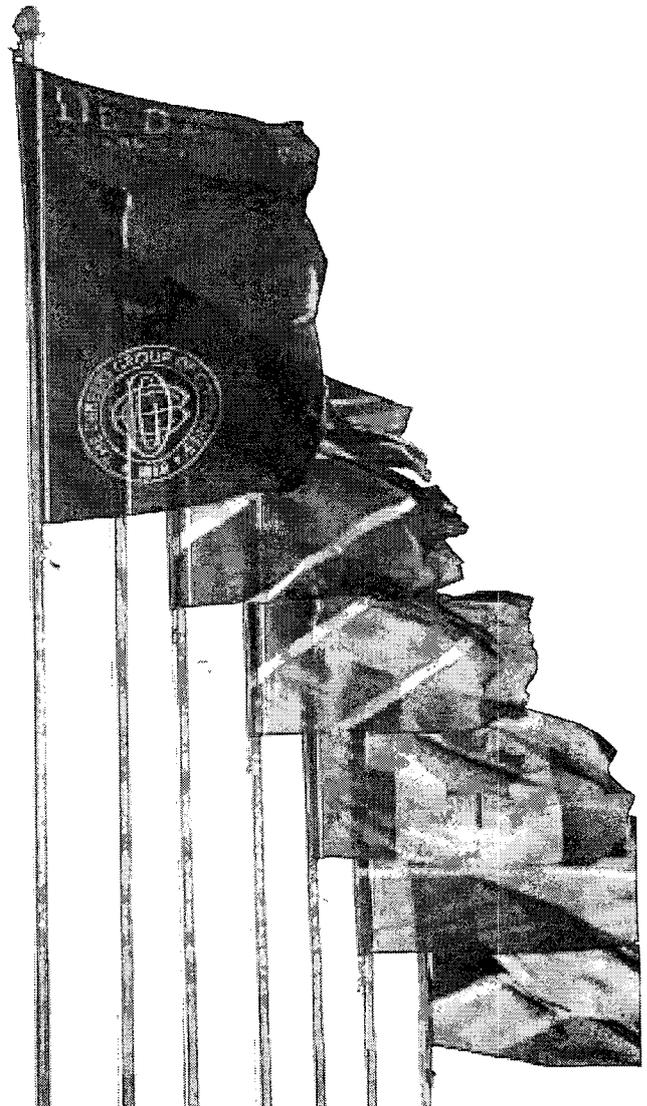
# Innovation

We are never too old  
to learn new ways of  
growing our business



- With 20 mines currently in production in Africa and with expertise in every form of mining built up over more than a century, De Beers has the skills to surmount the formidable technical challenges that face us wherever we operate, from deep sea to alluvial and open pit to underground
- Debswana achieved a record 30 million carats, while Namdeb increased carat production by 14%, Williamson, Tanzania 9% and DBCM 15%
- The weakening dollar impacted on many of our operations. As diamond demand soared, so did production costs. The approval of the Centenary Cut project at Cullinan was postponed
- De Beers invested more than US\$90 million in exploration in 13 countries and five continents. New joint venture and other partnership agreements were signed in Canada, western Russia and Australia
- All our major operations continue to be ISO14001 certified

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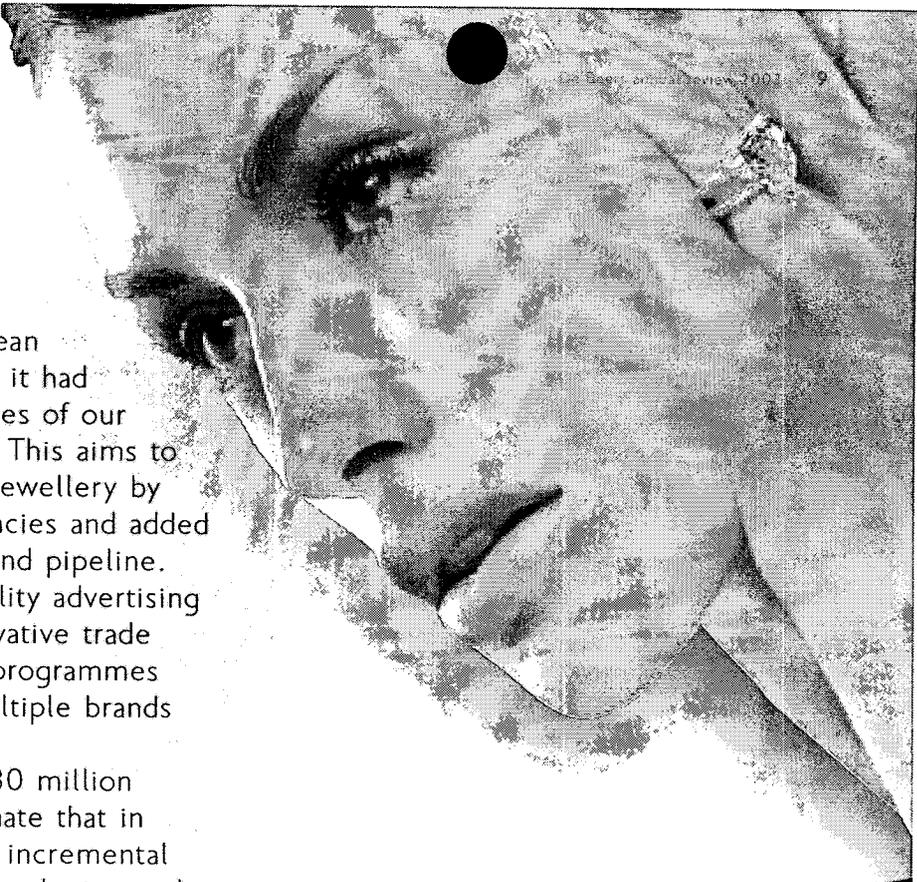


Supplier of choice

# Natural

Our bold strategy of driving  
diamond demand through  
customer focused relationships

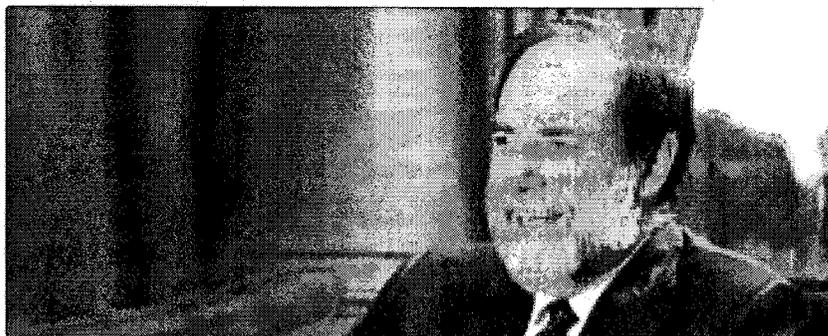




- In January 2003, the European Commission confirmed that it had no objection to the principles of our Supplier of Choice strategy. This aims to drive demand for diamond jewellery by encouraging greater efficiencies and added value throughout the diamond pipeline. This includes increased quality advertising spend by the industry, innovative trade distribution and marketing programmes and the development of multiple brands
- In addition to DTC's US\$180 million marketing budget, we estimate that in 2003 the trade invested an incremental US\$272 million in quality marketing and advertising. Our clients have developed some 250 marketing initiatives
- The South African led Kimberley Process certification system became effective from January 2003. We are proud of the role we are playing in the international drive to ensure that this ends the trade in diamonds that support conflict
- De Beers and all DTC customers will comprehensively adopt the *Diamond Best Practice Principles* to ensure the highest professional and ethical standards to protect consumer interests and to sustain the reputation and integrity of natural diamonds and the diamond industry
- We are above all committed to operating our businesses in such a way that we neither engage in, nor encourage, in any manner, practices which are regarded as unacceptable and against the public interest and that of the diamond industry



## Chairman's statement



### Strong financial performance

The term "watershed" is often used too loosely to retain its meaning, but as we look back on 2003, I believe it offers a precise description of what has been a truly remarkable year in the annals of De Beers.

In only our second full year as a privately owned company we achieved record sales of US\$5.5 billion, enabling us to increase own earnings by 17% to US\$465 million and headline earnings by 18% to US\$676 million. Against a background of persistent global economic uncertainty and in a year when consumer confidence in our major markets was affected by both the war in Iraq and the Sars outbreak, these figures speak for themselves and for the growing demand for the product we mine and sell.

This robust demand has allowed the DTC to reduce its stocks by a further US\$700 million bringing it down to working stock levels, in line with our business model going forward. The figures have been achieved by a mixture of sales out of stocks and by reducing the pipeline between mine and time of sale by the DTC. In turn, this strong cash flow enabled us to replace in two years the five year US\$3.5 billion loan, which helped finance the privatisation of De Beers, with a US\$2.5 billion revolving credit facility.

This achievement, remarkable even in the most benign economic circumstances, proves conclusively the value of the suite of strategies which we initiated some six years ago to ensure that the company and the industry would grow and prosper in the new century. The idea was simple – to bend all our efforts to increasing worldwide demand for our product and ensure that diamond jewellery would henceforth outperform the rest of the luxury goods market. The methods we devised to achieve that goal were, I believe, imaginative, complex and radical as De Beers reorganised both itself and its business to meet the challenges of a changing world. As old shibboleths were questioned and discarded, we showed that we were not about to wait for the future to come to us, but were determined to have a hand in shaping it ourselves. The momentum of change since then has been fast and continuous until finally in mid year, with EU approval, the final pieces of our Supplier of Choice strategy were locked into place.

### New clients come on board

Change – especially if successful – is exciting; but it can also be painful. It was therefore with very mixed emotions that, once EU approval of Supplier of Choice had been obtained, we set about revising our client list to assess their requirements against our supply. It was both

A remarkable year characterised by a 17% increase in earnings, strong cash flows and a dramatically shortened pipeline

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difficult and sad to say goodbye to a number of old friends, some of whom had done business with us for decades. However, we are delighted to welcome new clients to the DTC, which will be opening its client list to new applications every two years. It is hoped that some of those who are no longer on our list will re-apply then.

Incremental quality marketing spend provides a useful measure of the extent and success of this necessary transformation. In addition to the DTC's US\$180 million marketing budget, we estimate that in 2003 the trade invested an incremental US\$272 million in quality marketing and advertising.

DTC sightholders have also continued to develop their marketing activity to the point where we are now aware of some 250 marketing initiatives run by our clients. Indeed, I believe that the principles of Supplier of Choice – grasped so vigorously by sightholders and the trade – have contributed significantly to the strong retail performance.

### Global retail jewellery demand up strongly

Once again the figures speak for themselves. Despite an overall flat performance in the rest of the luxury goods market, preliminary indications are that the retail value of diamond jewellery sales in 2003 was US\$28.7 billion in the United States. This represents an increase

over 2002 of between 5% and 8% in our major market which also recorded 10% growth in the diamond jewellery sales in the last quarter of 2003. Global diamond jewellery sales of over US\$55 billion also reflected double digit growth in Asia Arabia and markedly improved demand in Japan, where it was partially fuelled, no doubt, by the DTC led Trilogy marketing programme and by the favourable yen/dollar exchange rate.

On a separate, but related note, Tokyo was also the site of the successful launch of three stores within stores by De Beers LV, our international venture with luxury goods manufacturer LVMH.

### Weak dollar sees production costs soar on many of our mines

The 28% weakening of the US dollar against many of the world's currencies, especially when combined with the volatility of the rand, had a far less beneficial effect on the supply side of the equation. Indeed, it had the paradoxical result that as demand soared so did the rand production costs on many of our mines. This put the profit to revenue ratio, especially on our marginal underground mines such as Kimberley and Koffiefontein under pressure. The result was a critical review of all overheads on our South African operations, including corporate

headquarters in Johannesburg, and a reduction in staffing levels through redeployment and a freeze on recruitment. Every effort was made to avoid retrenchment and employees were invited to apply for voluntary separation. A generous package was put together and some 440 employees successfully took up the offer. Meanwhile, exchange rate pressure has also compelled the postponement of major capital projects such as the Centenary Cut at Premier mine – renamed in 2003, its centenary year, the Cullinan Diamond Mine.

### Record production numbers at key mines

Similar external pressures on production costs affected the profitability of both Debswana and Namdeb. Nevertheless, the group's mining operations did chalk up some major achievements during 2003. In Botswana the Damtshaa mine, commissioned in 2003, reached full production of more than 290 000 carats a year. This, together with other initiatives, including cutting edge technology to sort diamond production, resulted in Debswana achieving a record 30 million carats in the year under review.

In South Africa overall carat production was also increased – by 15% – through a variety of innovative projects, most notably the new combined treatment plant which contributed to Kimberley's production of

## Chairman's statement continued

more than one million carats, a feat last achieved in 1986. The Venetia quick wins project should result in a 25% increase in the tonnage treated per year. It was also a notable year for Namibian operations. At Elizabeth Bay, modifications to be completed in 2004 should extend the life of the mine to at least 2013, while the conversion of the mining vessel *!Gariiep* was completed and handed over to De Beers Marine Namibia seven months ahead of schedule. This, together with the commissioning of an additional mining vessel, the *Ya Toivo*, helped Namdeb to achieve a 14% increase in carat production in 2003.

### Good progress in Canada

In Canada there have been positive developments in the group's operations with the environmental impact assessment for Snap Lake approved in 2003, and the Gahcho Kué resource handed over from Group Exploration to De Beers Canada for a pre-feasibility study. Meanwhile, we expect within the next few months to receive the final go ahead on our Victor project in Northern Ontario which will enable us to start construction in 2005, thus realising a goal we set ourselves some 40 years ago when De Beers first identified Canada as a prospective diamond province. In the intervening period, exploration – sometimes with joint venture partners – yielded the discovery of 216 kimberlites, more than half of which have been proved to be diamondiferous.

De Beers' Canadian operations are animated, as elsewhere in the world, by a spirit of partnership – with governments, aboriginal communities, education authorities, contractors and joint venture partners. One example is the C\$600 000 training centre which the company has constructed in Attawapiskat and the C\$500 000 which De Beers is contributing to a new trades training centre in Yellowknife.

### Africa now a key area of focus

While exploration continues in Canada, India, eastern Europe and Russia with joint venture and other partners, the group's chief focus remains on Africa. Exploration expenditure in Africa increased from US\$25 million to US\$38 million in 2003 and capital spending on operations from US\$255 million to US\$320 million, contributing more than US\$3 billion annually to the continent's foreign exchange earnings.

These figures, which make us a natural partner and supporter of NEPAD, only tell part of the story. They do not fully reveal the group's commitment to sustainable development, to the environment and most important, to the education, training and skills development both of its workforce and the wider community. In 2003 the range of this concern was demonstrated by more than R93 million which De Beers spent in South Africa alone on the training and skills development of its workforce, the R23 million which the De Beers Fund spent in South Africa on an imaginative array of social, educational and cultural projects – and on our continuing commitment to the development of small and medium business enterprises in host communities, especially where diamond mining – a necessarily dwindling resource – has been the major employer. A telling example of this concern in 2003 was the announcement of a R16.8 million investment in the first phase of Kimberley's Big Hole project, designed to turn the city which is the company's historic home into a world-class tourism venue. Indeed, sensitivity to the needs and aspirations of local communities, together with the ambition to be seen as both the employer and partner of choice wherever diamonds are mined are, I believe, the enduring hallmark of the De Beers group.

This is exemplified, particularly in our home region of southern Africa, by the response of DBCM and its fellow companies to the threat of Aids.

### Bold, new measures in fight against Aids

I am particularly proud of the fact that in 2003 De Beers became the only mining company in South Africa to extend ART free of charge to HIV positive employees and their spouses or life partners. This treatment will be provided through a network of trained doctors and will continue to be available to employees after retirement, retrenchment or retirement from ill health.

One of the problems still to be resolved is the fact that the provision of ART to employees and their life partners outside company medical facilities is considered by government to be a fringe benefit and the employee is taxed accordingly. As an interim measure, De Beers has agreed to shoulder this additional burden on behalf of its employees and their partners. We have, however, made urgent representations to government for relief of this cost escalating measure on a step which is designed to provide treatment for those who would otherwise find it unaffordable.

As part of its Aids policy, the company and the National Union of Mineworkers have signed a joint HIV/Aids workplace document which lays the foundation for a comprehensive response by the company, in collaboration with the union, to one of the gravest threats facing South Africa. Similar policies are pursued in Botswana and Namibia by Debswana and Namdeb.

### Taking the lead in environmental and social matters

It is also a matter of pride that all the group's major mines now have

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ISO14001 certification that indicates compliance with international environmental standards. Our concern for the environment extends beyond our own operations, as illustrated by our participation – unique among South African mining companies – in the World Parks Congress in 2003 where we were able to illustrate our relationship with South African National Parks, the Peace Parks Foundation and the development of the Vhemba/Dongola National Park in which De Beers played a key role.

Our concern for our host communities and our pride in the benefits which partnership with De Beers can bring especially in Africa, throw into sharp relief the attempts by Survival International to publicise its campaign on behalf of the Basarwa of the Central Kalahari Game Reserve, by targeting De Beers; ignoring the fact that no connection can be made between De Beers in particular or diamonds in general and the inhabitants of the reserve. It also ignores the fact that Botswana's diamond revenues remain a key source of welfare spending for all Basarwa in Botswana of whom the group in the reserve are a small, if important, part. De Beers continues to vigorously refute the allegations made against it.

Social engagement with host communities is, as I hope I have demonstrated, not an add on to our core business, but an intrinsic part of the way we do business. It is on par with our determination to protect – for our mines and those who work on them, for our clients and above all, for the consumer – the image and the integrity of the natural diamond as the only true expression of emotional commitment. I remain proud of the way De Beers rose to the challenge of 'conflict diamonds' by helping the industry devise a system of stringent self regulation. It also showed

its leadership by involving itself closely in the Kimberley Process whose certification scheme is now in operation and which, in October, agreed on measures to provide regular, effective and credible monitoring of rough diamond production around the world. De Beers' role in the fight to curtail the trade in conflict diamonds has won praise from the United Nations, concerned governments and NGOs, but the success of the Kimberley Process was a remarkable achievement for everyone who took part in this historic partnership between more than 70 governments, industry and civil society.

## Upholding the integrity of natural diamonds

Other threats to consumer confidence in the integrity of the diamond, however, remain, especially the development of treatment technology and synthetics. The sterling detection work done over many years by those involved in our gem research programme continues and 2003 saw the start of the worldwide distribution of instruments to facilitate differentiation between the natural, the synthetic and the treated. But if science is essential, it is not enough. The efforts of everyone involved in the worldwide diamond industry are needed to ensure that the emotional values encapsulated in the natural diamond, a product as old and enduring as the planet on which we live, and the reputation of our industry as a whole, cannot be undermined by unscrupulous practices using factory made imitations.

A determination to defend the value of the natural diamond and integrity of the industry does not mean that De Beers is hostile to change. Indeed, its willingness to anticipate and initiate change has, I believe, enabled it both to retain its premier position in the industry and to build a demand for diamonds which benefits everyone in mining and marketing this unique product.

Change is a process, not an event, which is why, of course, under the title Project Rainbow, we have embarked on the radical restructuring of our South African company, De Beers Consolidated Mines. The future of the new DBCM, as a stand alone company within the De Beers group, will, I believe, be secured as a transformed miner of choice in South Africa. The restructuring process, which also involves the creation of a new group holding company to house research and development, exploration and other service activities, such as IT, began in 2003 and is due for completion in mid 2004.

It gives me special pleasure to note that Jonathan Oppenheimer has been nominated as managing director of the new DBCM. In addition, Gareth Penny has been nominated as managing director of the DTC. They will take up their new positions in July 2004. Both will report to the managing director of the De Beers group, Gary Ralfe. These appointments, representing, as they do, faith in a new generation of leadership, will also be accompanied by the development of imaginative new business targets and innovative strategies for next year and beyond as the De Beers group looks to build on the successes of 2003 and the radical initiatives which made that success possible.



**Nicky Oppenheimer**  
27 February 2004

## Financial sustainability



- DTC sales increased by 7% to US\$5.5 billion
- Net diamond account decreased to US\$794 million from US\$873 million in 2002 largely as a result of the strength of the rand
- Net earnings increased to US\$484 million from US\$439 million in 2002
- Headline earnings increased to US\$676 million from US\$575 million in 2002
- Return on capital employed increased to 13.7% from 12.9% and return on equity stayed constant at 19%
- The group adopted International Financial Reporting Standards during 2003

### Results for the year ended 31 December 2003

De Beers Société Anonyme  
(Incorporated under the laws  
of Luxembourg)

2003, overall, was a good year for the diamond industry with further encouraging growth in retail sales of diamond jewellery. In spite of war in the Middle East and the Sars virus

impacting negatively on the global economy and consumer confidence, diamond jewellery sales during the first half of the year were marginally positive compared with the first half of 2002. However, strong growth in sales was reported in the third and fourth quarters as the world economy and consumer confidence rebounded. Preliminary indications are that global



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*Director finance Paddy Kell (second right) with (from left) Stuart Brown, Tony Attwood and Raymond Pickavance*

*Director corporate finance Ollie de Sousa Oliveira (left), Jane Disborough and Hamish Macaskill*

retail sales of diamond jewellery for the year as a whole were about 5% higher than the previous year in local currency and, because of the weakness of the US dollar, about 6% higher in US dollars. The USA, which accounts for over 50% of world diamond jewellery sales, was particularly strong as were India, China and the UK. Encouragingly, Japan also recorded growth for the first time in a number of years. These results should help ensure that any excess pipeline stocks held by the trade would have been cleared by the 2003 year end and hopefully should help to reduce debt levels in the cutting centres which have been at historically high levels.

The strong demand for rough diamonds from the cutting centres in the first half of the year continued through into the second half and full year sales by the DTC were US\$5.5 billion, 7% more than in 2002.

During the year, the DTC raised its rough diamond prices on three occasions and, by the year end, its prices were, on average, about 10% higher than at the beginning of the year. Increased sales at higher prices and lower financing costs more than compensated for the negative impact on De Beers' 2003 results of the significant appreciation of the rand

against the US dollar in 2003, and headline earnings at US\$676 million were 17.6% higher than for 2002. Diamond stocks were reduced further by nearly US\$700 million during the year and, for the second year running, operating cash flow of US\$1.6 billion was generated. This enabled the group to reduce net interest bearing debt from US\$1,716 million to US\$906 million and to reduce net gearing to 15% (2002: 28%). De Beers intends to give notice in June 2004 to preference shareholders of an early redemption of 25% of its preference shares, amounting to US\$214 million.

The board has recommended to the shareholders that a final ordinary dividend of US\$150 million in respect of the year 2003 be declared at the forthcoming annual general meeting. Together with the interim ordinary dividend of US\$250 million paid in December 2003, total ordinary dividends for the year amount to US\$400 million (2002: US\$124 million).

# Financial sustainability continued

## Consolidated income statement for the year ended 31 December 2003 (abridged)

	US dollar millions	
	2003	2002 (Note 1)
Diamond sales		
– DTC	5 518	5 154
– Other	397	380
Trade investment and other income	656	592
	<b>6 571</b>	6 126
<i>Deduct:</i>		
Cost of sales	4 794	4 444
Depreciation and amortisation (Note 2)	294	250
Sorting and marketing	490	391
Exploration and research	147	126
Corporate expenses	52	42
<b>Net diamond account</b>	<b>794</b>	873
<i>Deduct:</i>		
Net interest paid	58	144
Costs related to reorganisation and restructuring	22	44
<b>Income before taxation and debt redemption costs</b>	<b>714</b>	685
Taxation	239	273
<b>Income after taxation but before debt redemption costs</b>	<b>475</b>	412
Attributable to outside shareholders in subsidiaries	10	14
<b>Own earnings before debt redemption costs</b>	<b>465</b>	398
Share of retained income of joint ventures	114	41
<b>Total earnings before debt redemption costs</b>	<b>579</b>	439
Costs of early debt redemption (Note 3)	95	
<b>Net earnings</b>	<b>484</b>	439
Headline earnings reconciliation		
Net earnings	484	439
<i>Adjusted for:</i>		
Amortisation of intangible fixed assets	170	163
After tax surplus on realisation of fixed assets less provisions	(3)	(27)
Facility fees (Note 3)	25	
<b>Headline earnings</b>	<b>676</b>	575
<b>Cash available from operating activities</b>	<b>1 606</b>	1 611
<b>Dividends in respect of</b>		
2001 – Final ordinary		65
2002 – Preference		86
– Final ordinary	124	
2003 – Preference	86	
– Interim ordinary	250	

## Consolidated balance sheet

### 31 December 2003 (abridged)

	US dollar millions	
	2003	2002 (Note 1)
Ordinary shareholders' interests	3 549	3 035
Preference shareholders' interests	856	856
Outside shareholders' interests	115	96
<b>Total shareholders' interests</b>	<b>4 520</b>	<b>3 987</b>
Net interest bearing debt (Note 4)	906	1 716
Other liabilities	1 517	1 136
	<b>6 943</b>	<b>6 839</b>
Fixed assets	5 145	4 451
Investments and loans	53	33
Diamond stocks and other assets	1 745	2 355
	<b>6 943</b>	<b>6 839</b>

#### Notes and comments

1. The Annual Financial Statements have been prepared in accordance with both International Financial Reporting Standards and South African Statements of Generally Accepted Accounting Practice applying IFRS1 and AC138 ("First Time Adoption of International Financial Reporting Standards"). The effect of this on 2002's previously reported results has been to increase other liabilities by US\$178 million (before deferred tax of US\$46 million), being the recognition of actuarial deficits in pension funds at 1 January 2002, and to increase net earnings in that year by US\$5 million. The comparative figures in the abridged consolidated income statement and balance sheet have been restated accordingly.
2. Amortisation amounting to US\$144 million in respect of the goodwill attributable to De Beers Consolidated Mines Limited and De Beers Centenary AG has been expensed in the current year (2002: US\$144 million).
3. The Senior Debt and revolving credit facilities, arranged on leveraged buyout terms, were replaced during the current year with a US\$2.5 billion revolving credit facility on standard commercial terms with a five-year tenor.

The costs associated with this early debt redemption comprised the balance of US\$25 million of facility fees not yet amortised, and US\$70 million in respect of the mark-to-market of interest rate hedging contracts that were required to be entered into under the terms of the original Senior Debt facility. These contracts were being hedge accounted in terms of IAS39 and AC133 (Financial Instruments: Recognition and Measurement).

4. Cash has been offset against interest bearing debt.

## Corporate governance

### Underpinning the way in which we run our mines and do business

The board of De Beers supports the principles of openness, integrity, responsibility and accountability and continuously endeavours to ensure that the group's policies on corporate governance meet current best practice. The group follows, to the extent that they are applicable, the principles and recommendations set out in the Code of Corporate Practices and Conduct contained in the South African King Report on corporate governance.

#### Board and committee structures

The board is responsible for the group's system of corporate governance and is ultimately accountable for its activities. Currently the board comprises 16 directors of whom eight serve in an executive capacity. All directors have unrestricted access to all company information, records, documents and property. Non-executive directors derive no benefits from the company for their services as directors other than their fees.

The board meets regularly every quarter and more frequently if required. Where a director based in another country such as the United Kingdom or South Africa is not able to attend personally, video conferencing facilities are used to include that director in the relevant proceedings. Directors are elected by shareholders for a maximum period of six years, whereafter they can offer themselves for re-election.

The board has established a number of committees, namely:

- **Executive Committee**  
Chaired by Nicky Oppenheimer, the Executive Committee meets regularly and is responsible to the board for implementing the policies and strategies of the De Beers group. It deals with all executive business of the company not specifically reserved for the board or shareholders, and prioritises the allocation of capital and technical and human resources, as well as reviewing biannually the major risk areas of each business unit.

- **Audit Committee**  
Monitors the adequacy of financial information reported to shareholders, internal controls, accounting policies and financial reporting, and provides a forum for communication between the board and the external and internal auditors.

- **Safety, Health and Environment (SHE) Committee**  
Monitors and reviews the group's safety, health and environmental policies, guidelines and operating practices, as well as the compliance by the operations with appropriate standards and relevant local laws.

The health and safety of the group's employees and the wellbeing of the communities surrounding its mines are the focus of a comprehensive policy dedicated to this end.

The group's mining and related activities face complex environmental challenges. Through this policy we are committed to addressing environmental risks and impacts.



*To De Beers the principles of sustainability – the triple bottom line of social, economic and environmental growth – include ethical accountability which is at the heart of our approach to business. These cards, part of our corporate advertising campaign, symbolise our ambition to fulfil our corporate social responsibilities in the countries and communities in which we operate*

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- Remuneration Committee  
It approves remuneration for the executive directors to ensure that rewards and incentives are linked to both individual and group performance.

## Accountability and control

### Internal controls

Although no system of internal controls can provide absolute assurance that De Beers' business risks will be fully mitigated, internal control systems have been designed to meet the group's particular needs and the risks to which it is exposed.

Management sets standards and implements systems of internal control designed both to provide reasonable assurance regarding the achievement of objectives and to reduce the risk of error or loss in a cost effective manner.

### Risk management

Both the shareholders and the board recognise that engaging risk is at the core of De Beers' business and that risk taking is a choice in the pursuit of objectives.

The focus of risk management is identifying, assessing, managing and monitoring all risks. These risks encompass such areas as consumer markets, skills and people risks, technology, stakeholder, commercial, social, environmental, corporate reputation, compliance with regulation and legislation, professional liability, general operating, production, financial and treasury risks.

### Monitoring process

The effectiveness of the internal control systems, including the potential impact

of changes in the operating and business environments, is monitored through regular management reviews and control self-assessment (with a representation letter on compliance being signed annually by the managers of each major business unit) as well as reviews and testing by internal auditors. Testing of certain aspects of the internal financial control systems by the independent auditors takes place during the course of their statutory examinations.

### Code of ethics

The group is committed to a policy of fair dealing and integrity in the conduct of its business. To this end, the De Beers Code of Business Conduct and Ethics requires employees to maintain the highest ethical standards in their business dealings.

### Employment equity

De Beers is committed to creating a workplace in which hard working people can develop rewarding careers at all levels, regardless of their background, race, or gender. The group's employment practices and policies emphasise equal opportunity for all, and seek to identify, develop and reward all employees.

DBCM's employment equity policies also aim to create an inclusive organisational culture in which all employees feel comfortable and accepted.

Employment equity is implemented in consultation with employee representative bodies. An employment equity/affirmative action agreement exists between DBCM and the National Union of Mineworkers.

In Botswana and Namibia, localisation and affirmative action strategies, determined and monitored through legislation, are well established and provide similar citizen development and workplace activities and initiatives.

### Training and career development

In South Africa, the employment equity policy guidelines of DBCM provide for bursary schemes and academic support programmes, input based targets, training, development and mentoring programmes, and innovative technical and management career development processes.

### Employee participation

The group supports a system of employee participation in addressing issues which affect them and encourages employees and their representatives to participate in communication, and consultative and negotiating structures.

Regular briefing sessions inform all employees of the company's operations and on other matters of interest.

Grievance procedures and other structures are in place with a view to the speedy identification of conflict and its effective resolution.

Detailed information about De Beers' corporate governance is available on our website [www.debeersgroup.com](http://www.debeersgroup.com)

## Ethical accountability

### Ensuring the integrity of the diamonds our customers buy

#### Sustainability

##### A concept ingrained in the company's thinking

We are committed to the principles of sustainability in terms of ethical accountability and investing appropriately in all capital stocks – natural, human, social and financial. This was already the thinking 50 years ago when Sir Ernest Oppenheimer, the grandfather of our current chairman, Nicky, said that the purpose of the company was to make profits for its shareholders in a way that would make a real and lasting contribution to the countries and the communities in which it operates.

##### Drive to comply with international standards

Most of our operations, both marine and terrestrial, are ISO14001 certified, indicating the presence of environmental management systems. The group also invests heavily in technology research and development to enhance eco-efficiency. In addition, we have set aside reserves several times the size of our mining footprint in the interests of conservation. One such reserve has been incorporated into the Limpopo Shashe Transfrontier Conservation Area. In recognition of this contribution, and of De Beers' relationship with the South African National Parks and the Peace Parks Foundation, the company received an award at the World Summit for Sustainable Development in 2002.

##### Holding the diamond trade to higher standards

As a leader in the global diamond industry, De Beers has been a major

player in the formulation and introduction of the Kimberley Process certification scheme, aimed at ending the trade in so called 'conflict diamonds'. In a similar vein, our *Diamond Best Practice Principles* hold our business partners to specific ethical and professional standards.

##### Health and safety initiatives

De Beers is the first mining company to provide free HIV/Aids treatment for employees and their spouse or life partner. Most of our mines are proud recipients of the highest ratings awarded by the National Occupational Safety Association (NOSA).

##### Working with the community

We respect the cultures, customs and values of the people living in and around our mines. In Canada, for example, where new mines are coming on stream, relationships have been forged with surrounding communities, which have been brought into various aspects of the planning and development process. Wherever we operate, we support countless community needs in education, health and welfare through our corporate social investment programmes. Our motto: give people a hand, not a handout.

##### Supporting empowerment

De Beers is fully committed to transformation and black economic empowerment in South Africa. We have implemented several initiatives such as employment equity, empowerment contracting and outsourcing, and joint ventures with historically disadvantaged businesses.

#### Consumer confidence

##### How fraudsters erode confidence

The greatest threat to consumer confidence is from disreputable, unethical practices designed to defraud consumers.

These practices, perpetrated by a few individuals at the margins of the industry, debase the very essence of what a natural diamond symbolises – true human emotion, either as the ultimate gift of love or as the pinnacle of self reward.

These isolated fraudulent practices commonly involve passing off a synthetic or non-diamond as the real thing, or not disclosing the extent to which a stone may have been treated to alter its appearance. Blatant over selling – claiming a diamond is larger or of a better colour than it really is – is yet another, as is the substitution of stones with other stones.

##### How we fight them

The DTC's well established Consumer Confidence programme has three main strands: declaration, detection and trade education.

- Declaration

In one of the last industries still operating on a trust basis, we strive to ensure that correct declaration is fundamental and automatic both within the industry itself and for consumers at the point of sale. We liaise closely with trade bodies to ensure self regulation.

- Detection

Our Research and Development facility, based in Maidenhead,

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England, does fundamental research into the characteristics of diamonds, develops detection criteria for problem stones, and then designs and deploys the appropriate detection instruments. The facility works closely with leading gemmological laboratories around the world. Detection is all the more important with the recent appearance on the market of synthetics: man-made, engineered products designed to simulate natural diamonds, and which may look, to the consumer's eyes, exactly like the real thing.

- Trade education  
Together with the Diamond Promotion Service worldwide, we provide a variety of educational materials to the trade, ranging from interactive CD-ROMs to point-of-sale material. Trade seminars and trade fairs are also held worldwide in an effort to limit the number of individuals in the trade who, through

lack of knowledge or skills, may unwittingly be misleading consumers.

### All about ethical business practice

The other key element of our Consumer Confidence programme is the focus on ethical business practice. We state upfront the standards to which we are

committed. The De Beers group and its clients will not do business with parties that do not adhere to them. To ensure compliance, we are about to have an auditing mechanism that includes both self-assessment and independent verification.



*The Consumer Confidence programme is all about declaration, detection and trade education*

## *Diamond Best Practice Principles*

*Diamond Best Practice Principles* are designed to sustain the confidence of consumers by requiring DTC clients and encouraging the entire diamond industry to adopt the highest professional and ethical standards, to protect consumer interests and ensure the good reputation and integrity of our product in the industry as a whole.

The DTC is leading the industry in this vital initiative and those involved in Supplier of Choice will be expected to adhere to these principles in all aspects of their business.

Consumers expect to purchase diamonds in their natural state and the *Best Practice Principles* are designed to ensure the clear disclosure to consumers of synthetics, simulants and treated diamonds.

One vital aspect is a prohibition of trade in 'conflict diamonds' by members of the international diamond industry. Conflict diamonds are those that originate from areas where rebels are seeking to overthrow legitimate governments. Although they have constituted less than 1% of the world's rough diamonds, even one 'conflict stone' sold is a stone too many.

The *Diamond Best Practice Principles* also encourage proper working conditions, including health, safety and well-being for workers, as well as full compliance with international best practice in respect of the environment.

These *Diamond Best Practice Principles* will ensure that consumers buying diamond jewellery will be able to rely with confidence on the integrity and high ethical standards of the industry.

# Group directorate and structure

*Please note that the structure is colour coded to correspond with the directors on this page*



**Nicky Oppenheimer**  
Chairman



**Gary Ralfe**  
Managing Director



**Gavin Beevers**



**Dr Mark Berry**



**Joseph Iita**



**Paddy Kell**



**Sir Chips Keswick**



**Bill McKechnie**



**Jonathan Oppenheimer**



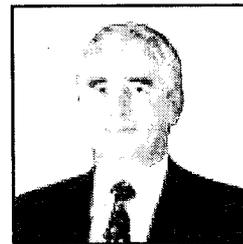
**Gareth Penny**



**Barend Petersen**



**Andrew Poolman**



**Peter Somner**



**Dr Akolang Tombale**



**Serwalo Tumelo**



**Glenn Turner S.C.**



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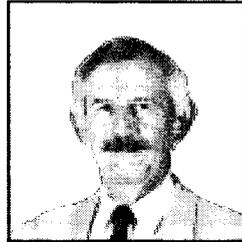
A DIAMOND IS FOREVER



Robin Crawford



Ollie de Sousa  
Oliveira



Michael Farmiloe



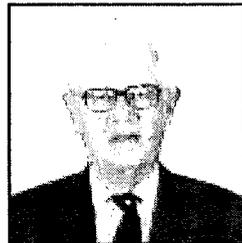
Debbie Farnaby



Craig Mudge



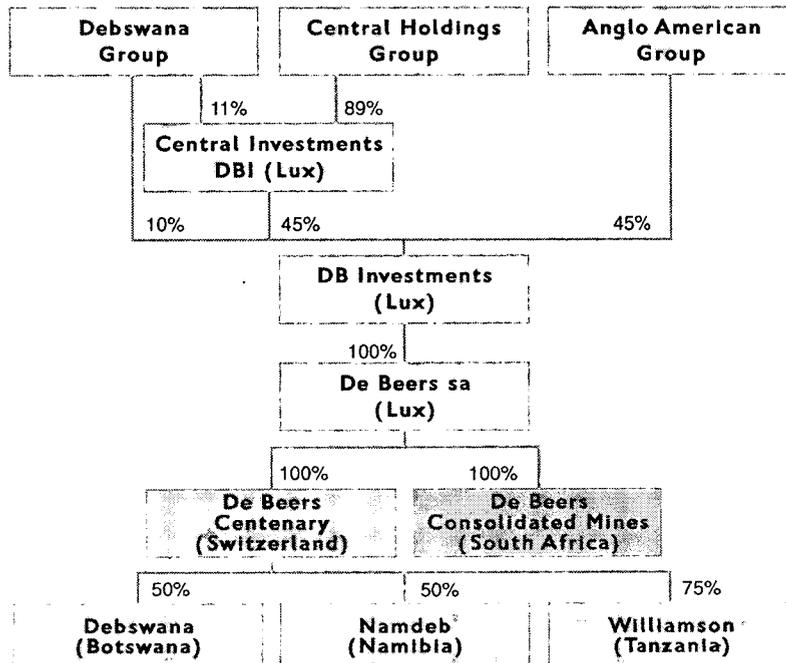
Louis Nchindo



Julian Ogilvie  
Thompson



Anthony  
Oppenheimer



### Executive Committee

- Nicky Oppenheimer (Chairman)
- Gavin Beevers
- Ollie de Sousa Oliveira
- Michael Farmiloe (Secretary)
- Debbie Farnaby
- Paddy Kelt
- Louis Nchindo
- Jonathan Oppenheimer
- Gareth Penny
- Gary Ralfe
- Peter Somner
- Glenn Turner S.C.

### Audit Committee

- Sir Chips Keswick (Chairman)
- Robin Crawford
- Julian Ogilvie Thompson

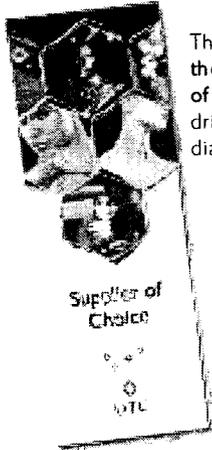
### SHE Committee

- Robin Crawford (Chairman)
- Dr Mark Berry
- Anthony Oppenheimer
- Julian Ogilvie Thompson

### Remuneration Committee

- Sir Chips Keswick (Chairman)
- Nicky Oppenheimer
- Julian Ogilvie Thompson

# Timeline 2003

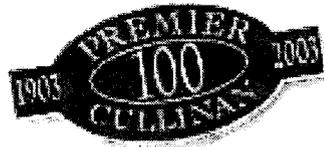


The European Commission gives the green light for DTC's Supplier of Choice strategy which aims to drive consumer demand for diamond jewellery.



A South African Mint Company 2003 special one ounce proof Krugerrand is minted 645 metres underground at Cullinan to commemorate the mine's centenary.

The Tower of London hosts an exhibition featuring the 100 year link between Cullinan mine and the British Crown Jewels.



Nicky Oppenheimer and Gary Ralfe officially open the 'Cornerstone' building, an extension to the CHQ in Johannesburg.



January 16

April 2

May 8

July 30

February 19

April 10

June 6

August 25



De Beers welcomes the publication of the Mining Industry Charter and scorecard following months of uncertainty.



The Namdeb board approves an upgrade of Elizabeth Bay's treatment plant to extend the life of mine by at least 10 years.



De Beers and the National Union of Mineworkers sign a joint HIV/Aids workplace policy.



The historic Rhodes Building in Cape Town is made available to the Mandela Rhodes Foundation.

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We participate in the World Parks Congress, Durban, through a joint exhibition with South African National Parks, with which we have a conservation partnership.

The Federal Minister of Indian and Northern Affairs approves the environmental assessment for the Snap Lake Project in the Northwest Territories, Canada.



The Vice President of Botswana, Lt. General Ian Khama, officially opens Debswana's fourth diamond mine, Damtshaa, which has an estimated life of 30 years.

De Beers announces a R16.8 million investment in Phase 1 of the Kimberley Big Hole Project – designed to develop the existing facilities on the perimeter of this historic landmark into a world standard tourism attraction.



September 8

October 15

October 25

November 6

September 16

October 16

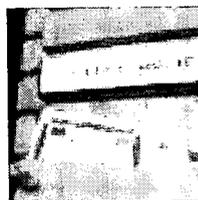
October 31

December 1



De Beers Canada donates C\$100 000 to the University of Alberta to equip the first ever Canadian diamond research laboratory, named De Beers Laboratory for Diamond Research.

Gary Ralfe, inaugurates a new school and hospital in Gujarat, India, which was hit by an earthquake in 2001.



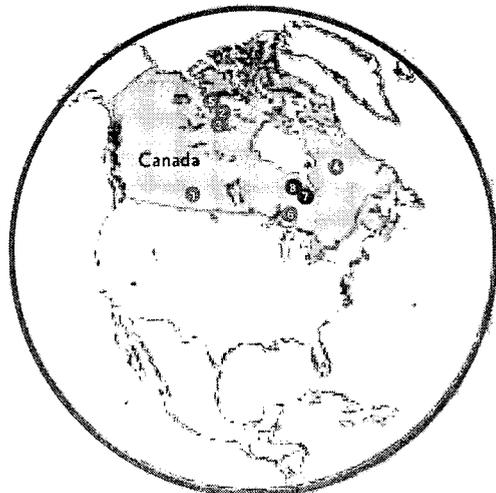
Nicky Oppenheimer extends congratulations and appreciation to the South African Government on its successful tenure as Chair of the Kimberley Process.



De Beers Canada announces a C\$25 million study of the Gahcho Kué Project in the Northwest Territories in January 2004.

# Group exploration activity worldwide

## North America



- 1. Fort à la Corne (Kensington Resources Ltd. Cameco Corp. Uranerz Exploration and Mining)
- 2. Doyle Lake project (GGL Diamond Corp.)
- 3. Gahcho Kué (Mountain Province Diamonds Inc., Camphor Ventures Inc.)
- 4. 33 Carats (Dios Exploration Inc.)
- 5. Knife Lake (Rhonda Corp.)
- 6. Festival project (Pele Mountain Resources)
- 7. Victor
- 8. Attawapiskat Satellites

In Canada, exploration continued in the NWT, Nunavut, Saskatchewan, Manitoba, Ontario and Quebec. The Gahcho Kué project moved to a full technical study and further exploration and evaluation work was carried out on the large kimberlites in the Fort à la Corne cluster in joint venture with Kensington Resources and Cameco Corp. Work recommenced on the Knife Lake and Gerle Gold joint ventures and bulk sampling was carried out on the Festival property in joint venture with Pele Mountain Resources. Minibulk sampling of kimberlites in the Attawapiskat cluster was undertaken with some encouraging results.

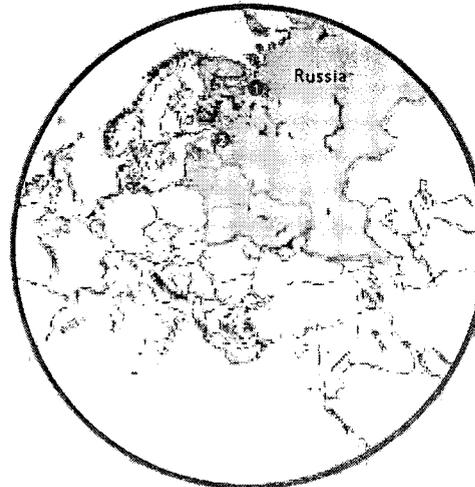
### Legend

#### Advanced projects

- Joint venture
- De Beers
- Technical agreements
- Early stage projects (includes joint ventures)

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## Europe

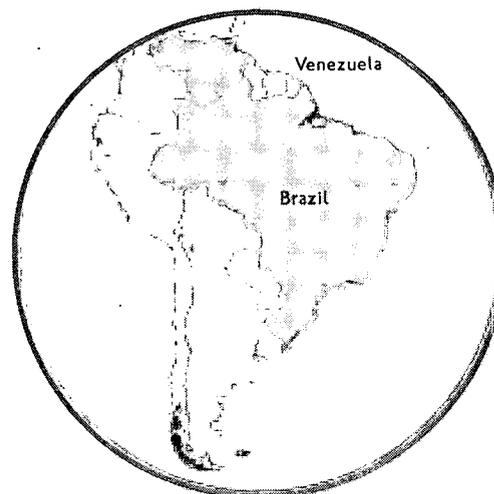


- 1. Grib Pipe (Archangel Diamond Corp – ADC)
- 2. The Luzhskaya project (Petronet Diamant)

Exploration work carried out on the Luzhskaya property in western Russia in joint venture with the local company Petronet Diamant. Geological studies and investigations of joint ventures continued elsewhere in the region.

Archangel Diamond Corporation continue to pursue a settlement of its dispute with its joint venture partner Arkhangelskgeoldobycha (AGD) concerning transfer of the Verkhotina licence.

## South America



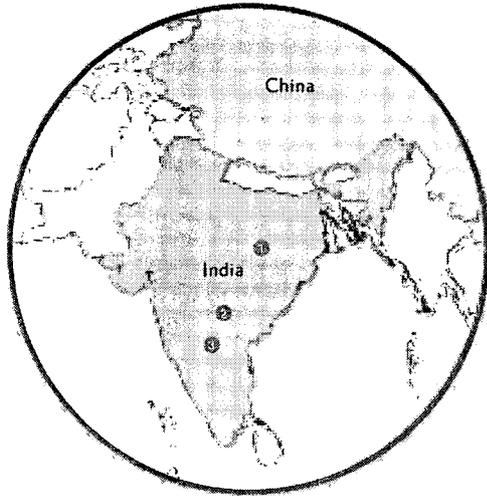
- 1. Conquista

In Brazil, testing of the Conquista kimberlites was completed in 2003 but results proved disappointing.

In Venezuela, the technical cooperation agreement between De Beers and the Ministry of Mines ended in September and applications for prospecting licences were withdrawn.

Active exploration projects in Brazil and Venezuela were terminated at the end of 2003 and no field exploration is planned for 2004.

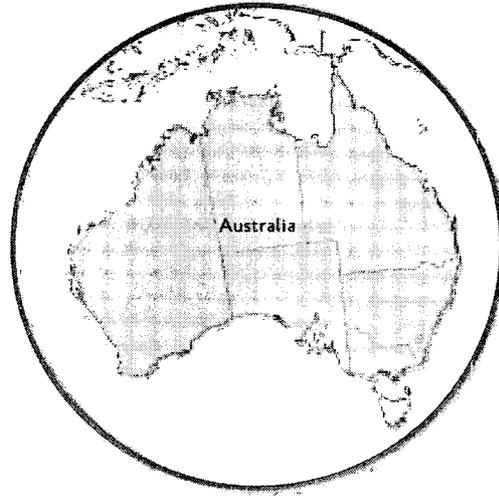
Asia



- 1. Chhattisgarh
- 2. Andhra Pradesh
- 3. Karnataka

In India prospecting licences are held in Karnataka, Andhra Pradesh and Chhattisgarh with a number of new kimberlites discovered. Although we are not actively exploring in China we maintain a presence through a representative office in Beijing.

Australia



Exploration continued in west Australia and the Northern Territories in 2003 and five new kimberlites were discovered. At the end of 2003 a number of projects were terminated and the scale of activity will be significantly reduced.

Africa

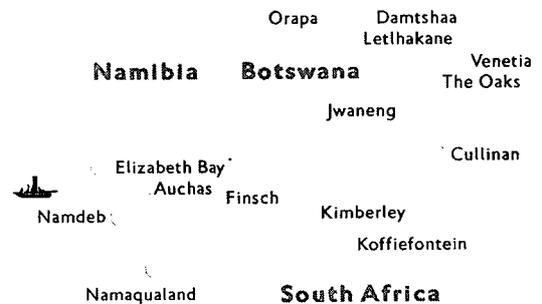


- 1. Ndowana JV (Mvelaphanda)
- 2. Kgare

Exploration continues in RSA, Botswana, Zimbabwe, Gabon and Guinea with 36 new kimberlites discovered in 2003. No further work is planned on the Kgare kimberlite in Botswana as results proved disappointing. No progress was made in Angola, but joint venture negotiations with various entities continue in the DRC where De Beers has also made applications in its own right.

De Beers has ceded its diamond rights in some 68 farms in the Ndowana project area to the joint venture company. In addition, Ndowana's applications for the right to prospect on State-held diamond rights, originally submitted by De Beers prior to formation of the joint venture, are still pending.

Detailed view of southern African mining operations



## Managing director's review



### Transformation continues as DBCM and DTC reorganise structures

In the last few years De Beers has undergone dramatic transformation to meet the challenges and opportunities of our business in the 21st century. In 2003 we have been preparing for an important reorganisation which we plan to implement in 2004. This involves redefining DBCM and DTC as stand-alone companies in the De Beers group, each with its own managing director from July.

Jonathan Oppenheimer will become MD of DBCM and Gareth Penny, who has been so instrumental in driving the new Supplier of Choice strategy, will become MD of DTC. Both will report to me as MD of the De Beers group of companies.

DBCM and DTC will therefore take their place in our group structure alongside our other clearly defined operating companies like our valued partnerships with the Government of Botswana in Debswana and with the Government of Namibia in Namdeb.

The reorganisation flows from what we have called *Project Rainbow*, an initiative that has its roots in the privatisation of De Beers (and the reorganisation of the group under a Luxembourg based holding

company, DBSA) and, secondly, the new Minerals and Petroleum Resources Development Act regulating the South African mining industry, which requires companies to sell 15% of their equity to black controlled companies within five years and 26% within 10 years. An important additional objective of Project Rainbow will be to extract operational effectiveness and efficiencies.

The redefined DBCM will encompass our South African mines and the services working directly for these mines. On the other hand, certain other technical and professional services will be centralised in a new South African subsidiary of DBSA and will be available to service the requirements of all operating companies in the De Beers group.



## Rough sales significantly ahead of target

As the marketing arm of the De Beers group, DTC's operations cover the pipeline from the reception or purchase of diamonds from the mining companies through to consumer marketing.

### Continued focus on generating cashflow

The major task we received from our shareholders following the privatisation of De Beers was to generate superior cash returns on equity such that free cash flow was maximised and applied to reduce debt. It is therefore significant that for two years running now, we have been able to generate an operational cash flow of US\$1.6 billion dollars.

This was achieved through a reduction in our stocks towards working inventory levels of US\$700 million (US\$1 billion in 2002). This was made possible by reducing DTC London's sorting and valuing pipeline from two cycles to one cycle, which released US\$450 million of working capital.

### Debswana again proves its value

When we look at value drivers, up front is Debswana, the leading mining company within the De Beers group. Debswana's contribution to De Beers from its diamond operations in 2003 increased to US\$409 million from US\$362 million the previous year.

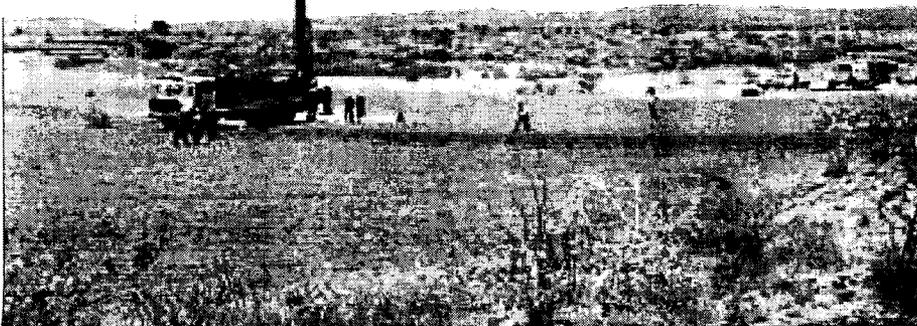
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### Rough diamonds sales indicate significant retail growth

Another significant achievement was the group's rough sales of US\$5.5 billion – significantly ahead of a target of US\$4.5 billion. These sales calibrate with the growth that we have seen in the retail market during the course of 2003. Very important for 2004 is the confidence that what we sold last year has actually been drawn through the pipeline to the consumer as a result of increased retail demand.

### Strong cashflow satisfies shareholders and allows us to finance De Beers more efficiently

Not only have these strong cash flows allowed us to pay ordinary dividends of US\$400 million in respect of 2003 (2002: US\$124 million), but also made possible more satisfactory borrowing arrangements.



*Exploration target drilling activity in India*

## Managing director's review continued



We repaid the onerous and expensive acquisition debt finance that the DBI consortium had taken on for the leveraged buy-out in 2001, and replaced it with a more favourable US\$2.5 billion multi currency revolving credit facility on standard commercial terms, resulting in a significant reduction in interest margin. Syndication was launched in June and successfully completed in late July 2003.

During the course of the re-financing process, De Beers took the opportunity to write off the mark-to-market of the fixed interest rate hedging contracts that were required under the terms of the original senior debt facility; this mark-to-market was expensed in 2003.

The company continues to comply comfortably with all of its covenants. During the period under review, the group has reduced net interest-bearing debt from US\$1,716 million to US\$906 million and reduced net gearing, defined as net interest bearing debt to total capital employed, to 15% in 2003 (2002: 28%). Furthermore, we intend to give notice in June 2004 to preference shareholders of an early redemption of 25% of their preference shares, amounting to US\$214 million.

### Strong local currencies reduce profitability

Of course there are negatives. The strengthening rand had a considerable negative impact on the profitability of the South African and Namibian operations and increased production costs in South Africa alone by almost US\$120 million. Particularly hard hit in South Africa were marginal operations like Koffiefontein and Kimberley underground mines.

I am encouraged by the effort made so far to return all the mines to profitability, particularly the marginal operations. Part of the effort was a review of costs, particularly our overheads. This resulted in a process of voluntary separation, whereby we have reduced our overall complement in DBCM by almost 440 employees.

### We withdraw from bond issue

Another negative was having to withdraw from the planned issue of De Beers bonds following an intensive roadshow around the United Kingdom. We had been asked by our shareholders to examine the feasibility of replacing part of our revolving credit facility, which has a tenor of five years, with longer term paper. In the event we decided that the extra interest margin that would be required for such an issue could not be justified.

### Production

Our operations worldwide continued the previous year's focus on growth, both to go on delivering, free cash flow for debt redemption and also to prepare for an indicated shortfall in supply versus demand. The result was a 9% increase in carat production to 43.9 million carats on the back of higher volumes mined and greater tonnage throughput.

### Botswana: Debswana Increased technical efficiencies help boost production to a record 30 million carats

Debswana has achieved for the first time sales of 30 million carats of sales in this last year. This has partly been due to technological efficiencies, particularly in what we call CARP (completely automated recovery plant) and FISH (fully integrated sorthouse), which together make up the Aquarium and were developed by our own research teams in Johannesburg. Damtshaa, a much smaller mine, was also commissioned towards the end of last year.

### Namibia: Namdeb Production up 14% to 1.5 million carats, increased capacity expected to increase future carats

Namdeb achieved a 14% increase in carats produced to 1.5 million carats. This was due principally to increased production from the marine operations.



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*Director operations Gavin Beevers (centre) with Billy Mawasha (left) and Nelson Mthanti*

*Group manager exploration Bill McKechnie (second left) with (from left) Mike Lain, Phillip Barton, Beverley Appelbaum, Vittoria Jooste and (standing) Craig Smith*

*Outgoing director producer relations, purchasing, sorting and valuing Peter Somner (seated) with (from left) Jackie Thorpe, Yvette Gurton, Paul Cuming, Ian Whitney and Brian McDonald*

The *Ya Toivo* crawler was purchased from the liquidators of Namco and the *!Gariep*, formerly a problematic crawler ship converted to a drill ship, has been in operation since November. With this additional capacity, we hope to grow Namdeb's marine production by a further 160 000 carats in 2004.

Because Namdeb operates at moderate profit to revenue ratios, it has been impacted by the strong exchange rate. That is why in spite of increased production the contribution to De Beers has fallen from US\$52 million to US\$33 million.

### South Africa: (DBCM) Production up 15% due to projects aimed at delivering growth

Our South African operations produced 11.9 million carats, 15% higher than in 2002. One of the major success stories has been the "quick wins" project at Venetia which at modest cost increased treatment capacity by 25% from 4.7 million tons to 5.9 million tons. We only started to see the benefits of this increase in the last quarter of 2003. This year we should see the full impact of the project, which is going to be very important in the year ahead.

The combined treatment plant in Kimberley, designed to retreat dumps in the area, has finally overcome its teething problems and is starting to approach its full capacity of 20 000 tons per day.

Significant progress has been made on the capital intensive Block 4 project which involves the redeveloping of a new mining area at the Finsch underground mine in the Northern Cape.

### Tanzania: Williamson Williamson remains the world's largest kimberlite pipe mine

Better than expected production from alluvial deposits saw tonnage treated up 37% on 2002, with an accompanying rise in the number of carats produced by 9%.

Although we failed to make a profit from Williamson, we remain optimistic that this enormous kimberlitic resource may one day prove economical to the mutual benefit of De Beers and its partnership with the Tanzanian government.



*Len Makwinja (left) and Seb Sebetlela, the general managers of Orapa and Jwaneng respectively. Debswana mines produced a record 30 million carats in 2003*

## Managing director's review continued



### De Beers Canada Construction of our first mine is just around the corner

Forty years after we first identified Canada as a prospective target for diamond exploration, the first of our mines is soon to become a reality.

Victor, in Northern Ontario, is currently subject to an environmental assessment and should this proceed as hoped construction will start in 2005. Snap Lake in the Northwest Territories has already received approval for its environmental assessment, and operating permits are anticipated in mid 2004 which will allow pre-production work to commence this year. The Gahcho Kué joint venture project in the Northwest Territories is also advancing, with a C\$25 million technical investigation which started early in 2004.

### Exploration Refocusing our efforts on diamond-rich areas while suspending or cutting back in others

De Beers Group Exploration invested more than US\$90 million in diamond exploration during 2003 in 13 countries throughout the world and refocused exploration efforts towards the "Big 5" (central and southern Africa, Canada, India, eastern Europe and Russia) to

improve our chances of discovery in the short to medium term.

We sustained a high rate of ground coverage and kimberlite discoveries globally, and have engaged in a number of new joint ventures.

We suspended exploration work in South America and downsized in Australia. There is no breakthrough to report in Angola on our efforts to progress activity. Negotiations are continuing in the Democratic Republic of the Congo.

### Technology

We continued to supply our mining operations with improved technology and identified needs and opportunities in exploration, mining and processing.

R&D work included the design of more efficient marine-mining tools; a Mark 2 Scannex body scanner for improved diamond control; and superior diamond recovery machines (of which more than 150 have already been deployed).

Meanwhile, a new, high capacity machine for earlier recovery of relatively high value, large diamonds is ready to be tested, and further improvements are being applied in the dense medium separation and water conservation processes.

Performance of the Debswana FISH improved to full capacity thanks to the joint efforts of technology and mine staff.

### Safety, Health and Environment – strong focus on positive health

A major negative this year has been six fatalities within the De Beers group of companies. We have enormous sadness about this. Physical safety of our workforce is receiving all necessary attention to ensure that we have no fatalities in our company, where we pride ourselves on global best standards. *(Detailed safety statistics on our website).*

We have been an early adopter of implementing environmental systems according to the international ISO14001. Our first operation was certified in 1998 and the bulk of our mining operations by the end of 2001. Using these systems as a solid foundation, the focus last year was on improving environmental performance, ensuring environmental risks were clearly understood and on standardising reporting across the group.

I am also pleased to record that from this past year Namdeb and DBCM have joined Debswana in the vanguard of providing anti-retroviral treatment (ART) for all permanent employees and a spouse/life partner. It covers areas such as doctors' consultations, pathology testing, nutritional

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## Focus on improving safety and environmental performance

supplements, counselling and support, and prophylaxis to prevent mother-to-child transmission of the disease.

We also piloted a holistic and comprehensive wellness programme at three operations to encourage employees to live a balanced life and manage stress.

### Producer Relations, Purchasing and Sorting

New initiatives boost efficiencies

Consistent and competitive assortments of diamonds are very much at the heart of the DTC's compelling brand proposition. This is thanks to the skills that we have built up over many years. Our clients also applaud the regularity of

supply, under what we call the Intention to Offer (ITO) process, whereby clients know six months in advance what we are planning to sell them.

I have already mentioned the enterprising Pipeline Shortening project, designed to increase efficiencies by reducing the time between the arrival of rough diamonds in London and their eventual sale. During 2003 the pipeline in DTC London was almost halved, freeing up diamonds for sale and thereby increasing cash flow by US\$450 million.

Increasing production by Debswana has for some time put pressure on Orapa House,

the sorting facility in Gaborone. A project to build a new sorting facility that can accommodate current and future production levels is underway.

The new Integrated Stock Management system passed its first tests with minimal problems reported. It is now possible to identify stock bottlenecks, follow stock movements, analyse resources and compare cycles.

### We continue to forge relations and negotiate agreements in the countries in which we operate

In South Africa we have been actively involved in the legislative and parliamentary process by contributing to new legislation affecting the mining industry.



*Driver operator Ellen Kethaotswe of Damshaa, the newest mine in Debswana's productive stable of operations*

## Managing director's review continued



and have been asked to contribute to the Diamond Board's restructuring process.

In Botswana our primary focus during 2004 will be the renewal of the mining lease for Jwaneng.

In Namibia, where the strong exchange rate has impacted Namdeb's profitability, De Beers and the government are trying jointly to find ways of improving Namdeb's financial position.

Negotiations continue with the European Commission following its Statement of Objections to the trade agreement between De Beers and Alrosa of Russia. We are hopeful that a conclusion will be reached early in 2004.

### Sales and marketing

**A year marked by increased sales, official approval of our Supplier of Choice sales strategy, the formulation of a new client list and strong growth in demand for diamond jewellery**

Strong demand for rough diamonds from the cutting centres resulted in DTC sales of US\$5.5 billion, 7% more than in 2002.

In January 2003, the European Commission confirmed in writing that it had no objection to the principles of our

Supplier of Choice strategy. This announcement signalled the start of the process that led, in the middle of the year, to the announcement of a new DTC client list.

The start of 2003 saw buoyant diamond jewellery sales. However, consumer confidence was hit in Q2 by war in Iraq and Sars in the Far East. In response, DTC focused its efforts on stimulating global incremental demand, for example, in the western consumer markets through the vital Christmas buying season, in India with Diamonds for Diwali, in South East Asia for Chinese New Year and in Japan around the Trilogy programme. DTC research suggests that global retail sales of diamond jewellery for the year are nearly 7% higher in US dollars than in 2002. These positive results mean that diamond jewellery sales have met or exceeded GDP growth four times in the last five years since our strategic review in 1999, compared to once in the nine years prior to that. This is as a direct result of the Supplier of Choice philosophy and the increased focus on the marketing of diamonds and diamond jewellery by DTC and the industry.

In 2004 we will also be promoting the intrinsic, emotional values of natural, untreated diamonds. Maintaining

consumer confidence in these values will be crucial as consumer awareness of treatments and synthetics grows and unsease increases about the potential unscrupulous practices using such treated or artificial goods.

### Growing focus on equipment capable of distinguishing synthetics from natural diamonds

Our research and development facility in Maidenhead, England, is using its established expertise in diamond research and detection by designing and marketing sophisticated instruments capable of distinguishing synthetics from natural diamonds. These instruments (DiamondSure™ and DiamondView™) are being sold to key gemmological laboratories worldwide. Marking techniques have been refined to enable the DTC's *Forevermark* logo to be cost-effectively lasered onto the tables of polished diamonds; a pilot programme will start in Hong Kong shortly.

### Legal services

**Our strengthened legal department now plays a pivotal role in helping us to achieve our strategic objectives**

Our legal business unit came of age during 2003 with the creation of three distinct legal departments in London, Johannesburg and Kimberley – and the employment around the globe of six more professional lawyers in specialist fields.

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## Promoting the values of natural, untreated diamonds

Our legal unit's many tasks during the year included presentations to the European Commission on issues such as our Supplier of Choice strategy and our trade agreement with *Airosa* in Russia. As regards the latter, we are hopeful that a positive outcome for all concerned may be reached.

In relation to the USA, De Beers continued to engage in positive interaction with various US Government departments, including the Department of Justice. It is hoped that outstanding issues can be satisfactorily resolved.

### Human resources

**With a new global structure in place, we continue to help the group achieve its business objectives by adding value and helping our people obtain diamond mining and marketing excellence**

**New leadership structure announced** HR leadership, in conjunction with respective line management, has also engaged in an effort designed to examine the role and impact of the HR function across the group. This has led to the announcement of a new leadership structure for the HR function.

This new structure has been designed to lead the establishment of HR management approaches that add value to the group by helping employees reach their full potential. In addition, the new structure is designed to:

- improve alignment of HR programmes with business needs;
- reduce layers of management within the HR structure; and
- elevate the prominence and influence of HR roles at partner companies.

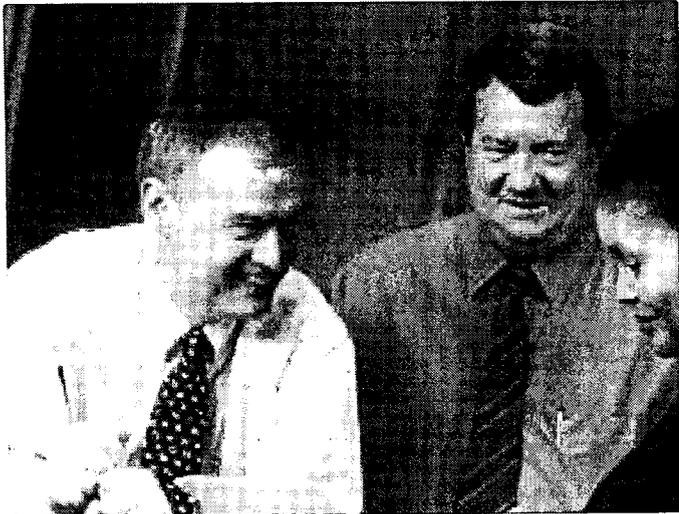


*The Ya Toivo crawler is expected to help boost Namdeb's marine production by more than 160 000 carats in 2004*

*Head finance and administration, DTC, Michael Farmiloe (left) with (from left) Gavin Watson, John Miller, Mike Page, Bob Bartrop and Nick Stacey*

*Head legal services Glenn Turner (left), Colin Blanckenberg and Craig Kraus (right)*

## Managing director's review continued



### Several employee issues addressed

Through consultations with management and staff, HR played a leading role in the DTC's successful pipeline shortening initiative.

Our mining and management personnel – particularly in South Africa – are increasingly the focus of overseas recruitment. We therefore continue our drive to demonstrate our position as Employer of Choice.

In compliance with undertakings given to the European Commission as one of the conditions for approval of Supplier of Choice, we took steps to further protect the confidentiality of the sensitive customer/client information handled by key sales and marketing staff.

### Tackling staffing levels

In-depth succession planning and leadership development continued on all fronts as we prepare for a transition at executive level over the next few years. Special attention is being given to the depth of staffing in executive mining roles to ensure continuity of management capability.

### HIV/Aids

#### **Our treatment programme and workplace policies have positioned us as an industry leader**

The De Beers group is increasingly recognised as a leader in HIV/Aids workplace management. Representatives are often invited to share their experience at conferences and workshops, both locally and overseas.

In June, the National Union of Mine-workers (NUM) and DBCM co-signed a Joint HIV/Aids Workplace Policy, which

has set a benchmark for the whole industry. In July, De Beers unveiled its anti-retroviral treatment programme aimed at extending the productive lives of HIV-positive employees and enhancing the quality of life for themselves and their families.

### Public affairs

#### **The public image of De Beers, and diamonds in general, continues to improve**

Following the formal adoption of the Kimberley Process by over 70 nations, measures were formally implemented to



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## A leader in HIV/Aids workplace management

counter the trade in conflict diamonds and allow the free flow of certificated parcels of diamonds between participating countries. A "peer review" monitoring system to be conducted by governments was also agreed.

There is a real opportunity now to apply the Kimberley Process to other areas and issues where similar co-operation between governments, civil society and industry can make a difference.

Botswana's *Diamonds for Development* campaign went a long way towards

countering negative portrayals of our industry from certain quarters such as the conflict diamonds lobby.

Survival International's claims of a link between the relocation of the Basarwa in Botswana's Central Kalahari Game Reserve and prospective diamond exploration activity in the area are being vigorously refuted by De Beers.

In 2004, De Beers and its customers will comprehensively introduce and require compliance with the *Diamond Best*

*Practice Principles* under a detailed, independently auditable programme designed to ensure the highest professional and ethical standards, to protect consumer interests and to sustain the reputation and integrity of the diamond industry. Other diamond trade organisations around the world are also developing similar codes – a practice we hope will soon spread across the entire diamond industry:



*Far left: What is believed to be the first ever pre-negotiation workshop between the NUM and a mining group was recently held at DBCM to seek to establish mutually beneficial solutions to both parties' needs prior to wage negotiations. At the workshop were: (from left) Daphne Markus, NUM deputy general secretary Archie Palane, De Beers general manager – HR Jeff Leaver, Gert Klaasse, Cynthia Modise and Raymond Ruwana*

*Quality diamond jewellery advertising is stimulating global incremental demand*

## Managing director's review continued



The World Parks Congress (WPC), an international event convened under the auspices of The World Conservation Union (IUCN) every 10 years, was hosted by South Africa in September 2003.

De Beers was provided with a unique opportunity to showcase its successful public/private sector partnership in conservation with the South African National Parks (SANParks). Over the years we have been working closely with SANParks in facilitating, planning and developing the new Vhembe-Dongola National Park in the Limpopo Province, which will be part of the Limpopo-Shashe Transfrontier Conservation Area.

We believe our participation in the WPC showcased our commitment towards biodiversity and sustainability and credibly demonstrated our support for IUCN and the South African Government.

### Independently managed assets

De Beers LV

#### Progress in our luxury goods joint venture with Moët Hennessy Louis Vuitton

There was progress in 2003 with the flagship London store completing its first full year of trading and the launch of new

boutiques within three prestigious Tokyo department stores.

By selecting the world's most beautiful diamonds and setting these in jewellery pieces with a strong design element, De Beers LV has established a brand which has acquired a reputation for wearable luxury.

Pre-Christmas sales in all of the De Beers LV stores were satisfactory and the company will continue to work on building its brand strength and growing market presence in 2004.

#### Element Six Strong product growth boosts operating profit by 50%

Element Six, a producer of industrial diamonds, had a good year. Top-line revenue increased 6% in 2002 despite generally weak market conditions and continued price pressure in some product areas. Operating profit rose 50%, thanks to new product growth, further cost control and the streamlining of business processes.

Strong growth was achieved in the drilling and machining market segments, the result of a long term strategy to invest in research and development. Product innovation has produced many new high performing products that have proven to

be very competitive in the marketplace, and we are confident of continuing this leading position going forward.

### Strong optimism for 2004

There is optimism that 2004 will be another good year for the diamond industry. Macro economic indicators are positive for the global economy and there is growing evidence that a value adding transformation of the diamond industry, stimulated by Supplier of Choice, is taking place around the globe. Greater investment by the trade in marketing and branding is driving demand for diamond jewellery and helping diamonds to gain a larger share of the luxury goods sector.

Although some group mines remain marginal at the current exchange rates, we will continue to demonstrate our ability to achieve greater efficiency and profitability. The growth in group production has been targeted at 7% for 2004.

- Debswana aims to build on its contribution to the group by targeting record production levels – from 30 million to 31 million carats.
- In South Africa, mine production targets will increase from 12 million to 14 million carats – with Venetia increasing output from 6.6 million to 7.4 million carats.

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## The current strength of the diamond market offers encouraging prospects for the year ahead

- Additional marine mining capacity should increase Namdeb's production from 1.5 million to a target of 1.7 million carats as the full benefits of the two new mining vessels kick in.

In addition to the organisational changes that will mark the first half of 2004, the year will also see the start of negotiations with our government partners in Botswana for the renewal of the Jwaneng mine lease. Strong partnerships are key to this company's growth and none is more important than our partnership with the government of Botswana.

The maintenance of consumer confidence in natural diamonds is of paramount importance. Sales and marketing will continue to work closely with DTC's research and development team to ensure that the detection of treatments, fakes and synthetics, the promotion of disclosure at all levels of the downstream pipeline and the education of the trade are prioritised to provide assurance to the consumer.

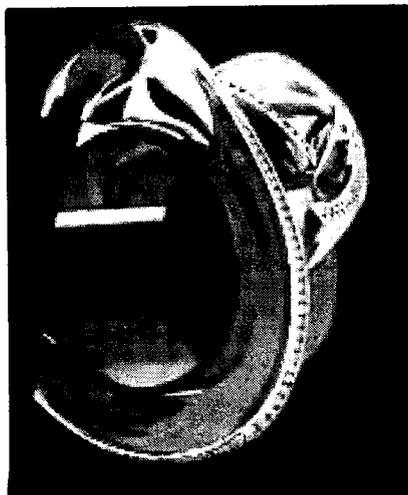
At the same time the comprehensive rollout of DTC's Best Practice Principles to its sightholders and the trade will gain momentum through the year ahead of full implementation in 2005.

Significant milestones were reached – and often exceeded in 2003. Following two strong sights, with rough diamond prices raised by a further 3%, the current strength of the diamond market offers encouraging prospects for the year ahead.

I would like to pay special tribute to Peter Somner who has taken early retirement after 33 years of executive service to DTC and four years on the directorate.



**Gary Ralfe**  
27 February 2004



*The De Beers biennial Shining Light Awards for excellence in diamond jewellery design, launched in 1996, continues to promote talented designers and provide job opportunities for those previously excluded from the industry*

## Focus on Debswana



*Debswana MD Louis Nchindo (seated, right) with Sir Chips Keswick, Debswana MD designate Blackie Marole and Robin Crawford (standing right)*

### Debswana

Target reached ahead of schedule  
I am happy to record that a major stretch target set in 2002 – the production of 30 million carats by 2004 – has been reached a year early.

#### Operations

Total production up to 30.4 million carats  
Total rough diamond production processed and valued at the Botswana Diamond Valuing Company amounted to 30.4 million carats: this figure includes production from our recently opened Damtshaa mine. The total figure was significantly more than the 28.4 million carats processed in the previous year, but less than the 31.2 million carats projected for 2004.

Operational challenges at Jwaneng Mine ore treated by the main treatment plant was 8.9 million tons, 9% below budget. Saleable diamond production was 12.8 million carats, 6% below budget. These deficits were due to a variety of technical challenges ranging from mainline conveyor failures and a major fire to blockages of slime distribution circuits. An early closure also resulted in 13 fewer production shifts for the year.

Orapa production up  
The mine produced 16.3 million carats, 8% higher than budget. This was due to excellent recovery efficiencies and selective treatment of high grade ore.

Letlhakane production up  
Diamonds recovered at 1 061 000 carats were 4% above budget.

Impressive debut for Damtshaa  
At this recently opened mine, 292 000 carats were produced – some 17% higher than budget.

#### Safety, Health and Environment

Jwaneng retained its NOSA (National Occupational Safety Association) Integrated Platinum five-star status with an improved score of 94%, and is making good progress towards the higher National Occupational Safety Credited Awards (NOSCAR) status. Jwaneng retained its ISO 14001 certification for the third consecutive year, and no environment related issues were raised.

Orapa and Letlhakane did not have a good year and recorded 20 lost time injuries, eight more than in the previous year; two of these were fatalities. It has been established that the major problem was employees' commitment to the programme and their not following established procedures.

As a result, these mines decided not to conduct a NOSA grading in November 2003. Instead, they invited the British Standard Institute (BSI) to conduct an independent audit on the entire SHE programme in order to prepare for a NOSA five-star grading in November 2004.

### Sales up by 1.4 million carats

Diamonds sold during the year amounted to 30 million carats (2002: 28 million carats). However, the pula's strength against the US dollar resulted in Debswana's revenue declining to P10.5 billion (2002: P11.2 billion). The increase in carats helped to lessen the impact of the rallying of the pula against the world's major trading currencies during the year.

### Diamonds for Development campaign gathers steam

The *Diamonds for Development* campaign went a long way towards countering negative portrayals of our industry from certain quarters such as the conflict diamonds lobby. British MPs, members of the House of Lords and European journalists all visited Botswana and were pleased to note that diamond revenue was being used to develop Botswana. And, in a major coup for legitimate diamond producers such as Botswana, US President George Bush applauded and committed to legislation which expressly protects Botswana's interests in all initiatives by the US to eliminate trade in conflict diamonds. Moreover, the Congressional Black Caucus now champions our cause in the US Congress.

On the home front, the media and other opinion formers such as MPs, chiefs and district councillors were briefed on a wide range of projects and

Despite technical and safety problems, we boosted production to 30 million carats and confirmed our status as the world's leading diamond producer

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initiatives – from tourism and farming to the Debswana scholarship programme. Our website (Debswana.com), intranet and various group publications and newsletters have allowed us to strengthen communications with all stakeholders.

#### **HIV/Aids prevalence continues to fall**

Although HIV/Aids remains a serious threat, our Anti-Retroviral Treatment (ART) programme is producing good results. Employees and their legally married spouses who are HIV positive are now covered 100% for ART, prophylactic and opportunistic infections treatment, and related monitoring tests.

Overall prevalence in the workforce continues to fall – it was 20% in 2003, compared to 23% in 2001 and 29% in 1999. However, efforts continue on all fronts. For example, our recent Stakeholder Engagement Policy compels companies providing goods and services to Debswana to have their own workplace HIV/Aids policy.

#### **Social investment**

A total of P2 245 000 spent on a wide range of causes

Financial assistance for deserving causes

In keeping with our philosophy of helping the less fortunate, we donated

over P1.4 million in 2003 to the Botswana Council for the Disabled. We also provided financial assistance to other organisations such as the Cancer Association of Botswana and the SOS Children's Village in Tlokweng. We also funded a wide range of sporting organisations such as the Botswana Amateur Athletics Association and the Botswana Chess Federation.

#### **Funding small business development**

Peo Holdings, a business development initiative established by De Beers and Debswana to encourage the creation of small and medium businesses, is doing well. Peo's failure rate to date is only 10% compared to the 20% tolerated by financial institutions and 40% for similar projects in the SADC region. Thirty-four businesses have been assisted to date.

#### **Attracting investment and stimulating tourism**

As part of our supply chain management programme, P91 million was awarded to citizen owned companies in our housing projects at the mines, representing 71% of the current housing programme. The business development unit of the supply chain management function has to date attracted nine foreign companies to Botswana: they have invested a total of P24.5 million so far. Over 90% of the companies that we have attracted to Botswana have set up businesses with citizens.

On the tourism front, the Debswana board has approved in principle the company's plan to build a lodge in Kasane with the intention of strengthening Botswana's tourism industry. The project is expected to start in 2004.

#### **Favourable outlook for 2004**

We enter 2004 with a continued commitment to high safety standards, and the knowledge that the diamond market will continue to be favourable for the foreseeable future. We will continue to strive for improved production, safety and profitability.

**Louis Nchindo**  
Managing Director

## Focus on Namdeb



### Namibia

A major contributor to the economy  
The partnership between the Government of the Republic of Namibia and De Beers Centenary AG continues to be one of the key players in the Namibian economy, accounting for 10% of GDP and 30% of foreign exchange earnings.

#### Reduced profitability

Namdeb critically reviewed its business plan to adjust to the challenge of the exchange rate, which saw a dramatic strengthening against the US dollar. We implemented a number of initiatives that included increasing production, managing capital, reducing working costs and eliminating product theft.

#### Production up 14%

A total of 1 454 756 carats were produced, an increase of 14% on the previous year's figure of 1 275 899 carats.

#### Safety, Health and Environment

All our operations attained NOSCAR (National Occupational Safety Association) and NOSA five-star safety ratings in 2003. However, we recorded 14 lost time injuries for the year (compared to our annual maximum target of six) with a lost time frequency ratio of 0.35 (compared to our annual maximum target of 0.16).

#### HIV/Aids treatment programme in full swing

Namdeb has been commended by government, the private sector and NGOs for its lead in providing Anti-Retroviral Treatment (ART) to its employees.

The ART programme was officially launched in December by the Minister for Health and Social Services, the Honourable Liberthine Amathila.

During the year, 35% of our employees had been for voluntary counselling and testing (VCT). The last prevalence survey results released in November 2003 indicated that 10% of the workforce is infected with HIV/Aids.

The Namdeb Friendly Society, established to manage the ART programme, was registered with the relevant authorities.

#### Corporate citizenship

Namdeb is committed to the development of Namibia and its people. Through the Namdeb Social Fund (NSF), its official social investment vehicle, the company supports initiatives aligned with government goals that contribute to the improvement of the quality of life of communities both rural and urban by giving grants to educational, social and charitable causes.

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## Dollar weakness hits profitability despite increased production

In 2003, some NS3.8 million was dispensed by the fund to 73 initiatives countrywide.

### Investment in plant at Elizabeth Bay

The upgrading of the treatment plant at Elizabeth Bay near Lüderitz to a wet crushing system, which was inaugurated by the Minister of Mines and Energy, the Honourable Nickey Iyambo, in August represents an investment of nearly NS400 million. This project has the potential to increase the longevity of the mine by 10 years and enhance the sustainability of the coastal town.

### Acquisition of mv *Ya Toivo* assets

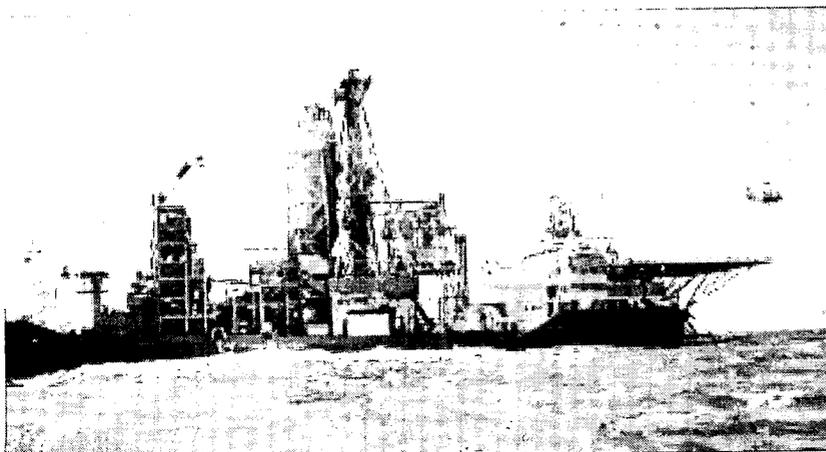
As Namdeb's onshore resources diminish, the company will heavily depend on its marine deposits, which are mined by De Beers Marine Namibia, in which Namdeb has a 30% stake and De Beers, 70%.

Earlier this year De Beers Marine Namibia successfully acquired a marine diamond mining system made up of the "Namssoll II" crawler, treatment plant and related assets aboard the vessel mv *Ya Toivo* from the provisional liquidators of Namco for US\$20 million.

Operations have already started in the marine mining area.

### *!Gariep* conversion

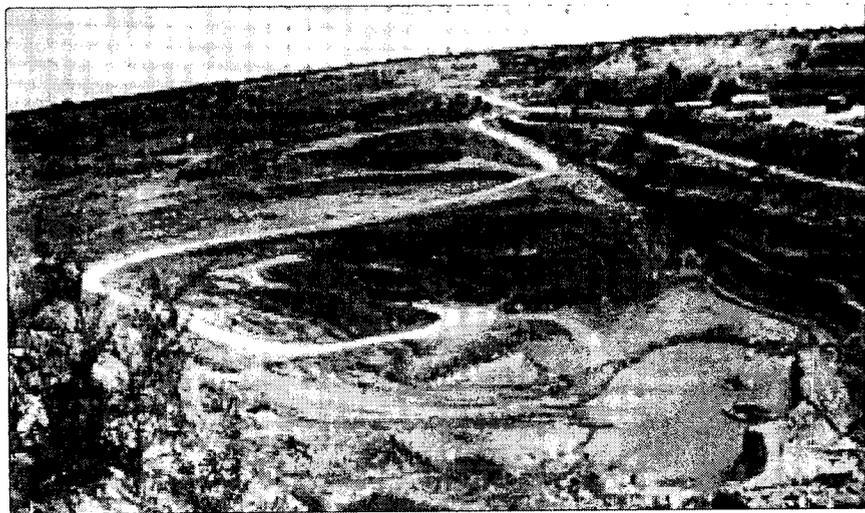
The *!Gariep* vessel is back in operation after a successful technology conversion in the UK. The installed crawler technology was unsuitable for our licence area. The conversion to a drill ship was completed seven months ahead of schedule and this vessel will contribute significantly to the additional carat output in 2004.



**Inge Zaamwani**  
Managing Director

*In typically choppy seas, The Grand Banks recovers diamonds from the sea floor off the Namibian coast at depths of more than 100 metres*

## Focus on Williamson



### **Production up, but technical difficulties remain**

During 2003, Williamson saw increased tonnage treated up by 37% on 2002 with an accompanying rise in the number of carats produced – an increase of 9%. This was mainly due to better than expected production from alluvial deposits in the New Alamas area (mined for us by Consolidated African Diamonds) and the commissioning of a new in-line pressure jig plant.

A number of quick win initiatives aimed at increasing carat production will be implemented during 2004. In the longer term, we are investigating various options for growth; they will require significant capital expenditure over the next few years.

### **Operations**

#### **Measures taken to improve efficiency**

Technical audits aimed at improving the performance of the production plants and identifying efficiency improvements within the jig plant were completed during 2003. The reasons for the jig plant's low recoveries have still not been identified, and work will continue with Technical Support Services (TSS) assistance in 2004. In addition, various other management, control and security audits were completed.

### **Security beefed up**

Security standards and procedures on the mine and town of Mwadui were significantly enhanced. We also worked on our relationships with local authorities, various agencies, regional government and the police.

### **Safety, Health and Environment Major safety milestone reached**

On 8 July 2003, *Williamson* achieved the important milestone of one million fatality free shifts – a first for any mine in Tanzania. To maintain these levels of performance, we are implementing a comprehensive Safety, Health and Environmental management system.

### **HIV/Aids programme launched**

During the year, we launched our 'War against HIV/Aids' consisting of an educational programme for residents of Mwadui and surrounding areas, a Voluntary Counselling and Testing programme, a peer health education initiative and the widespread distribution of condoms in the township.

### **No water borne diseases**

No water borne disease outbreaks were reported in the Mwadui area during 2003, despite continuous cholera outbreaks in most other provinces in the country. A mosquito control programme started during the course of the year.

De Beers and the Tanzanian government continue working together to mine one of the world's largest kimberlitic pipes

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**Balanced Scorecard gets going**

We started to roll out our Balanced Scorecard (BSC) management process, which has already been implemented up to middle management level. BSC will eventually affect the entire organisation as finances become available.

**New contract with Consolidated African Diamonds**

A new operations contract was negotiated with Consolidated African Diamonds, who mine on our behalf in the New Alamas area. The contract ensures protection of product and a more favourable profit split for Williamson mine.

**Community involvement  
New cooperative mining venture**

We presented local government with an initiative to create a cooperative mining programme with local communities. It will involve our providing technical support to a group of local inhabitants in an effort to formalise small scale mining in the area.

**Educational support**

Donations of furniture and other support were made to schools within the greater Mwadui area. Requests are now collated with the Kishapu District Commissioner to ensure that those most in need are assisted.

**Drought assistance in Mwadui**

To alleviate the drought that has plagued Mwadui over the past 12 months, we have provided food assistance to employees to supplement government's own feeding programme. And in partnership with government, we have built two dams for use by local communities.

**Employment boon for Mwadui**

We successfully invited Grinaker LTA, who have been awarded a road construction contract, to set up their working base in Mwadui. This will help to alleviate the region's chronic unemployment problem. In addition, the construction company will build accommodation units which will be left for use by Mwadui citizens after the road is completed.

**Development projects and businesses support**

We support a mushroom and dairy farm rehabilitation project through business management skills transfer, training and test work facilitation. We also provide financial and other support to private enterprises such as guesthouses, kiosks and petrol stations.

**Tony Guthrie**  
Managing Director

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*A bird's eye view of Williamson's opencast pit*

## Focus on Canada



### A 40 year old vision

De Beers first identified Canada as a prospective target for diamond exploration almost 40 years ago. De Beers' early interest in Canada provided the impetus for many other geologists to search for diamonds in the country. Today, the country's growing diamond industry contributes significantly to the national economy. Canada is expected to become the third largest producer of diamonds by value in 2004.

### Victor Project to get green light in 2004

The realisation of our 40 year old vision will be the commissioning of our first mine, the Victor Project in Northern Ontario. Things are going well, and we are highly optimistic that final go ahead will be received in May 2004. This will allow construction to start in 2005.

### Snap Lake construction scheduled for 2005

Snap Lake in the Northwest Territories has received approval for its Environmental Impact Assessment (EIA), and operating permits are expected by the end of the first quarter of 2004. Phase one pre-production work, to confirm dilution estimates and test new technology and equipment, will be under way in mid 2004. This phase will be

integrated with the main underground development plan to allow construction to begin in 2005.

### Gahcho Kué technical investigation started

The Gahcho Kué joint venture project in the Northwest Territories is also advancing and we will be conducting a C\$25 million technical investigation in 2004. This will include engineering, geotechnical, resource and environmental studies as well as stakeholder consultation with federal agencies, territorial agencies and the primary Aboriginal groups affected by the project.



Construction of our first mine is just around the corner in this diamond rich country, which is already the world's third largest producer by value

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### 30 exploration projects under way

De Beers continues to make strides in exploration and has some 30 exploration projects under way. Our 40 year commitment to Canada has yielded the discovery, in some cases with joint venture partners, of some 216 kimberlites. Well over half of these are diamondiferous, and we are evaluating the viability of many of them.

### Multiple partnerships in place

We believe that the best way to maximise benefits for all stakeholders is through a spirit of partnership with government, Aboriginal communities,

educational authorities, contractors, joint venture partners and industry.

We presently have six exploration joint ventures, an alliance with Amec – our preferred supplier of engineering, consulting and project/construction management services, and relationships with First Nations communities and educational institutions. For example, agreements with the Attawapiskat First Nation have seen the construction of a C\$600 000 training centre in Attawapiskat and the formulation of a study setting out how they will benefit from a future mine at Victor.

Meanwhile, in partnership with the Yellowknife Catholic Schools, we will be providing a total of C\$500 000 over five years for the construction of a new trades training centre in Yellowknife.

Other initiatives include the sponsoring of two training workshops for teachers in Attawapiskat, and a literacy programme in the North Western Territories. The latter involves providing books to school children, developing materials and designing a training course to help residents pass their trades entrance exam.



### Richard Molyneux

President and CEO  
De Beers Canada

*Above: Baffin Island – the site of one of De Beers' many exploration projects*

*Left: Loading drill core from our Fort à la Corne joint venture project*

*Jumping for joy: a picture demonstrating the pioneering spirit of partnership in Canada. De Beers Canada geologists (from left) Anthony Belis, Graham Dolce and Domenic Chartier*

# Mining and recovery

## PRODUCTION STATISTICS

Botswana Debswana	Tons treated (metric tons – 000)		Diamonds recovered (carats)		Grade (carats/100 metric tons)	
	2003	2002	2003	2002	2003	2002
Damtshaa	1 237	124	292 180	7 084	23.6	5.7
Jwaneng	8 922	9 326	12 764 649	13 034 510	143.1	139.8
Letlhakane	3 590	3 666	1 061 068	1 025 690	29.6	28.0
Orapa	16 423	16 390	16 294 258	14 329 642	99.2	87.4
	30 172	29 506	30 412 155	28 396 926	100.8	96.2

### Namibia Namdeb

Diamond Area 1	25 811	28 076	796 694	696 914	3.1	2.5
Marine	n/a	n/a	658 062	578 985	n/a	n/a
	25 811	28 076	1 454 756	1 275 899	5.6	4.5

### South Africa DBCM

Cullinan (Formerly Premier)	3 391	3 245	1 273 022	1 471 754	37.5	45.4
Finsch	5 282	5 101	1 942 235	2 378 243	36.8	46.6
Kimberley	5 962	3 633	1 054 181	473 975	17.7	13.0
Koffiefontein	2 044	2 155	113 715	112 265	5.6	5.2
Namaqualand	6 286	5 280	829 686	773 768	13.2	14.7
The Oaks	312	323	100 123	115 234	32.1	35.7
Venetia	5 414	4 711	6 600 721	5 077 042	121.9	107.8
	28 691	24 448	11 913 683	10 402 281	41.5	42.5

### Tanzania Williamson

Williamson	4 543	3 325	166 263	152 234	3.7	4.6
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<b>Grand total</b>	<b>89 217</b>	<b>85 355</b>	<b>43 946 857</b>	<b>40 227 340</b>	<b>49.3</b>	<b>47.1</b>
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# The triple bottom line

## **Operational sustainability**

1. Pipeline Shortening project
2. HIV/Aids – ART rollout
3. Supplier of Choice update
4. Mining Charter progress

## **Social sustainability**

5. De Beers Fund update
6. Company contributions

## **Environmental sustainability**

7. Environmental update



## Pipeline Shortening project

Our diamonds are now processed and sold faster, resulting in less working capital and higher cash flows.

### Why a shorter pipeline?

The plan was straightforward: to shorten the diamond pipeline – defined as the time between the arrival of rough diamonds at the DTC and their eventual sale. A shorter pipeline means less working capital and higher cash flows.

The objective, formulated last year, was to reduce the time it takes rough diamonds to travel through the DTC pipeline to five weeks for southern African countries, and seven weeks for other producers.

That objective was achieved. Here's how.

### Fantastic response by our people

The project began with a stringent assessment of working processes and reviews of working practices, technology and workforce flexibility. Every department conducted a detailed assessment and made wide ranging proposals for change. Innovative ideas and suggestions were implemented at all levels. The result has been a release of working capital and an increase in available cashflow of US\$450 million.

### Future reductions being planned

The challenge going forward is to ensure the continued successful implementation of a sustainable shortened pipeline, and to establish a basis for future pipeline

reductions in southern African sorting offices through co-operation with stakeholders.

### Comments DTC's Kim Simson:

"Preparation was one of the biggest factors in this project. We had to plan how we could compress the work into effectively half the normal time.

"As we moved into the practical stage, we found we had to be more flexible and learn to think about the whole pipeline – not just our own section. Everything is connected: a delay in one area can cause even bigger problems down the line, producing a kind of ripple effect.

"The real success of the project so far has been the way in which information and decision-making were shared. We now better appreciate the financial implications of what we do and the reasoning behind it.

"There was genuine surprise at the relatively smooth progress. Initial fears about excessive staff overtime have proved groundless.

"The challenge now is to maintain the productivity gains made so far and adapt to any new working patterns which may eventually be needed."



## HIV/Aids – ART rollout

Our bold anti-retroviral treatment programme and joint workplace policy signed with NUM have positioned us as industry leaders

### Workplace policy signed with NUM

DBCM, Debswana in Botswana and Namdeb in Namibia, have played a leadership role in making ART available in the workplace. Paving the way for this in South Africa was the National Union of Mineworkers (NUM) and De Beers co-signing the Joint HIV/Aids Workplace Policy. In June the deputy minister of the Department of Minerals and Energy, Susan Shabangu, commended the parties for reaching agreement on a policy which could show the way forward for the whole mining industry.

### ART programme unveiled

The De Beers ART programme, a key element of the joint HIV/Aids Workplace Policy in South Africa, was unveiled in July. It seeks to extend the productive lives of HIV positive employees and enhance their quality of life and that of their families.

The treatment programme will run for an initial two-year period and is free to permanent employees and their spouse or life partner. It covers areas such as doctors' consultations, pathology testing, ART, nutritional supplements, counselling and support, and prophylaxis to prevent mother to child transmission of the disease.

The programme uses both mine medical facilities and accredited private practitioners, and even allows employees and their partners some choice in a treating doctor. Various partnerships have been established with service providers and pharmaceutical suppliers to procure world class services and medication at affordable prices.

We are currently the only mining company in South Africa to extend free treatment beyond the workplace to both spouses/life partners and retired or retrenched employees.

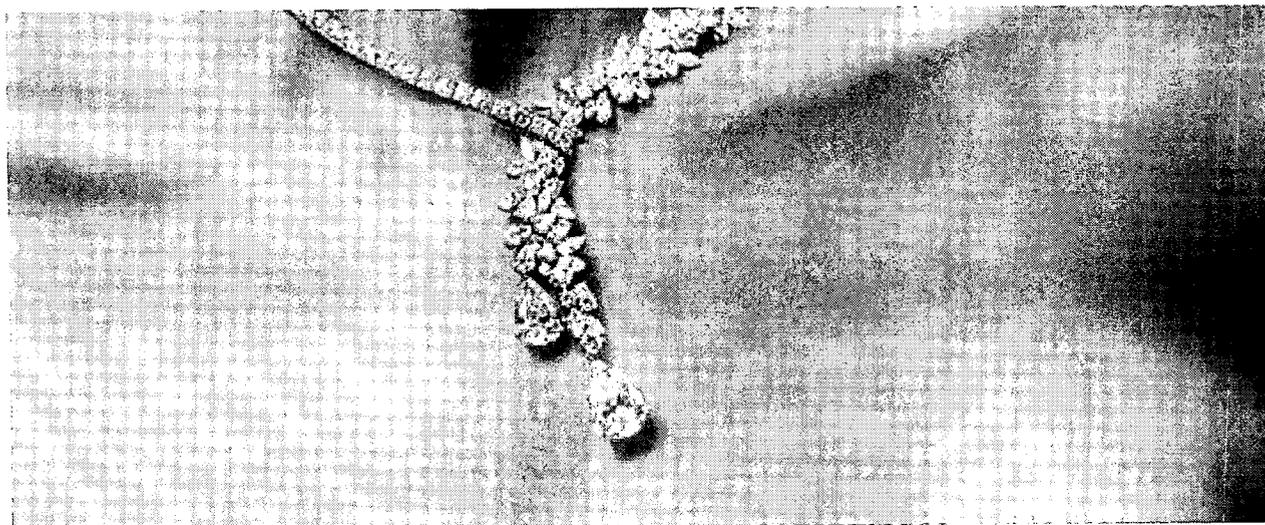
### Action pays dividends

The cost of doing nothing about HIV/Aids far exceeds the cost of doing something. Through our treatment programme and other initiatives aimed at reducing the infection rate over time, we hope to at least begin to limit the impact of HIV/Aids on the organisation.

DBCM is an active member of the HIV/Aids Tripartite Committee, a working group consisting of labour, business and government which focuses specifically on the mining sector. During 2003, the first Mining Summit on HIV/Aids produced a co-signed declaration of intent which lays the platform for HIV/Aids management in

the mining industry, the first sector to win the commitment of all stakeholders.

DBCM is a founding member of the South African Business Coalition on HIV/Aids, where South African corporate representatives share their experience and identify projects which could be usefully tackled collectively by business. We are also a member of the Global Business Coalition on HIV/Aids. Company representatives have been asked to speak at HIV/Aids management conferences and workshops both locally and abroad.



## Supplier of Choice update

### Supplier of Choice developments

2003 has been a watershed for Sales and Marketing and its relationships with its clients in particular. January heralded receipt of a Comfort Letter from the European Commission (EU) confirming that its investigations into the Supplier of Choice (SoC) strategy were complete and it had no objection to the principles of the strategy. This announcement signalled the start of the client evaluation process that led in the middle of the year to the announcement of a new DTC client list.

After the announcement from the EU, sightholder profile questionnaires were issued to all existing sightholders as well as to a number of companies that also wished to apply to become sightholders. The information provided formed the basis for each client's evaluation against the relative criteria used for the assessment: financial standing, market position, distribution ability, marketing ability and technical manufacturing ability. After an exhaustive and rigorously objective evaluation process, the new sightholder list was approved at the end of May.

The outcome of the process resulting in the new sightholder list was an emotive one that generated a great deal of comment and discussion in the trade

press and in the diamond cutting centres. It is important to note that there were new sightholders taken on in each cutting centre and the overall list contains a wide range of business models.

### Incremental quality trade marketing spend

Incremental quality trade marketing spend is one way of measuring the extent of trade transformation. In order for the diamond industry to compete on a more equal footing with its competitive set, and the luxury goods sector in particular, we believe strongly, that it needs to transform the way it does business. There should be a far greater focus on the consumer and what he/she wants in terms of the product bought, the inherent emotional values that consumers look to find embodied in such products and the experience consumers have when going in to their local jewellery shop.

Increasing diamond jewellery's exposure through quality advertising plays a vital role in this transformation. In addition to DTC's US\$180 million marketing budget, in 2003, it is estimated that the trade invested an incremental US\$272 million in quality diamond jewellery advertising. While it is too early to draw firm conclusions, the principles

Significant effort and resource will be invested in promoting the positive values of the natural diamond

of SoC that sightholders and the trade have grasped so vigorously have almost certainly contributed to the strong performance of the diamond industry at the retail level.

### Sales into efficient channels

The key to reducing the traditional peaks and troughs in DTC rough sales comes through sightholders strengthening their distribution. The proportion of their sales from DTC goods that enter efficient, consumer focused programmes, which are based on consumers' core needs, can influence the volatility of demand for DTC rough. Sightholders continue to develop their marketing activity to a point where DTC is aware of over 250 such initiatives. In 2003, it is estimated that 33% of DTC sales found their way into this type of efficient channel.

### Consumer confidence issues

At the root of the diamond industry's success is the well researched consumer perception that the purchase of a piece of diamond jewellery is not merely the acquisition of a stone set in gold or platinum, but an investment in a series of emotional values that help define who they are, where they are in their relationship and their place in society. In recent times there have been a number

of issues that have been brought to the public's eye that potentially threaten that perception.

These include ethical issues like the sale of diamonds from areas of conflict, child labour and the misrepresentation and non-disclosure of treatments and synthetics.

DTC has been at the forefront of industry initiatives to ensure that the positive, emotional values and equity encapsulated in the natural diamond are not damaged by such concerns and that reassurance can be provided to consumers in their diamond purchases.

*Commentary on the diamond jewellery market growth and rough diamond sales appears in both the chairman's statement and MD's review.*



## Mining Charter progress

### Contributing value to all South Africans

With most of its operations, assets and employees still rooted in the country of its origin, De Beers continues to add substantial economic benefits to South Africa in direct and indirect employment, taxes and levies.

### Transformation process under way

The South African economy has been undergoing a process of gradual transformation over the past decade as part of a wider, state-led initiative to promote democracy, equity and opportunity. There have been wide-ranging initiatives aimed at bringing historically disadvantaged South Africans into the mainstream economy, hence the emphasis on socio-economic empowerment. The Mining Charter is one such example: it gives effect to the Minerals and Petroleum Resources Development Act and is aimed at redressing imbalances in the mining industry and creating a globally competitive industry. We at De Beers support the advancement of black economic empowerment not because it is a legislative requirement, but because it makes good business-sense.

We fully support the main aim of the legislation: to accelerate the necessary

social and economic transformation of South Africa. Certainly the government's drive to effect a real change to the economic landscape should be understood by all who wish the country well. De Beers and other mining companies have been working hard to increase the pace of black economic empowerment as we recognise that legislation supports the economic and social transformation of the country.

Our newly created Mining Charter office monitors our compliance and works to integrate the charter across all our operations.

### The Charter in a nutshell

The Charter's scorecard consists of nine measures. Mining companies must comply with them within a five-year period to qualify for the conversion of "old order" rights to "new order" rights. The nine measures are:

- Human resources development
- Employment Equity (EE)
- Migrant labour
- Mine community and rural development
- Housing and living conditions
- Procurement
- Beneficiation
- Ownership
- Reporting

We support the objectives of the Charter, and are making good progress in complying with its specific requirements

**Our progress so far**

Comprehensive strategies are in place and we have made significant progress in all of these areas. We have even set ourselves stretch targets in three areas – human resources development, employment equity and procurement – to exceed the scorecard requirements.

**Employment Equity**

We are on track to achieve our 2004 targets in management positions.

**Numbers improving**

We submitted our fourth EE progress report to the Department of Labour in 2003. Head Office, Namaqualand, Group Exploration and DTC Kimberley were included in an audit by the department and positive feedback was given by its inspectors.

There has been encouraging growth in the number of designated employees (defined as Africans, Coloureds, Indians, women and disabled persons), with a steady improvement in the management category.

**Additional measures being taken**

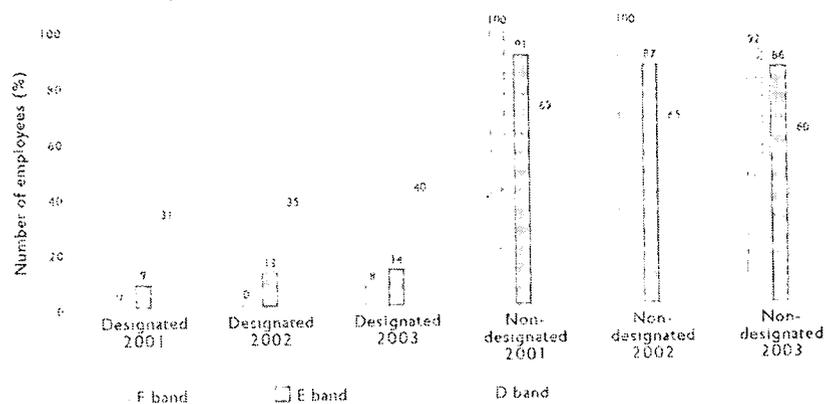
We firmly believe that a talented and diverse workforce makes good business sense, irrespective of geographic location. To fast track our efforts in this regard and formulate appropriate

strategies, we have appointed a general manager to coordinate and manage our effort to comply with the Charter and launched a wide range of initiatives that include:

- diversity awareness programmes
- the establishment of EE committees throughout our SA operations
- monitoring employee turnover
- job assignments directed at the development of key competencies

In 2004, we will implement a revised EE strategy as well as a review of the Diversity Management Programme and its alignment with the requirements of the Mining Charter.

DCBM D-F band profile comparison 2001 – 2003



The above graph pertains specifically to the D – F Patterson band grading within DBCM. It depicts a steady growth in the designated profile in the D, E and F bands from 2001 to 2003. The decrease in the non-designated profile indicates the challenging process of balancing the representation of designated and non-designated employees within the top level of the organisation through appropriate employment equity interventions.



## The De Beers Fund update

### A focus on communities

The De Beers Fund is the company's dedicated social investment agency in South Africa. It supports the efforts of hundreds of community organisations and development projects working to bring lasting change in areas that need it most. The Fund has invested R135 million in over 2 500 projects in South Africa over the past five years.

The Fund invests in projects of all kinds, big and small, which are led and managed by hundreds of dedicated individuals in the community. We respond to the initiative of the projects and organisations that approach us – people taking up the challenge of their own development. We follow their lead, at a pace set by them, reflecting on their capacity, rather than imposing donor driven initiatives. With this as the basis for our engagement, we provide guidance and advice (and funding) based on our collective experience, and believe that together we ultimately derive a benefit for the communities far greater than the individual rands we invest.

In 2003 the Fund invested R23 million in around 400 projects. The Fund also formally adopted a strategy to align its giving very closely with the business imperatives of the company. In this way greater resources, both financial and

human, can be invested in a multi-sectoral approach to addressing community needs. In this vein 62% of the Fund's spend went to areas where De Beers employees live or return to, or on projects which impact on the life and times of the employees more broadly. This expenditure primarily falls into the Northern Cape, Limpopo and parts of Gauteng – very often remote and poorly resourced areas, where we believe the Fund can make a meaningful contribution and difference. What has significantly increased the impact of such investments, where possible and appropriate, is where an investment is undertaken in partnership with government, fitting in with their realities, policies and planning priorities, and with government bringing often significant additional funding to the projects.

Broadly speaking 38% of expenditure went into best practice projects wherever they occur, contributing to overall development, but also to the Fund's knowledge base of these successes, enabling us to apply lessons learnt elsewhere.

The Fund does not focus on grand development projects, but rather on development that brings real change – often immediately in the lives of the beneficiaries – that is sustainable within

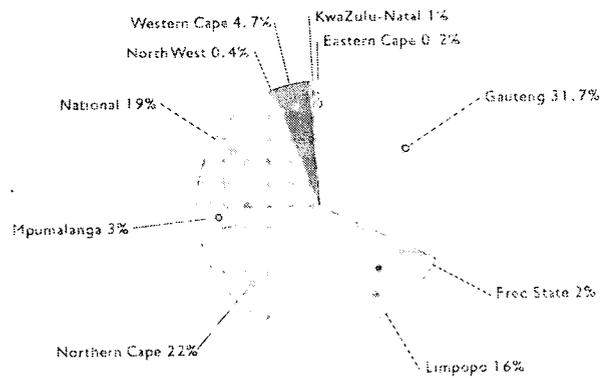
The Fund has invested R135 million in over 2 500 projects in South Africa over the past five years

the realities of communities, rewards initiative where it occurs, promotes effective delivery focused partnership and builds on the fabric of that community in lasting ways.

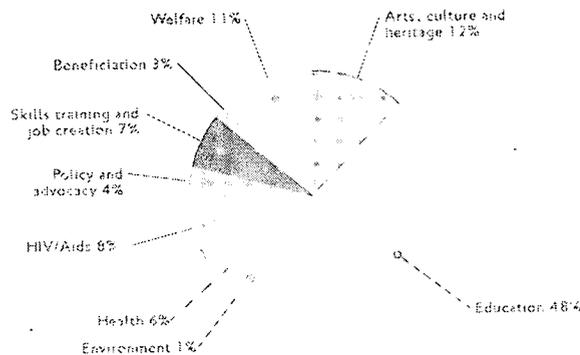
**De Beers Fund trustees**

- Jennifer Oppenheimer (Chairman)
- Barbara Masekela (Vice-chairman)
- Roger Ketley
- André Marais
- Margie Keeton

**2003 spending per province**



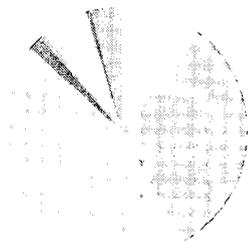
**2003 spending by sector**





## Company contributions

### Social investment spend per operation in US\$



Canada	890 000
Cullinan	2 576 944
De Beers Marine	31 485
DTC	2 878 000
Finsch	743 568
Kimberley	87 469
Kleinsee	29 794
Koffiefontein	2 402
Tanzania	447 538
The Oaks	1 570
Venetia	324 387

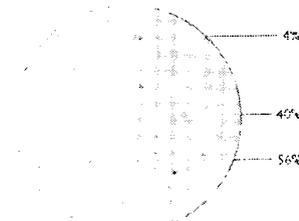
Although the De Beers Fund is the dedicated vehicle through which DBCM directs its social investment, our group operations support a wide range of projects in communities close to where we operate. The pie charts indicate areas of giving by each operation.

#### Canada



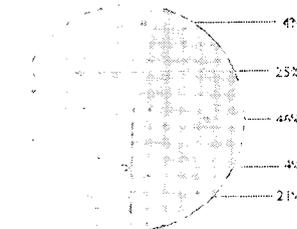
- Education and training
- Miscellaneous and donations

#### Cullinan



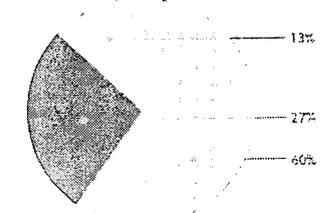
- Education and training
- Social welfare and health
- Miscellaneous and donations

#### De Beers Marine

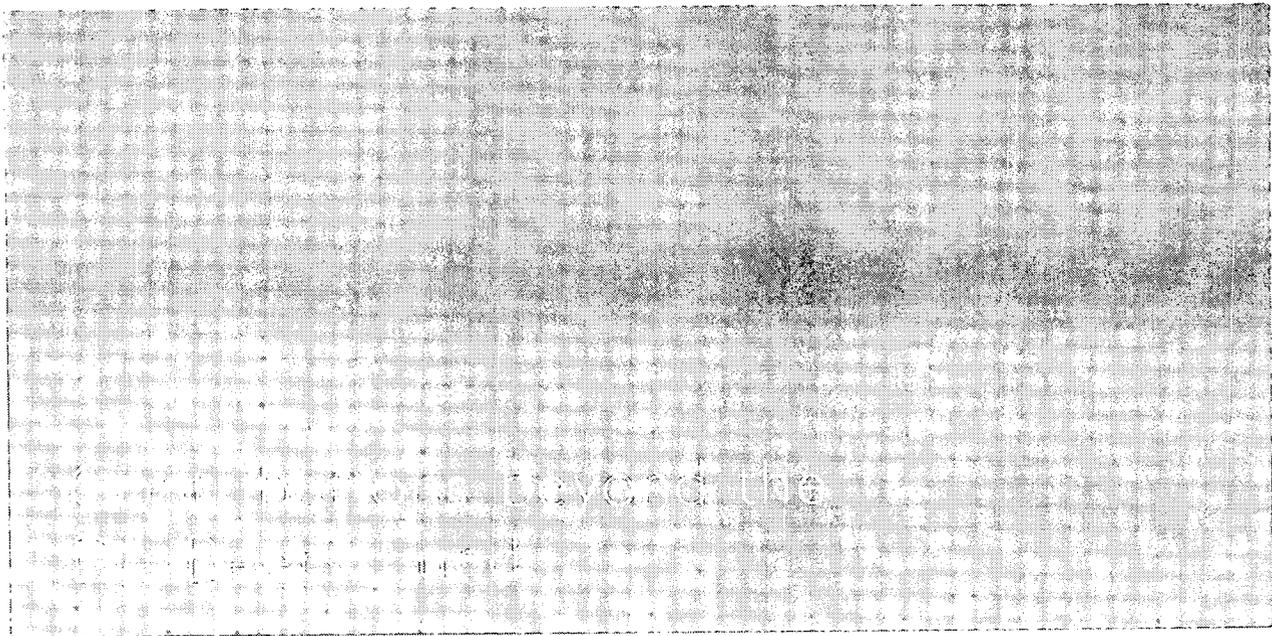


- Education and training
- Social welfare and health
- Arts and culture
- Sports and recreation
- Miscellaneous and donations

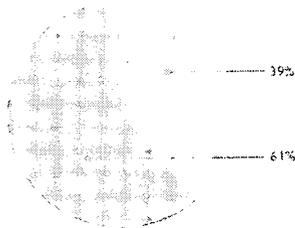
#### DTC



- Miscellaneous and donations
- Corporate sponsorship
- Corporate membership

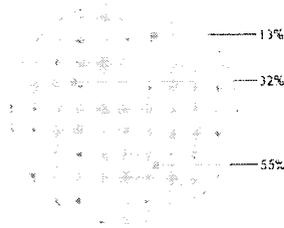


Finsch



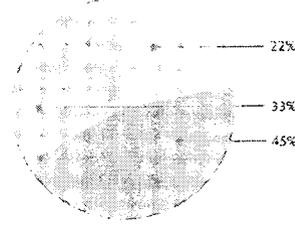
- Education and training
- Social welfare and health

Kimberley



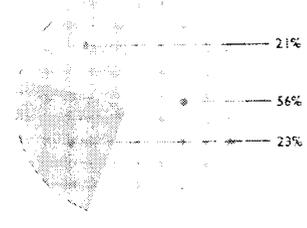
- Education and training
- Sports and recreation
- Miscellaneous and donations

Kleinzee



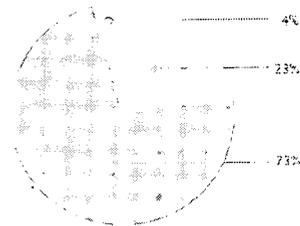
- Education and training
- Social welfare and health
- Miscellaneous and donations

Koffiefontein



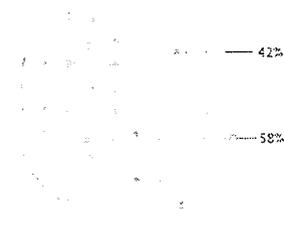
- Education and training
- Social welfare and health
- Miscellaneous and donations

Tanzania



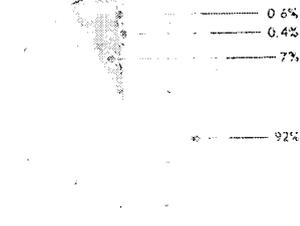
- Education and training
- Social welfare and health
- Miscellaneous and donations

The Oaks



- Education and training
- Miscellaneous and donations

Venetia



- Education and training
- Social welfare and health
- Arts and culture
- Sports and recreation

MD Gary Ralfe recently inaugurated a new school and hospital in Gujarat, India. De Beers gave US\$1 million to help build new facilities after a devastating earthquake hit the region in 2001. This young boy was pictured at the opening ceremony



## Environmental sustainability update

### Four mines scoop awards

Venetia, Cullinan, Koffiefontein and Kimberley mines won the Excellence in Mining Environmental Management (EMEM) awards for diamond mining in the Northern, Gauteng, Free State and Northern Cape regions respectively. The awards were made by the South African Department of Minerals and Energy.

### System certification proceeding apace

Most of our mines already carry international ISO14001 certification. Others are getting there. The Oaks in South Africa and Snap Lake in Canada received their ISO14001 certification during the year. All other ISO14001 certified operations retained their status. Jwaneng, Venetia and Namdeb

successfully underwent the triennial recertification. The sample treatment plant at De Beers India should be certified ISO14001 compliant in 2004. Environmental systems are being implemented at Williamson mine, the Corporate Headquarters campus, the DTC, Australia Exploration and one of our conservation areas, the Venetia Limpopo Nature Reserve.

### Extensive auditing

During the year, well over 100 environmental audits, both internal and external, took place across our operations. Audits were also carried out on service providers such as waste and recycling contractors.

NOSCAR's, NOSA's "Oscar" or top award given for excellent SHE

performance, were awarded to Namdeb and Venetia; five stars were given to Jwaneng. The Oaks, Finsch, Kimberley and Koffiefontein and four stars were awarded to Cullinan and Corporate Headquarters in Johannesburg. Williamson in Tanzania is implementing the integrated system.

### Our approach to environmental matters

Across the group, we have 57 full time and nine part time environmental staff who include highly trained and experienced specialists. Numerous additional staff run our conservation areas, waste and salvage operations and are involved in the actual rehabilitation of areas. External specialists are used as required.

### Current and proposed ISO14001 certification within the De Beers group

1998	1999	2000	2001	2002	2003	2004/5
De Beers Marine		Jwaneng	Finsch	Canada - Corporate	The Oaks	India - Exploration
		Namdeb - Mining Area <sup>1</sup>	Canada - Exploration	Canada - Mining	Canada Mining (Snap Lake)	Williamson
		Premier	Koffiefontein	Brazil - Exploration		Johannesburg campus
		Venetia	Namaquaiaand	De Beers Marine Namibia		Diamond Trading Company
			Namdeb - Orange River			Australia - Exploration (Compliance)
			Namdeb - Elizabeth Bay			Venetia Limpopo Nature Reserve (Compliance)
			Kimberley			
			South Africa - Exploration			
			Orapa/Letlhakane			

## Continued progress in ensuring that our mining operations cause minimal environmental disturbance

We run group environmental conferences, such as this year's successful one held in Orapa with the themes of water, waste and rehabilitation. External conferences are also targeted: for example, De Beers participated in the World Parks Congress in Durban, a gathering which attracted thousands of delegates from governments, UN agencies, conservation agencies, NGOs, and private sector institutions.

### Engaging stakeholders

We liaise with numerous stakeholders who play a critical role in influencing environmental management across the group. They include neighbouring landowners, government officials, unions, local schools, higher educational institutions, the media, local communities, aboriginal organisations, clients, wildlife and conservation agencies, NGOs, town councils, contractors and, importantly, our own employees.

### Numerous research studies done

We are investigating the rehabilitation of fine residue deposits at Jwaneng, Kimberley, Cullinan and Finsch. Baseline studies were conducted at Snap Lake in Canada, Tities Baai in Namaqualand, the deep sea marine area off the South African coast and Gobabis in Namibia. The discovery at Namdeb of *Juttadinteria*

*albata*, a critically endangered succulent plant, resulted in further surveys. A wide range of other research was conducted during the year including botanical and insect studies in Namaqualand, aquatic and wildlife studies in Canada, deep sea marine life of the Namibian coast and a particularly fascinating study on the African wild dog at our Venetia Limpopo Nature Reserve.

Some of the best preserved archaeological sites occur on the west coast. There are literally thousands of sites, mostly from the late Stone Age. Archaeological work continued there. At Koffiefontein, skeletal remains were removed from the Whitworth dump by an archaeologist from the national museum in Bloemfontein.

### Several environmental assessments done

We completed or started a wide variety of environmental impact assessments during the year across our operations. They covered everything from housing projects and fine residue deposits to mine extensions and pipeline upgrades.

### No major environmental incidents

This is the first year in which we report environmental incidents. There were no "major" incidents, 48 "moderate"

incidents, 743 "minor" incidents and 435 "near hit" incidents (which are those that could have led to an impact on the environment, e.g. a spill on an impermeable surface). Any incident that is reportable to legal authorities must fall into either the "moderate" or "major" category. Most of the "moderate" incidents were oil spills of over 200 litres, which may have limited environmental impact, but are nevertheless required to be reported to the authorities. De Beers received no environment related fines during the year.

A non-compliance to an Environment Management Programme (EMP) at Namaqualand, resulted in the suspension of the prospecting programme outside of the mining licence areas. Through open discussion with the Department of Minerals and Energy, a plan of action to update the EMP is underway to resolve this.

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*Wild dog at the Venetia Limpopo Nature Reserve*



## Environmental update continued

### Managing the disturbance to biodiversity

De Beers operates in mining licence areas totalling 0.9 million hectares of land. To date mining activity disturbance has occurred on 3% of that – 31 800 hectares. In the marine environment, mining licences total 17 000 km<sup>2</sup> – including a new marine licence in South African waters – and mining activities to date have directly disturbed 22 km<sup>2</sup> with an estimated further 37 km<sup>2</sup> disturbed by marine tailings discharged from the vessels – totalling 0.4% of licence areas. To assist with rehabilitation, programmes include profiling of areas, recovery of topsoil prior to mining for later use, re-vegetation and harvesting of indigenous seed for use in restoring native species. A number of the operations are involved in eradication of alien vegetation.

Our mining footprint is largely (67%) made up of overburden dumps and excavations. Most of these occur at the west coast operations (Namaqualand and Namdeb). These operations fall within the Succulent Karoo ecosystem which is one of the biodiversity hotspots in the world. In addition to addressing the impacts of land disturbance themselves, our operations are therefore also involved in SKEP (Succulent Karoo Ecosystem Planning), an international programme aimed at promoting conservation and

sustainable land use in this hotspot. De Beers also represents the marine and coastal diamond mining industry in the international Benguela Current Large Marine Ecosystem Programme, a regional initiative between Angola, Namibia and South Africa aimed at facilitating the sustainable development and utilisation of the region's natural resources associated with this ecosystem.

Particularly in light of the new South African Minerals and Petroleum Resources Development Act, a review of closure plans at the operations indicated that all of the existing plans need to be revised to a level of detail required for appropriate management through the life of the operations and at closure. We also undertook site visits and reviews of closure plans specifically for fine residue deposits – which form a significant portion of the mining footprint (14%).

### Energy

We have implemented various renewable energy and energy efficiency initiatives and the operations use indicators to track and manage energy efficiency. Over the past five years the focus has been on managing electrical power consumption across all our mines and is reflected in the consumption trends. Electricity usage in 2003 was 1 237 GWh with 98% being consumed at the mining operations.

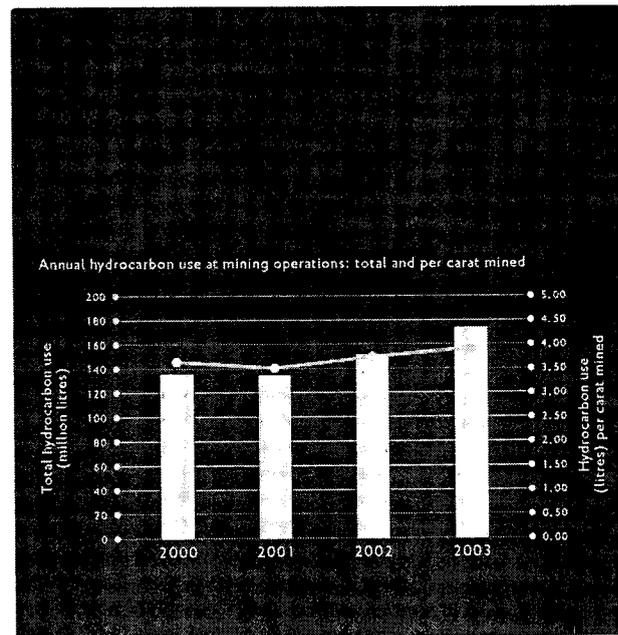
Almost all of this (99%) electricity was purchased with the remaining amount being generated at a limited number of sites. Power from natural gas constitutes about half of the power used at the DTC.

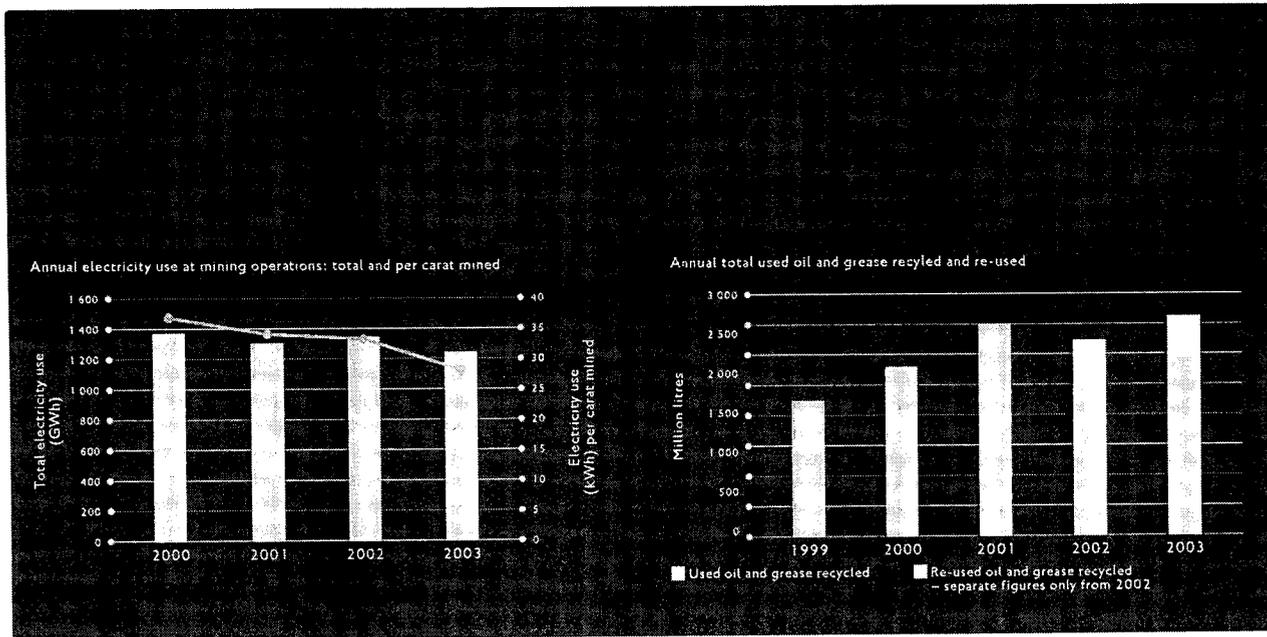
Diesel is the main form (93%) of hydrocarbons used – which include heavy fuel oil, petrol, oils and hydraulic fluids, aircraft fuel and catlight fuel. We used 175 million litres of hydrocarbons in 2003 of which 99% were used at the mining operations. The large open cast mines such as Orapa, Jwaneng and Venetia have increased fleet sizes and changed from electrically operated equipment to diesel driven machines, hence the increase in hydrocarbon consumption. Heavy fuel oil is used at Williamson to generate power, and at exploration sites for electricity generation and heating.

For each carat mined by the De Beers group, four litres of hydrocarbons and 27.6 kWh of electricity are used.

### Water

During the year, an assessment of water management practices at a number of mines highlighted areas for improvement. During the year, 61 million cubic metres of water (potable, non-potable and recycled water – excluding seawater) were used across the group. An additional equivalent amount of seawater was used





by the west coast mines and an unquantified amount on the prospecting and mining ships. For each carat mined by the De Beers group, 1.4 cubic metres of water (excluding seawater) were used.

Current treatment processes rely heavily on water, hence water recovery and re-use is paramount to minimising the impact on the environment. We have made considerable efforts over the past 15 years to develop technologies to enhance water recovery – principally through the adoption of new technologies such as Thickened Tailings Disposal. To make this technology accessible to all the De Beers operations, a *Paste and Thickened Tailings Disposal* handbook was published at the end of 2003. De Beers has successfully built and commissioned one of the largest paste installations in the world at the Kimberley combined treatment plant. Several exciting new technologies are also being investigated on water recovery.

## Material use

Stringent controls are in place for the handling of hazardous substances of which 1.7 million litres were used in 2003 and which include hydrofluoric acid, hydrochloric acid, nitric acid, sulphuric acid and trichloroethylene. The bulk of this volume (1.3 million litres) is hydrochloric acid which was used at

Venetia mine to neutralise the pH of discharges.

## Waste and recycling

Where feasible, waste is separated into categories at source so that recycling can take place. An important aspect is the reclamation of used oil/grease which totalled 2.7 million litres in 2003. Some of this is sent for recycling and some, at Namdeb, is re-used as fuel. The other recycling streams (and their totals for 2003, where comparable data is available) include: cardboard/paper (366 tons), scrap metal and cans (18 585 tons), conveyor belting (395 tons), drums (7 641), lead acid batteries (2 718), toner/ink cartridges (964), tyres of various types (3 771), and small quantities of plastic and glass. At various operations including at sea, some waste is incinerated in approved incinerator units and at others, land-fill sites are managed to cater for the waste generated in areas away from urban areas.

## Emissions

Work on independent evaluation of carbon emissions progressed but was not completed during 2003 as intended. An independent specialist conducted a site visit to Orapa mine, assessed the status and made recommendations for emissions improvements. We estimate carbon emissions for the group are 435 000

tons and 10 000 tons carbon dioxide from the direct consumption of diesel and petrol respectively. Indirect emissions from electricity purchased at South African and Botswana mining operations are estimated at 866 000 tons carbon dioxide. Other forms of emissions include dust, for which sampling and monitoring take place at some operations, and incinerator gases.

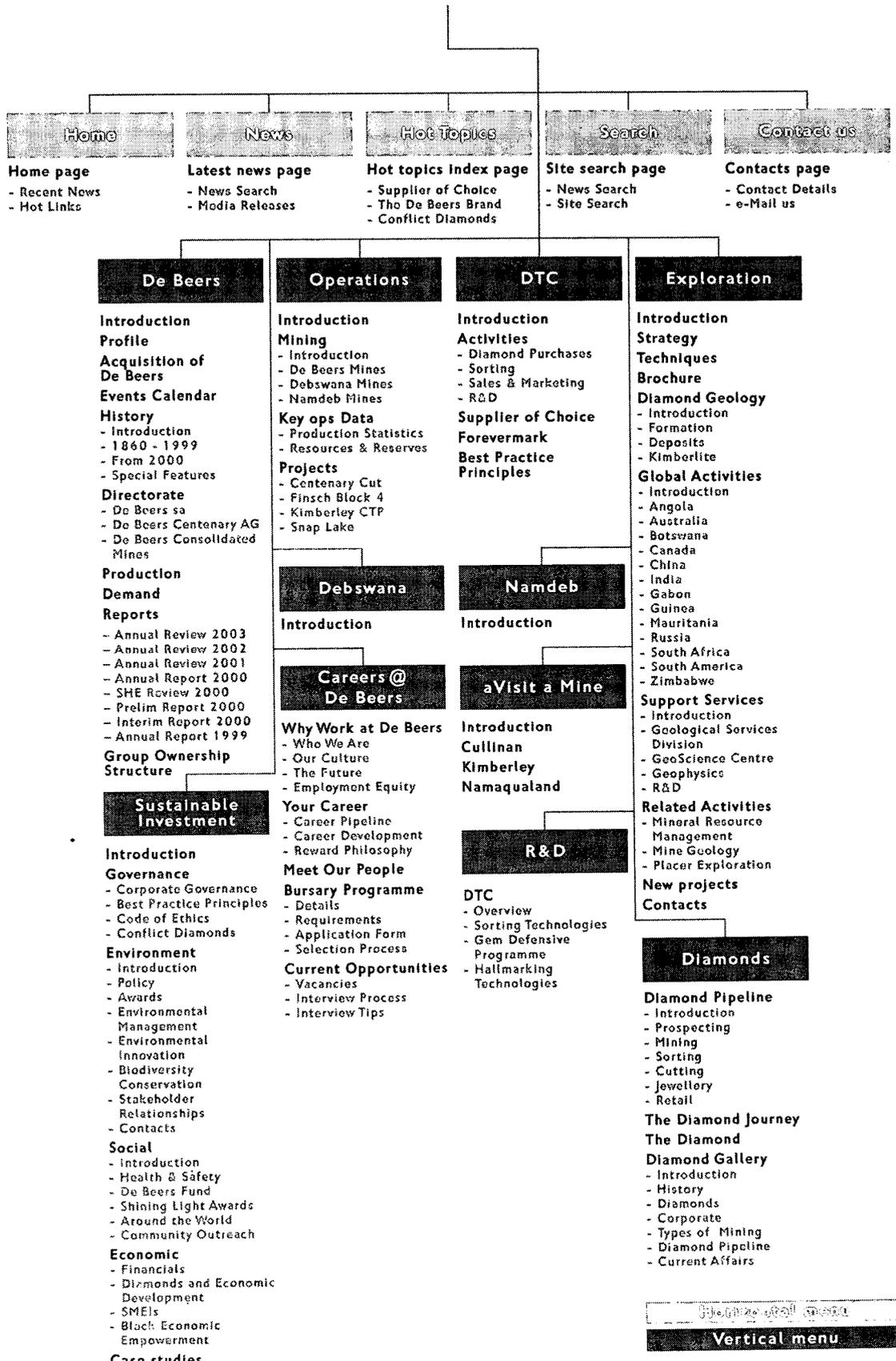
## Future challenges

Some of the challenges for 2004 and into the near future include enhancing engagement of stakeholders, ensuring closure plans are comprehensive, enhancing biodiversity management – including the restoration/rehabilitation programmes and improving water management practices.

**Note:** Environmental data for 2003 is extended from that presented in 2002 to include data from the mining operations and from the DTC and exploration activities.

*A fine residue deposit at Cullinan*

www.debeersgroup.com



## Contact addresses

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Australia	15 Hanwell Way, Bassendean, 6054	Luxembourg	9 rue Sainte Zithe, L-2763, Luxembourg
Belgium	Andimo Building, Schupstraat 21, B2018 Antwerp, Belgium	Namibia	10th Floor, Namdeb Centre, 10 Dr Frans Indongo Street, Windhoek, 9000
Botswana	6th Floor, Debswana House, The Mall, Gaborone	Russia	2nd Floor, 7 Ulitsa Chayanova Street, 125047, Russia
Canada	65 Overlea Boulevard, Suite 400, Toronto, Ontario M4H 1P1, Canada	South Africa	36 Stockdale Street, Kimberley, 8301 or Cnr Diamond Drive and Crownwood Road, Theta, Johannesburg, 2013
China	Room 9.04b, Citic Building, 19 Jianguomenwai Avenue, Beijing, 100004	Switzerland	Alpenstrasse 5, 6000, Luzern 6, Switzerland
Hong Kong	26th Floor, Kinwick Centre, 32 Hollywood Road, Central, Hong Kong	Tanzania	291a Mogore Street, Upanga, Dar-es-Salaam
India	Advanced Business Centre, 83 Maker Chambers VI, Nariman Point, Mumbai, 400 021, India	United Kingdom	17 Charterhouse Street, London, EC1N 6RA

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## Websites

De Beers Group  
[www.debeersgroup.com](http://www.debeersgroup.com)

Debswana Diamond Company  
[www.debswana.com](http://www.debswana.com)

Namdeb Diamond Corporation  
[www.namdeb.com](http://www.namdeb.com)

De Beers Canada  
[www.debeerscanada.com](http://www.debeerscanada.com)

The Diamond Trading Company's  
 Diamond Information Centre  
[www.forevermark.com](http://www.forevermark.com)

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DEBORA SPAR

## Forever: De Beers and U.S. Antitrust Law

*"As a worldwide dealer in enchanting illusions, Disney has nothing on De Beers."*  
- *The Economist*<sup>1</sup>

In 1999, a series of spectacular advertisements adorned the bus-sides and billboards of major American cities. Set against a lush black background, the ads displayed a perfect set of diamond earrings, or a single sparkling solitaire. The lettering, in white, was sparse and to the point: "What better time to celebrate the timelessness of love?" they asked. Or, "What are you waiting for, the year 3000?" Some were even more direct: "This wouldn't exactly be the year," they noted, "to give her a toaster oven."

Coyly, the ads captured a joint fascination with the new millennium and the enduring allure of diamonds. How better to capture time than with a diamond, they urged. How better to herald eternal love? Indeed. According to analysts, U.S. diamond sales (30% of which occurred during the Christmas season) were expected to surge by more than 10%, hitting a high of over \$20 billion for 1999.<sup>2</sup> A significant portion of this windfall would flow to De Beers, one of the world's most successful corporations and the controlling force of the international diamond market.

There were many ironies behind De Beers's millennial campaign, not least of which was that diamonds — those eternal gifts — had only been sold on the mass market for a hundred years. And that their allure was largely a creation of advertising. There also, though, were many stories buried behind the campaign — stories which ran to the core of the global diamond market and De Beers's position within it. The millennial campaign, for example, was part of the company's first attempt to brand gems, to sell a "De Beers diamond" rather than a regular diamond. This was revolutionary in a market where stones had always been centrally mixed and distributed, where De Beers's power, in fact, stemmed from its ability to collect the world's rough diamonds and send them out again, anonymously and bereft of origin. The millennial campaign also occurred at a time of rapid change at the closely-held corporation. While the ads purred of luxury and langour, De Beers was facing turmoil on all fronts: in western Africa, where illicit diamonds were flowing from the war-torn fields

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<sup>1</sup> "Glass With Attitude," *The Economist*, December 20, 1997, p. 113.

<sup>2</sup> SG Frankel Pollak Securities, Ltd., *De Beers: Interim Forecasts*, March 1999, p.1; HSBC Simpson McKie, *Morning Meeting Notes: De Beers*, August 10, 1999, pp. 3-4.

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Research Associate Jennifer L. Burns prepared this case under the supervision of Professor Debora Spar. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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of Sierra Leone and Angola; in Russia, where post-Soviet strongmen were carving out their own diamond fiefdoms; and in their home state of South Africa, roiling with the impact of apartheid's end.

De Beers was accustomed to chaos. The company thrived on it, and had long ago learned to master it. But the millennium posed new challenges — serious challenges with the potential to undermine De Beers's legendary power and compel a rethinking of its strategy. The millennial campaign was the beginning of this change, an elegant tiptoe into a new kind of diamond market. It was also, though, an innovative legal and political move. For the millennial campaign was centered in the United States, a market that absorbed nearly half the world's diamond jewelry but also forbade the kind of selling practices upon which De Beers relied. Legally, the entire De Beers group — its officers, its operations, its marketing structure — was in violation of U.S. antitrust law. Legally, then, De Beers was prohibited from directly selling any diamonds at all in the U.S. market. De Beers executives, of course, were aware of this contradiction and had managed adroitly around it for decades. But now, for a host of intricate reasons, it appeared that all their maneuverings might not be sufficient. Either the law or De Beers would have to change.

### History: De Beers and the Diamond Cartel<sup>3</sup>

For centuries, diamonds have been regarded as one of the most valuable commodities in the world. They have been the stuff of legend and the privilege of royalty, the symbol of romance and of greed. They have been treasured for their beauty, their hardness, and their unique ability to capture and transform light. Most of all, however, diamonds have been treasured because they are rare. In ancient times, this scarcity was real. Known to exist only in the riverbeds of India and jungles of Brazil, diamonds were the most exclusive of stones and only a tiny portion of the world's people had ever seen one, much less worn one. By the end of the nineteenth century, however, the discovery of the South African diamond mines had brought an avalanche of stones into the market. Suddenly diamonds were transformed from a privilege reserved for the elite into a commodity for the mass market. Surprisingly, though, after an initial period of adjustment, the vast change in the supply of diamonds had little effect on their price, or the way in which the public perceived them. The allure that had surrounded diamonds for centuries had not been tarnished at all.

Part of this allure was due, no doubt, to a deeply ingrained perception of scarcity that lingered even as diamonds were cascading into the markets of Europe. Most of it, though, was the result of a conscious effort by the new diamond producers to regulate the production of the stones and keep prices as high as possible. Realizing that South Africa's diamonds would be virtually worthless once they appeared commonplace, a young Englishman named Cecil Rhodes worked to consolidate the entire industry and keep the supply of gemstones sharply limited. Under his guidance, the international diamond cartel was born. Following his philosophy it became one of the world's most tenacious business operations and one of the most successful cartels of all time.

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<sup>3</sup> The word "cartel" carries many complicated political, legal, and economic connotations. Economically speaking, a cartel cannot exist without the collaboration of three or more firms. Internally, members of the diamond trade do not consider themselves part of a cartel, but instead refer to the practice of maintaining "orderly marketing arrangements." While recognizing the complexity of the term, the authors of this Case have nonetheless chosen to rely upon the word "cartel" as a term of subjective description.

This section is a modified excerpt from Debora L. Spar, *The Cooperative Edge: The Internal Politics of International Cartels* (Ithaca: Cornell University Press, 1993), pp. 39-87.

Since then, the international diamond cartel has regulated the market for diamond gemstones and maintained the fragile illusion of their scarcity. The cartel's reach is legendary. It controls a significant number of the world's diamond mines; it sorts and classifies a large percentage of the world's rough stones; and through its Central Selling Organization (CSO) in London, it determines who can buy which stones and how much each buyer must pay. Its tactics are varied and complex. Its strategy, though, is as simple now as it was in Rhodes's time: to balance the number of diamonds released into the market in any given year and thus to perpetuate the illusion of diamonds as a scarce and valuable commodity.

### *Cecil Rhodes and the Discovery of Diamonds in South Africa*

In 1866 the accidental discovery of diamonds in South Africa changed the diamond industry forever. The first stone, picked up on the banks of the Gariiep River<sup>4</sup> by a thirteen-year-old boy, was generally dismissed as a geological fluke; the second find, though, a stone of 83½ carats, was too tempting to ignore. By 1869, diamond fever had hit South Africa and some ten thousand diggers from around the world had rushed to the arid plains of the Cape Province to stake their claims and make their fortune.

By the end of 1872, five separate mines had been established in the Cape Province, producing an avalanche of gem-quality stones. Initially, the mines were rough-hewn affairs, agglomerations of individual prospectors, each scratching away at the yellow ground that lays atop most primary diamond deposits. As the diggers delved deeper and deeper into the kimberlite (diamond producing) ore they began to trip over each other's claims and tumble, quite literally, into the expanding chaos of the mines. At a certain level, the miners also tapped into underground water tables, flooding the claims and rendering them virtually unworkable. Fruitlessly, the diggers fought back the seepage with hand-held pumps. In 1874 a more effective steam-powered pump arrived at the Kimberley mine, hauled in and rented out by a sickly English youth named Cecil Rhodes. Within a year Rhodes was servicing all of the mines in the area. With this new-found wealth, he then started to buy small claims in the newly formed De Beers Mine and other holdings. In 1880, Rhodes formed the De Beers Mining Company to control his growing stake in the mine; by 1887 he had bought out all the other claim holders.

From the start, Rhodes realized that success in the diamond trade was contingent on the resolution of two serious problems. First, the very productivity of the South African diamond fields posed a threat to the long-term profitability of the diamond industry. If all the new South African gems were suddenly to sweep into Europe, the market would be flooded and prices would plummet. Secondly, there was an inherent conflict between buyers and sellers. The sellers (in this case, the diggers) have little control over the types and qualities of stones they produce; thus, they need to secure an indiscriminate buyer, one willing to purchase the smaller and less attractive stones as well as the large and flawless ones. The buyers, meanwhile, know that profitability rests with the ability to obtain a constant stream of stones and sell them at consistently high prices. The only relationship that serves both sides' interests is an ongoing arrangement between a single producer and a single distributor in which both benefit by keeping supplies low and prices high.

The solution Rhodes devised was ingenious. After having achieved full control over production at the De Beers Mine, he formed a coalition of merchants in Kimberley to whom he sold the full output of the mine. In 1890 this merchants' association was formalized as the "Diamond Syndicate," with all its members pledged to buy diamonds from Rhodes's mines and sell them in specific

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<sup>4</sup> Formerly named the Vaal River.

quantities and at set prices. By the end of the decade, Rhodes had completed his consolidation of the diamond industry by purchasing all the major South African mines. And just as he had predicted, diamond prices rose from eighteen shillings in 1889 to thirty-two shillings in 1890. The diamond cartel was in place.

### *Evolution of the Cartel*

After Rhodes's death in 1902, his vision of a diamond empire was taken up by Ernest Oppenheimer, a German who had come to South Africa to work as a diamond buyer and quickly maneuvered himself into a position of power within the industry. Even more than his predecessor, Oppenheimer realized that control of the diamond trade entailed a monopoly of distribution as well as of supply. Unlike many commodities, diamonds vary tremendously in quality. Yet the diamond industry cannot survive on the top end of its market; it needs to sell the full range of stones, especially the lower-end goods that constitute the vast bulk of its production. Thus it needs to ensure that the diamond merchants will take the mediocre along with the spectacular and that all the links in the network commit themselves to selling the stones that together provide the mainstay of the industry. Similarly, because diamond prices bear no relation to the cost of production, Oppenheimer understood the necessity of ensuring uniform prices across the industry and straight down to the retail level. In an industry where mass perceptions of value and scarcity are critical, any undercutting would be disastrous.

With these concerns in mind, Oppenheimer worried that the Diamond Syndicate formed by Rhodes was too independent and that it might eventually be tempted to break away from the producers. Thus he resolved to create a "new syndicate," intimately linked to his own diamond interests and designed to exert unbearable pressure on the existing group of distributors. His scheme worked, and in 1925, Oppenheimer bought out the old syndicate and replaced it with a new one joined by corporate links to his own company, Anglo-American, and pledged to comply with the distribution levels desired by the diamond producers. At this point, the links between De Beers and the Diamond Corporation, between producers and distributors, had been permanently forged. By 1929, Oppenheimer was presiding as chairman of both organizations, positions he held until his death in 1957.

### *The Cartel in Action*

In Rhodes's day, of course, the company could contain the supply of diamonds merely by regulating its own production; with the exception of several small outposts in Brazil, South Africa was the only source of diamonds in the world, and De Beers controlled all the diamonds in South Africa. In the mid-1950s, though, the yield from the once miraculous pipes at Kimberley, Dutoitspan, and Bultfontein began to decline, while discoveries in Siberia and different parts of Africa opened up rich new fields for exploration. De Beers was no longer alone in the market. By 1960, South African diamonds accounted for only 19 percent of the total world gemstone production and by 1999, 11 percent.<sup>5</sup>

To maintain its grip on the market, therefore, De Beers was obliged to reach out to the other major producers of rough diamonds, urging them to sell their production to De Beers. Generally, its entreaties were well received: realizing the benefits of cooperation and the dangers of oversupply, most diamond-producing states signed contracts with De Beers, agreeing to sell their rough

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<sup>5</sup> De Beers also handles the production from Debswana, a De Beers company in which the Botswana government has a 50% interest. The Debswana mines include three large kimberlite pipes that together produce 30% of the world's gem diamonds.

diamonds solely to De Beers and its agents. While the precise terms of these contracts were highly secretive, most countries apparently agreed to a common set of arrangements. The country would promise to sell its rough diamonds only to De Beers, at a price that De Beers set. Although there were exceptions to this rule, countries generally also agreed to accept lower sales during times of slack demand and to refrain from polishing any of their own stones. In exchange for complying with these rather rigid restrictions, the other producers would reap the traditional returns of a cartel: stable prices, guaranteed purchases, and a buffer against the cold winds of competition.

The power of the cartel, however, did not rest simply with its control of diamond supplies; rather, it extended throughout the length of the "diamond pipeline" and into the distribution and marketing of rough diamonds. After De Beers obtained its diamonds — either from its own mines or purchased from outside sources — it sent them to the London office of the Central Selling Organization, known in the trade as the Syndicate. Located in a nondescript London office building, the CSO acted as the central distribution point for the world diamond trade.

Ten times a year, the CSO held diamond sales (known as "sights") to which only an elite group of diamond merchants (the "sightholders") were invited. About five weeks before each sight the sightholders would inform the CSO of their preferences — how many stones they wanted, what quality, what colors, and so forth. The CSO then tried to match these preferences with its own needs and supplies, determining what stones would be offered to which sightholder and how much the entire package would cost. After this analysis, it would divide the gem stones into individual parcels, place them in plain brown shoeboxes, and offer them to the predetermined distributors. No cherry picking was permitted: either the buyers took the entire contents of their allotted parcel or they turned the stones back. Generally they took the parcel. The effect of these policies was obvious: they enabled De Beers to regulate, down to the carat, exactly what stones entered the diamond market and at what price. It was a legendary level of market control, one that repeatedly astonished outsiders and confounded those who tried to fight against it.

### *Stockpiling*

Not all of the cartel's benefits, however, redounded to De Beers. On the contrary, one of the cartel's strongest attributes was De Beers's ability to act as the buyer of last resort, using its own financial resources to stockpile excess diamonds during economic downturns. Thus whenever the market for luxury goods threatened suddenly to weaken, De Beers and the CSO would buy up the "excess" stones and add them to their stockpiles; whenever "outside" diamonds found their way to market, De Beers would buy again, always ensuring that the basic balance between supply and demand was not permitted to falter. Stockpiling was thus the final tool in De Beers's box, a last-ditch way to keep diamond prices high and convince the public that diamonds were indeed special and precious and scarce. But it could also be extremely costly. In 1981, for instance, the CSO responded to rising interest rates and slumping commodity prices with its normal strategy of withholding stones from the market. By the end of the year, the CSO's sales had slipped to 46% below their 1980 level, leaving De Beers with a stockpile estimated to equal a normal year's worth of sales. In the process, the company spent between \$700 million and \$1 billion of its own cash reserves to support diamond prices.

For most companies, that kind of financial blow would be devastating. Yet De Beers, clearly, wasn't like most companies. It had an exceedingly long-term view and a deep-seated commitment to market stability. It was also very much a family company, run by the Oppenheims, their relatives and long-time associates. Even the shareholders were tightly interlocked, linked by a complex web to a series of firms that together composed the "Oppenheimer empire." De Beers was, to be sure, a publicly-owned corporation, but about half of its shares had historically been held by

Anglo American, E. Oppenheimer and Son, and other friendly members of South Africa's commercial elite. They were an eminently patient lot, content to let De Beers sacrifice short-term financial gain in exchange for the long-term stability and prosperity of the international diamond trade.

For over a century, then, De Beers had presided over one of the world's most amazing commercial structures. In over a hundred years of operations, the corporation had only suffered two minor financial losses, in 1915 and 1932. It enjoyed absolute dominance in its market and an unparalleled reputation for quality and reliability. There was only one small downside: it was illegal in its largest market. Almost every single aspect of De Beers violated U.S. anti-trust laws, from its lion-sized market share to its unabashed price fixing scheme. In the United States, the company had been unsuccessfully prosecuted in 1945, 1974, and 1994, and was still under standing criminal indictment. Indeed, within the U.S. Justice Department, dislike of De Beers approached a religion: De Beers, government lawyers insisted, was in clear violation of U.S. law. It was a monopolist, a restraint on trade, a criminal entity. And it had gotten away with it.

## U.S. Antitrust Law

### *History and Motivation*

The U.S. antitrust laws that De Beers violated were not simple laws regulating commerce, but rather the fundamental underpinnings of capitalism as practiced in the United States. In a 1972 decision, the Supreme Court stated that, "The Antitrust laws... are the Magna Carta of free enterprise. They are as important to the preservation of economic freedom and our free enterprise system as the Bill of Rights is to the protection of our fundamental freedoms."<sup>6</sup>

The original legislation regulating the establishment of commercial monopolies was passed at the end of the nineteenth century, when the power of big businesses seemed to threaten American ideals of free enterprise and the small stakeholder. In 1890 the Sherman Act laid out the fundamental principles that would underpin antitrust law through the next century: it made illegal "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce."<sup>7</sup> Later, the 1914 Clayton Act strengthened antitrust laws even further, broadening the definition of unacceptable behavior and prohibiting any illegal behavior that might "[substantially lessen] competition or tend to create a monopoly in any line of commerce."<sup>8</sup> Thus even the apparent attempt to create a monopoly was deemed illegal.

Over the years, a series of decisions and interpretations developed a dual, and sometimes conflicting, focus to the antitrust legislation. The original Sherman Act contains language that seems to stress the well-being of the consumer as an important goal of anti-trust law, and subsequent court decisions have emphasized the loss in consumer welfare caused when monopolies or cartels eliminate competition. Some recent scholars have even argued that the sole purpose of antitrust law is to promote consumer well being. However, other interpretations of the same laws have given equal or greater weight to the social and political goods that result when monopolies are constrained. In this view, even if a monopoly is the most efficient means of production or distribution it still

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<sup>6</sup> As cited in John H. Shenefield and Irwin M. Stelzer, *The Antitrust Laws: A Primer* (Washington, D.C.; American Enterprise Institute Press, 1993), p. 1.

<sup>7</sup> *United States Code 1994 Edition, Vol. 6 Title 15*, (Washington: United States Government Printing Office, 1995), p. 114.

<sup>8</sup> *Ibid.*, p. 119.

imposes unfair burdens on society. By preventing competition, for example, a monopoly may constrain technological innovation in an industry. It might also result in a dangerous concentration of power and wealth in the hands of a few, preventing opportunities for individual enterprise.

Depending on the national situation and the interests of those in political power, the Justice Department's enforcement efforts have ranged from fervent prosecution of monopolies and cartels to half-hearted exploration of anti-competitive behavior. During the Depression, principles fell by the wayside as the U.S. government allowed firms in the coal industry to collude in support of the faltering economy.<sup>9</sup> But only two decades earlier, the enforcement of antitrust laws had been a powerful campaign issue, giving birth to the iconography of Teddy Roosevelt and his trust-busters. Despite the controversy that surrounds antitrust laws and the occasional periods when the laws are laxly enforced, they remain philosophically vital to the American tradition. As legal analysts John Shenefield and Irwin Stelzer point out, even with all the various interpretations over the years, no one has ever doubted their importance: "Almost all agree that the antitrust laws are of central significance to our economy. They do no less than establish the economic framework within which most Americans and their businesses operate."<sup>10</sup>

### *Extraterritoriality*

Despite the fact that De Beers retained no U.S. presence and was completely run by South African nationals, it was still subject to the reach of U.S. law. This is a tricky element of U.S. law and an infuriating one to many foreign nationals. It comes from the original wording of the Sherman and Clayton Acts, which make no reference to nationality and thus allows U.S. courts to extend their jurisdiction beyond U.S. companies and citizens. In a 1995 document, the Justice Department made its interpretation clear: "The reach of the U.S. antitrust laws is not limited, however, to conduct and transactions that occur within the boundaries of the United States. Anti-competitive conduct that affects U.S. domestic or foreign commerce may violate the U.S. antitrust laws regardless of where such conduct occurs or the nationality of the parties involved."<sup>11</sup> Recent court decisions have supported this approach. In a 1993 case, for example, the Supreme Court ruled that, "The Sherman Act applies to foreign conduct that was meant to produce and did in fact produce some substantial effect in the United States."<sup>12</sup>

Armed with this rather broad legal infrastructure, the Justice Department had tried on several occasions to prosecute De Beers for violating U.S. antitrust law. In 1945, after a dispute over the wartime usage of De Beers's diamond stockpile, President Roosevelt's administration requested that the Justice Department investigate De Beers.<sup>13</sup> The suit failed when the court found that De Beers's existing contacts with the United States, such as hiring an advertising agency, visits, making occasional sales, and maintaining a U.S. bank account did not constitute sufficient "doing of business" to warrant jurisdiction.<sup>14</sup>

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<sup>9</sup> Shenefield and Stelzer, p. 12.

<sup>10</sup> Shenefield and Stelzer, p. 10.

<sup>11</sup> U.S. Department of Justice and the Federal Trade Commission, "Antitrust Enforcement Guidelines for International Operations," April 1995, <http://www.udoj.gov/atr/public/guideline/internat.txt> [accessed 10/21/99], p. 10.

<sup>12</sup> *Ibid.*, p. 10.

<sup>13</sup> Stefan Kanfer, *The Last Empire*, (New York: Farrer Straus Giroux, 1993), pp. 227 - 230.

<sup>14</sup> James R. Atwood and Kingman Brewster, *Antitrust and American Business Abroad*, 2nd Edition, Volume 1 (Colorado Springs: Shepard's-McGraw Hill, 1981), p. 120.

Another attempt came in 1976, when the Department of Justice filed a civil and criminal suit against De Beers, ANCO Diamond Abrasives Corporation, and Diamond Abrasives Corporation for engaging in price fixing and customer and territorial allocation in the market for diamond "grit." ("Grit" is used primarily as an industrial abrasive.) Pleading no contest, De Beers Ireland (representing De Beers South Africa) and its co-defendants each paid a small fine and signed a consent decree agreeing to forego monopolistic practices. This settlement was the slim remains of an earlier and farther reaching action against the company. In 1973, acting off an anonymous tip, the Justice Department had discovered that De Beers held 50% of Christensen Diamond Products, an American company that made diamond drill bits for oil rigs and consistently received shipments of De Beers's best industrial diamonds. Before the Justice Department could act on this discovery, though, De Beers swiftly divested itself of all holdings in Christensen.<sup>15</sup>

In 1994 the Justice Department tried again, filing a suit against De Beers and General Electric for price fixing in the industrial diamonds market. The lawsuit against GE went to trial and was dismissed in a scant *six weeks*, when the court ruled it was impossible to determine whether Phillippe Loitier, one of the individuals charged, had in fact acted in De Beers's interests. Loitier was the managing director of the Belgian company Diamant Boart, a customer of both GE and De Beers. Through other business dealings, he had allegedly been in repeated contact with De Beers board members. In the spring of 1992, both GE and De Beers raised their prices on industrial diamonds, the first increase in five years. Prior to that, Loitier had reportedly informed GE of De Beers's intended price increase, and GE had responded with information about its price increase. The government argued that this exchange was part of a conspiracy to fix prices, and that because Loitier's actions benefited De Beers, he had thus acted on behalf of the company. Disagreeing, the court ruled that this contact alone was not evidence of collusion, and what was alleged to be price fixing could merely have been legitimate information sharing between a firm and its customers. GE was acquitted. However, because De Beers had never appeared in court to defend itself, its criminal indictment remained outstanding.

These repeated failures did not dampen Justice's enthusiasm for prosecuting De Beers. In fact, they only reinforced the intolerable idea that the company was getting away with something, and had to be brought to heel. According to a government official close to the Justice Department, there was little the company could do, short of reinventing itself that would make it legal in the United States. "Clearly, De Beers is a classic monopolist," said the official. "As long as De Beers continues to set the prices for both mined and rough stones, diamonds cannot be considered a legal, competitive market."

But if De Beers galled Justice with each day it continued to prosper, Justice was largely ignored at De Beers. Indeed, over the years, De Beers had simply come up with a series of ingenious strategies for remaining beyond the Department's grasp. It had no legal presence in the U.S. market, no U.S. directors, and — remarkably — no sales on U.S. soil. Instead, it sold all of its diamonds in London and then let its sightholders export them, perfectly legally, to the United States. By the time De Beers's diamonds reached the U.S. market they were no longer De Beers's diamonds — just an anonymous bundle of stones, mined and cut at some unknown location. With no direct U.S. presence, then, and no identifiable sales, De Beers remained at arms' length from the actual process of selling diamonds, dancing infuriatingly just beyond the grasp of U.S. law.

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<sup>15</sup> Kanfer, pp. 317 – 318.

## Challenges

Despite the diamond cartel's success, reports of its decline have endured nearly as long as the cartel itself. Indeed, throughout most of this century, reports have surfaced every few years that chart the assaults on the cartel's power and predict an immediate shake-out. In 1977 trouble came from the Israeli dealers, stunned by Israel's soaring inflation, who hoarded their diamonds and drove prices up. The company popped this speculative bubble through a combination of strong-arm tactics, including what may be described as a "purge" of over 100 Israeli sightholders who were stripped of their sights.<sup>16</sup> In 1981 it was Zaire that threatened to destabilize the industry, when the cash-starved Zairian government struck a deal with three independent Belgian diamantaires for its small, industrial grade stones. De Beers retaliated by letting loose a storm of its own small, industrial grade stones, driving prices down and crippling Zaire's diamond industry. Next, it was the Soviets and then the Russians who threatened periodically to withdraw from the De Beers structure and establish one of their own. This was a bigger threat to De Beers (and remains so),<sup>17</sup> but De Beers nevertheless managed to pay the Russians enough to sate their appetite for defection. In 1990, just as the Soviet Union was breaking apart, De Beers struck a particularly sensational deal, loaning the tottering Gorbachev government \$1 billion in hard currency and taking in exchange a significant chunk of the Russians' vast stockpile of diamonds. The sight of this transplanted stash was enough, reportedly, to squash the independent hopes of several other producers.<sup>18</sup>

In the late 1990s, however, De Beers found itself facing a new rash of problems. None of the problems was particularly dramatic; none suggested a direct threat to De Beers's power or an attack on its embedded business model. But together they began to hint at a very different structure for the world's diamond market and maybe even for De Beers. In retrospect, the problems really began in 1992, when De Beers suffered the double blow of Russian and Angolan defections. Caught in political turmoil, both countries began to leak diamonds on to the world market, Russia from its stockpile, Angola from its war-torn Cuango Valley. These flows came, moreover, right on the heels of a newly independent diamond development in Australia, which had already forced De Beers to load diamonds into its stockpile. When the Russian and Angolan floods hit, De Beers loaded even more. The stockpile continued to grow.

Then, in 1997 the Asian crisis swept through the Far East, leading to a massive decline in consumer confidence and luxury purchases. Diamonds were among the hardest hit; between 1997 and 1998 De Beers watched diamond sales in Japan fall from 33% to 18% of the total world market. The impact of this fall was three-fold. First, it greatly enhanced the relative importance of the U.S. market, which grew from its customary level of 30%, to account, in 1998, for a full 46% of retail diamond sales.<sup>19</sup> Second, it depressed De Beers's sales and thus its share price. By the start of 1998, De Beers was selling at 98 Rand, down 45% from a high of 178 Rand achieved just six months earlier.<sup>20</sup> And third, it brought a new wave of value investors from the United States, who saw in De Beers's depressed share price a glimmering opportunity for financial gain.

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<sup>16</sup> According to De Beers, with the end of the speculative bubble, many of its sightholders went bankrupt and thus lost their sights.

<sup>17</sup> For more on the Russian threat, see Spar, pp. 64 - 73, 78 - 87.

<sup>18</sup> Spar, pp. 58-63, 83-85.

<sup>19</sup> Casewriter interview with Tim Capon, London, November 29, 1999.

<sup>20</sup> Andrew McNulty, "Investment," *Financial Mail Corporate Report: De Beers*, April 24, 1998.

By 1999, American investors held nearly 21% of De Beers's stock. This was a fundamental change for the closely held De Beers, and would never have been possible during the long years of apartheid, when U.S. investors shied away from South African companies. But it was possible in 1999, and suddenly the company was faced with demanding shareholders, people who had little concern for the long-term stability of the diamond market or personal relations within the diamond trade. Suddenly accountants were prying into De Beers's financial management and scrutinizing the ever-growing weight of its stockpiles. For De Beers, of course, the stockpiles were a strategic asset, the final means by which supply and demand could be held in a perpetual delicate balance. For this new breed of investors, though, the stockpiles were a dead weight loss, a non-income producing asset that was actually destroying economic value.

Within De Beers, meanwhile, a new team of management was also pondering the company's strategic and financial position. In March 1998 De Beers and Anglo-American had ended their decades-long attachment, separating into two distinct firms. While the two companies would remain closely associated through cross holdings (Anglo-American and De Beers each owned 33-35% of the other, and the Oppenheimer family owned 8% of Anglo, and 3% of De Beers), this restructuring was described by company insiders as a significant step. Previously the bulk of De Beers management had been paid by Anglo-American, and a typical De Beers career path started at Anglo-American. Yet according to Investor Relations Manager Mark Irvine, shareholders in both companies had grown dissatisfied with this arrangement during the late 1990s, worrying that the arrangement obscured accountability in both companies, and that De Beers's legal situation might impede Anglo-American's strategic objectives.<sup>21</sup> The changes, too, were an attempt to make both De Beers and Anglo-American into more transparent, modern companies. After the isolation of apartheid, De Beers was anxious to shed its image as a secret, sinister organization and instead move into the world as a cosmopolitan, world-class firm. Simultaneously, there was a turnover in De Beers's top management. Nicky Oppenheimer (Ernest's grandson) assumed the helm as chairman and Gary Ralfe became the firm's first managing director.

### *The Strategic Review*

This changing of the guard brought significant changes to De Beers. In a move that seemed to signal an end to the company's secretive insiders-only style, Oppenheimer and Ralfe hired management consultants Bain and Company to conduct a wide-ranging strategic review. According to Financial Director Paddy Kell, "only a few years ago the use of external consultants would have been heresy."<sup>22</sup> But now, he recounted, there was a clear sense at De Beers that the company needed to refocus and decide why it was in business — for itself, or for the diamond industry as a whole? Oppenheimer himself seemed quite philosophical about the changes occurring in his family's business. "For any company that is long lived, there comes a time where you have to change, and cast your skin off," he said. "It seemed very natural to do this now, with all these personnel shifts. They were all new beginnings."<sup>23</sup>

The strategic review also highlighted concerns expressed by De Beers's new and aggressive American shareholders. Unaccustomed to dealing with either diamonds or South African firms, the new breed of investors lambasted De Beers with a litany of criticisms: its accounting methods could not be understood; it was "all cash and no dash," a stodgy company that refused to make bold

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<sup>21</sup> Casewriter interview with Mark Irvine, Johannesburg, November 30, 1999.

<sup>22</sup> Casewriter interview with Paddy Kell, Johannesburg, December 2, 1999.

<sup>23</sup> Casewriter interview with Nicky Oppenheimer, Johannesburg, December 1, 1999.

acquisitions; it was far too heavily invested in Anglo-American; and it had significant legal issues in the United States. While such an outside perspective was new to De Beers, few company insiders could question the fact that the diamond market was changing rapidly. Although De Beers no longer controlled 80% of the world's rough production — generous estimates put the figure somewhere over 60% — the company continued to follow its traditional business model. As CSO Executive Director Tim Capon joked, "None of us have had to think for 100 years. It's been: 'what do we do? We control the diamond industry. How do we control it? We do what we've always done.' But clearly, the old model was creaking."<sup>24</sup>

Creaking loudest, of course, was the stockpile. Over ten years, the cost of these excess diamonds — with a book value of \$4.8 billion at the end of 1998 — had eaten away at De Beers's profits. According to Bain, the company had consistently destroyed shareholder value throughout the 1990s, with returns on capital employed consistently below its weighted average cost of capital. Since so much of its profit was shared by other industry players, the company was only capturing a fraction of the very large diamond profit pool it had created. As a result, Bain argued, the company's stock price was undervalued.

However, Bain's analysis also revealed several nascent strengths within the company. Research revealed that De Beers was a tremendous brand name — one of the world's best recognized. It also had a phenomenally strong slogan ("a diamond is forever") and a brilliant history of marketing.<sup>25</sup> Moreover, De Beers had achieved this prominence while spending only a fraction of the advertising money other luxury brands did. Bain's analysis stressed the fact that while other luxury goods makers, such as high-end whiskey manufacturers, spent 10% of consumer sales revenue on advertising, the diamond jewelry industry (and De Beers, by far its heaviest advertiser) spent less than 1%. Further, De Beers did not even advertise its own products. For all the 111 years of its existence, De Beers had shied away from its own name, preferring instead to advertise diamonds on behalf of the entire industry. Now, perhaps, it was time to change.

### *The Power of the Brand*

With mounting excitement, De Beers managers began to contemplate an innovative branding strategy. They started to emphasize the De Beers name in advertisements, and even etched a microscopic logo onto some of their stones. In England, a small pilot project revealed that not only were customers interested in buying De Beers branded diamonds — they were willing to pay a 15% retail premium on jewelry bearing the De Beers name. And so, cautiously, the company began to raise its public profile. In honor of the approaching millennium, De Beers displayed in London a stunning 203-carat stone named the De Beers Millennium Star and crafted a high-end line of carefully selected, limited edition "millennium" branded stones. The day they went on sale in Japan, one dealer found a line of waiting customers outside his shop; before lunch, he had sold 68 out of his available 72 branded diamonds.<sup>26</sup>

To De Beers, branding offered a seductive route out of its financial troubles. Analysts estimated that the De Beers brand could be worth anywhere from \$175 million in rough stones up to \$1.25 billion at the retail jewelry level.<sup>27</sup> By branding, De Beers could carve out a newly lucrative niche in

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<sup>24</sup> Casewriter interview with Tim Capon, London, November 29, 1999.

<sup>25</sup> In 1999, the magazine *Advertising Age* voted De Beers's tagline the "Slogan of the Century."

<sup>26</sup> Casewriter interview with Capon.

<sup>27</sup> Andrew Jackson, "De Beers: 'Y' The Strategic Review?" Deutsche Bank Securities, November 11, 1999, p. 15.

the diamond industry. It could capture the unquestionable cachet it had never exploited, and it could differentiate its diamonds from the Australian, Russian and Angolan stones that now haunted the market. Potentially, branding also promised to help reduce its stockpile. If the company could increase demand for this new tier of diamonds, it could begin at last to draw down some of its reserves. Over the long run, it might even be possible to extend the brand farther downstream, creating a De Beers luxury store or a line of high-end fashion accessories.

If De Beers had been nearly any other company, and diamonds nearly any other industry, the strategy would have been simple: brand the stones, exploit the name, forge retail alliances, and push the stock price to a more satisfactory level. But De Beers, of course, was not an average company and diamonds were hardly an ordinary business. As Finance Director and long-term employee Paddy Kell put it, "We could be an anachronism. Or, it could be that there is something different about diamonds."<sup>28</sup> What would happen to the firm if it moved away from the trade it had supported and controlled for over a century? What would happen to prices if De Beers started to compete instead of collaborate? And what would all of this turmoil do to the industry's carefully nurtured vision of luxury and scarcity? No one knew.

Even more troubling were the potential legal ramifications. If De Beers was going to make branding a success, then it had to move aggressively into the U.S. market — the homeground of branding and the largest market by far for high-end diamonds. But each step closer to actually selling a product in consumer markets threatened to raise the ire of the Justice Department. A November 1999 report by Deutsche Bank Securities touched on this point, reminding readers that "[the Antitrust] ruling is indeed a poison pill... The impact of a resolution of the Anti-Trust issue should not be underestimated." The report further surmised, "Given the significant limitations posed by the current stand-off with the U.S. Justice Department, we would find it surprising if De Beers had not formulated a plan to resolve the Anti-Trust problem."<sup>29</sup> For years, U.S. antitrust laws had just been a basic condition of reality for De Beers. But now, for the first time, they threatened to put a serious crimp in the company's business model.

In a remarkable March, 1999 speech to alumni of the Harvard Business School, De Beers chairman Nicky Oppenheimer directly addressed the conflict between his company and U.S. antitrust law. "We make no pretence that we are not seeking to manage the diamond market, to control supply, to manage prices and to act collusively with our partners in the business," he told the audience. But Oppenheimer argued that De Beers's "single channel marketing" also brought social goods and benefits to all involved in the diamond industry and in particular to the African continent, which continued to produce 75% of the world's diamonds. He continued boldly:

It is always hard to argue that you are the exception to the rule but in the case of De Beers and the ultimate luxury — diamonds — I believe a review of U.S. anti-trust laws should form part of a new framework for engagement with Africa. Indeed it would be in line with the spirit of the African Growth and Opportunity Act, which reflects the fact that the U.S. is now trying to develop a policy towards Africa by recognizing its importance and the need to overcome Africa's image as a lost continent. De Beers supports any initiative that can break the mold of U.S.-Africa ties that were shackled historically by post-colonial and Cold War relations. We have a contribution to make in moving Africa from a past understanding based on aid and dependence, towards African trade, investment, sustainable prosperity and independence.

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<sup>28</sup> Casewriter interview with Kell.

<sup>29</sup> Jackson, p. 16.

Perhaps. But as the millenium drew to a close it wasn't clear how Oppenheimer's argument would be greeted by U.S. policymakers and what, if anything, De Beers could do to affect the tone of debate.

### **Appendix: Nicky Oppenheimer's Speech at Harvard Business School Global Alumni Conference, March 1999**

*[This excerpt is from an off-the-record speech prepared for a closed audience of HBS alumni. Speaking as a private citizen, Mr. Oppenheimer made his opening remarks intentionally dramatic and provocative, as suitable for a keynote address. This speech should in no way be construed as an official statement of the De Beers Group.]*

Ladies and Gentlemen,

It is with some surprise that I find myself addressing you today. In jest, but as with all good jests with a healthy serving of truth, I have always thought of American commercial life as being, in effect, a religion. There are certain fundamental beliefs and the Moses of that religion is Mr. Sherman, who in his act of 1890 set out some of the commandments:

1. Thou shalt not seek to monopolise.
2. Thou shalt not restrict competition.
3. Thou shalt not seek to fix prices.
4. Thou shalt not restrict production.
5. Thou shalt not divide markets.
6. Thou shalt not deny a competitor access to markets.
7. Thou shalt honor the consumer.

The torquemada of this religion is the head of the anti-trust division of the Department of Justice, who through Grand Juries conducts the equivalent of the Spanish Inquisition, routing out heresy wherever it may be found. No one is safe from the process, so that even the most successful and wealthy American businessman, Bill Gates, is going through trial by ordeal at this time.

I assume that you, as graduates of the Harvard Business School, have worshipped at the Temple of this religion and are no doubt fervent converts. Therefore in your eyes I must be the devil incarnate, the anti-Christ. For I am chairman of De Beers, a Company that likes to think of itself as the world's best known and longest running monopoly. We set out, as a matter of policy to break the commandments of Mr. Sherman. We make no pretence that we are not seeking to manage the diamond market, to control supply, to manage prices and to act collusively with our partners in the business. It seems that the only commandment of the ones I have set out that we do believe in is we do seek to honor the consumer. Despite all this we believe that what we do is not only good for us, and all producers of diamonds, but is also in the interests of the consumer.

How then am I bold enough to stand here before you and risk the rotten tomatoes? My confidence rests on two tenets. Firstly diamonds are unique; they are the ultimate luxury and yet they are desired and owned by a vast number of people. They are seen as the ultimate gift that lasts forever

and has a store of value. But dealing in a complete luxury that lasts forever and has a store of value lays on some very firm disciplines. We at De Beers never dare forget that the material quality of a person's life would not be changed if they never bought a diamond. The purchase of a diamond at engagement, is a mixture of commitment, beauty and store of value — a heady cocktail of emotion and practicality. Certainly anyone who makes that investment becomes a supporter of the single channel marketing with its aim of preserving value.

The second factor is that for De Beers to continue to play its traditional role in the industry it must be able to clear the market of all rough diamond production. We do try (with some success) to even out the effects of economic cycles but we are not in a position to abandon economic reality. Indeed any company dealing in a total luxury cannot behave as an evil monopoly exploiting the masses because at the end of the day they do not have a compelling need to purchase.

The moment De Beers Consolidated Mines was incorporated by Cecil Rhodes some 110 years ago it became the largest and most successful diamond company in the world, and so it has remained. I always feel longevity must mean we are doing something right and fulfilling a need. What we have done is particularly important for growth and development in Africa. Diamonds have a special place in the economy of South Africa, and of many other African countries.

Until the discovery of diamonds along the Vaal River in the late 1860 South Africa was just another poor African colony with only Table Mountain and some grapes to attract the tourists. All that changed with diamonds — suddenly the country was full of young people heading for the diamond fields in order to make their fortunes, and with them came money, skills and capital. In today's politically correct atmosphere it can be argued that these newcomers paid no heed to the indigenous people and that the capital realised in the diamond fields was often lost to the emerging South Africa. But that is only part of the answer for from the diamond fields flowed the skills, expertise and wealth which enabled the gold fields of the Witwatersrand to be exploited. And on these two strong pillars, diamonds and gold, is built the modern South Africa, the economic powerhouse of the continent.

In the region diamonds have not only been important to South Africa. In 1908 deposits were discovered in what is now Namibia. Even today, 90 years later, diamonds account for 40% of the country's foreign exchange earnings.

The story in Botswana is even more dramatic. Prior to the discovery of diamonds by De Beers Botswana was one of the poorest countries in Africa with minimal infrastructure and a subsistence agricultural economy. The most important source of revenue was via remittances from Botswana working in South Africa as migrant labor. Once production of diamonds started there was a dramatic change — in the ten years immediately following the start up of the Orapa mine the economy grew at an average rate of 14.5% per annum and continued at an average of 11% for the next decade. The Government of Botswana has been careful to harbor the benefits flowing from their diamonds and their country is one of Africa's success stories. The only other country in Africa so endowed with a single mineral is Nigeria — there the product is oil. Interestingly the oil industry tries to regulate itself in much the same way as the diamond industry. One would have thought that OPEC had a major advantage over De Beers in that oil is an essential. But there can be little doubt which has worked the better!

Blackie Marole, Permanent Secretary in the Ministry of Mineral and Energy Affairs in the Government of Botswana and a director of De Beers said:

*"Diamonds have been the engine of our economic growth for a quarter of a century and through them our economy has become the envy of many in Africa .... Therefore our actions and role in the (diamond) market are always geared to promoting stability in the market.*

*From the time we became part of this industry we have consistently subscribed to the concept of orderly marketing through a single channel system .....*"

Currently South Africa, Botswana and Namibia account for 50% of the world's diamond production, by value. If you include Angola, Democratic Republic of the Congo, Tanzania and West African producers, then Africa produces 75% of the world's diamonds. Almost all diamonds produced in Africa are exported and the export earnings of these diamond mines are critical to the economies of many African countries.

Now it could be easy to say that all this is very fine and that no one could have an argument with De Beers and what it has done for Africa as a producer but that the argument would come over its marketing activities. But the production and marketing of diamonds are inextricably linked in a virtuous circle.

Cecil Rhodes first enunciated the need for a symbiotic relationship between production and sale. To attain the first objective of being the major producer he created De Beers Consolidated Mines, by amalgamating the major producing companies in Kimberley. To attain the second, he sold the output of the mines to a group of diamond merchants in Kimberley, which subsequently became the Diamond Syndicate...

This form of single channel marketing has exercised an extraordinary beneficial influence upon the whole of the diamond industry and particularly to many of the economies of Africa. This is best illustrated by how rough diamond prices, measured in dollars, have moved over time. Overall, between 1985 and 1996, the CSO's prices rose on average 5.4% per annum, compared with the average U.S. Consumer Price Index of 3.5% per annum, while production for the same years rose from 66 million to 109 million carats. In the past two decades, rough diamonds have out-performed commodities such as gold, oil and aluminium, all the more remarkable an achievement given that gem diamonds fulfil a purely emotional, rather than a practical need. It is no accident that diamond prices have been more stable when compared than other commodities. The positive trend in rough diamond prices is due to De Beers' marketing efforts. And this is an effort which is in the interest of both the producer and the consumer; a strange and illogical coming together of opposites.

The De Beers marketing strategy for diamonds is endorsed by our partners in Botswana and Namibia, and other major producers such as Russia, as well as those producers who do not sell through De Beers but are happy to shelter in its shadow. Stable prices are essential for the maintenance of confidence and the wellbeing of the industry...

It is ironic that 46% of the world's diamonds are sold in the United States, where De Beers cannot do business, although we do indirectly advertise there. In this case I believe the attitude of the Justice Department is at odds with American foreign policy which seeks to support the reconstruction and development of Africa and to contribute to the awakening of Africa and the African Renaissance. As President Clinton stated in his recent visit to South Africa: "America wants a strong South Africa; America needs a strong South Africa. And we are determined to work with you as you build a strong South Africa." This statement was further underlined by the President when he "borrowed" the word "Masakhane" or "building together," to characterise the relationship he would like to see emerge between the U.S. and South Africa. In fact the sub-theme of President Clinton's visit was "trade, not aid," and this is realised in the pending African Growth and Opportunity Act.

It is always hard to argue that you are the exception to the rule but in the case of De Beers and the ultimate luxury — diamonds — I believe a review of U.S. anti-trust laws should form part a new

framework for engagement with Africa. Indeed it would be in line with the spirit of the African Growth and Opportunity Act, which reflects the fact that the U.S. is now trying to develop a policy towards Africa by recognising its importance and the need to overcome Africa's image as a lost continent. De Beers supports any initiative that can break the mould of U.S.-Africa ties that were shackled historically by post-colonial and Cold War relations. We have a contribution to make in moving Africa from a past understanding based on aid and dependence, towards African trade, investment, sustainable prosperity and independence.

Diamonds can have a key role to play in stopping Africa continuing to dig itself into a hole. Aid only increases the speed of the shovels, what is needed is trade and investment which will allow the digging to stop and the building to start. Two countries north of South Africa could particularly benefit from their diamond assets. These are Angola and the Congo. Both are currently meshed in violent conflict but both have considerable diamond deposits that should be used for their reconstruction and development. Both will need these assets to be used in the most efficient way possible.

De Beers, a truly African company, can and should be part of any effort involving by the USA to use diamonds to help the renaissance of Africa. To African countries endowed with diamond resources De Beers brings unparalleled mining expertise and a unique marketing mechanism. In countries like Botswana and Namibia, with democratic systems of government and an open economy, this partnership has proved its worth. In addition to a lasting skills and technology transfer, diamond mining has provided a revenue base for those countries to develop their economy.

Diamonds are a unique product and De Beers has, over the years, demonstrated how best to utilise this product in a way which enhances value to producers and consumers alike. I feel it deserves the support of the U.S. Government in its endeavors in Africa not their hindrance.

Source: De Beers

## Exhibit 1 De Beers Financial Results

Rand millions			US\$ millions	
1997	1998		1998	1997
29,280	24,845	<b>Turnover</b>	4,492	6,418
3,871	3,237	Diamond account	585	849
1,061	1,267	Investment income	229	233
279	158	Interest income	29	61
7	583	Other income	105	1
5,218	5,245		948	1,144
1,157	1,914	<b>Deduct:</b>	346	252
663	776	Prospecting and research	140	145
266	516	Interest payable	93	58
208	622	Other expenditure	113	45
20		Exceptional items		4
4,061	3,331	<b>Net income before taxation</b>	602	892
		<b>Deduct:</b>		
1,148	1,005	Taxation	182	252
2,913	2,326	<b>Net income after taxation</b>	420	640
94	256	<b>Deduct:</b>	46	21
92	254	Attributable to outside shareholders in subsidiaries	46	20
2	2	Dividends on preference shares		1
2,819	2,070	<b>Own earnings</b>	374	619
		<b>Add:</b>		
		Retained earnings of associated companies		
1,852	1,526	Current trading	276	405
936	(183)	Exceptional and non-trading	(33)	205
5,607	3,413	<b>Total net earnings</b>	617	1,229

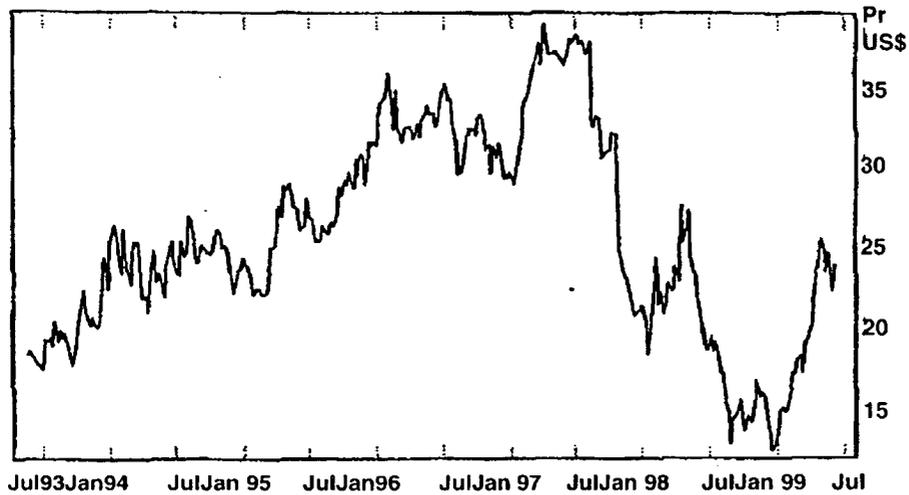
Source: De Beers Annual Report 1998

## Exhibit 2a De Beers Financial Results

	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
<b>Diamond stocks</b>										
\$ million	4,816	4,439	4,703	4,673	4,439	4,124	3,765	3,034	2,684	2,476
Rand millions	28,231	21,599	22,002	17,058	15,753	14,020	11,502	8,324	6,879	6,291
<b>Investments outside the diamond industry</b>										
Listed at market value										
\$ millions	4,253	5,644	7,491	8,768	8,170	6,863	2,615	4,984	3,845	4,136
Rand millions	24,933	27,468	35,041	32,005	33,210	29,458	12,944	15,973	13,034	14,747

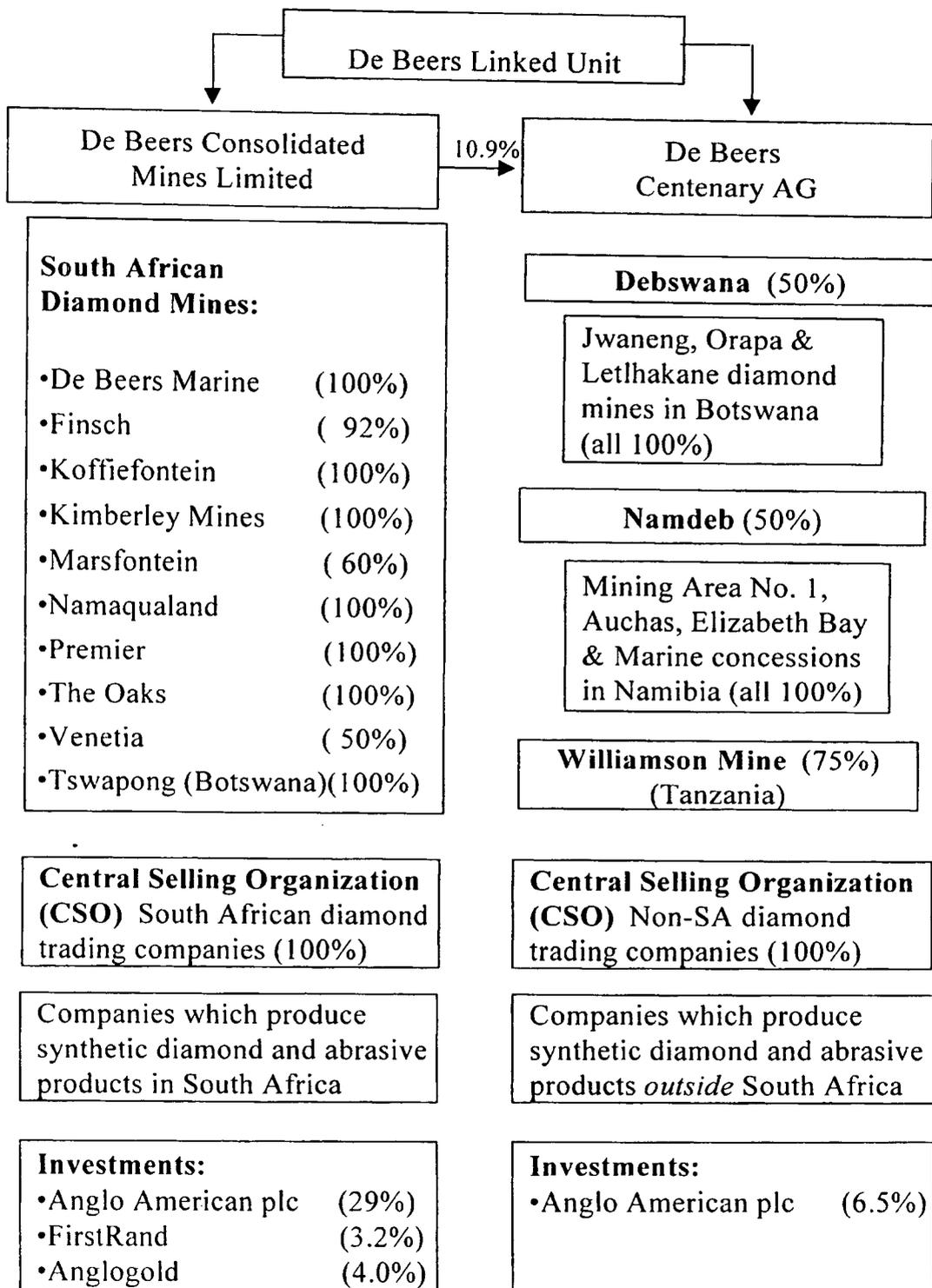
Source: De Beers Annual Report, 1998.

## Exhibit 2b De Beers Share Price



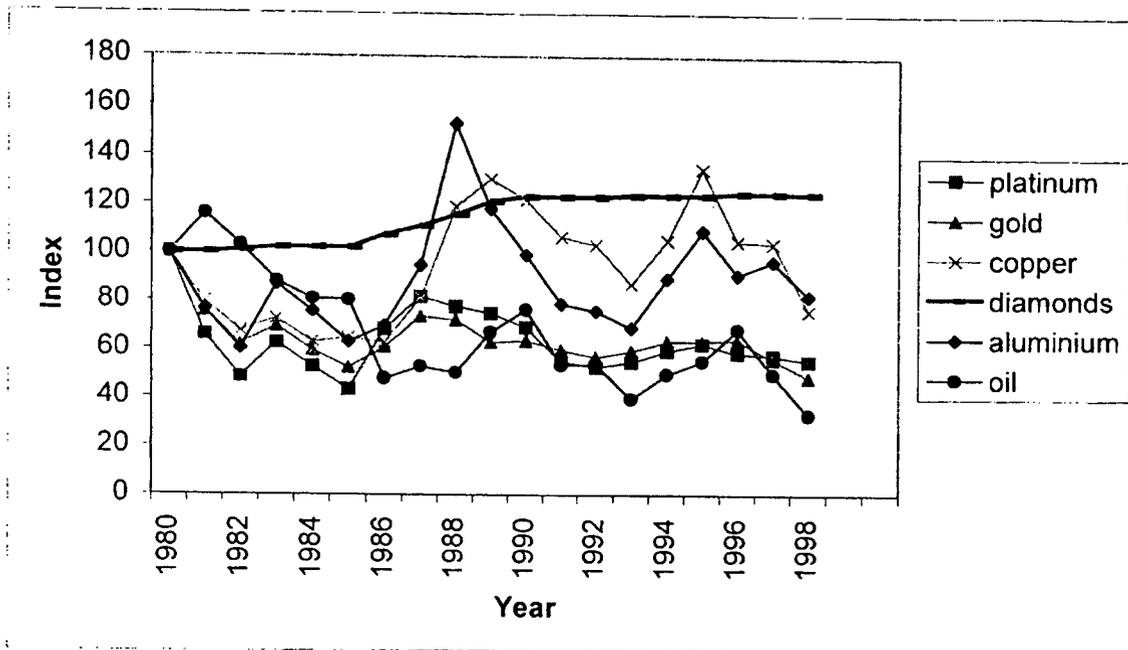
Source: CIBC World Markets

Exhibit 3 De Beers Corporate Structure



Source: De Beers

Exhibit 4 Commodity Prices, 1980-1998



Source: De Beers

Exhibit 5 U.S. Antitrust Law: The Sherman and Clayton Acts

Sherman Act, Section 1.

Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal.

Clayton Act.

It shall be unlawful for any person engaged in commerce, in the course of such commerce, either directly or indirectly, to discriminate in price between different purchasers of commodities of like grade and quality, where either or any of the purchases involved in such discrimination are in commerce, where such commodities are sold for use, consumption, or resale within the United States or any Territory thereof or the District of Columbia or any insular possession or other place under the jurisdiction of the United States, and where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce...

Source: *United States Code 1994 Edition, Vol. 6 Title 15*, (Washington: United States Government Printing Office, 1995), p. 114, 119.

Exhibit 6 Diamond Industry Operating Profit, 1997 (Total = U.S.\$8.5 billion)

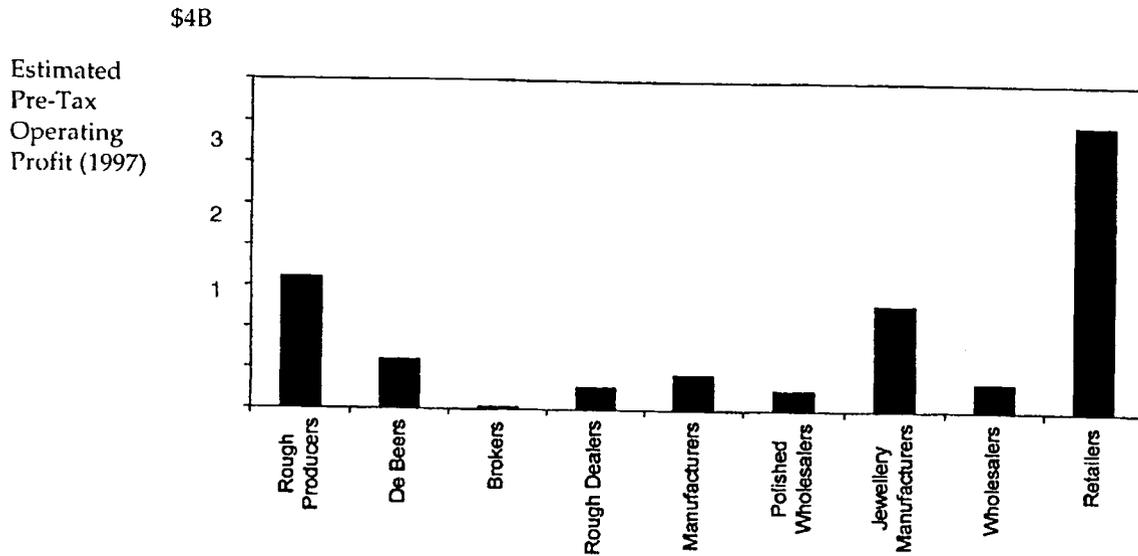
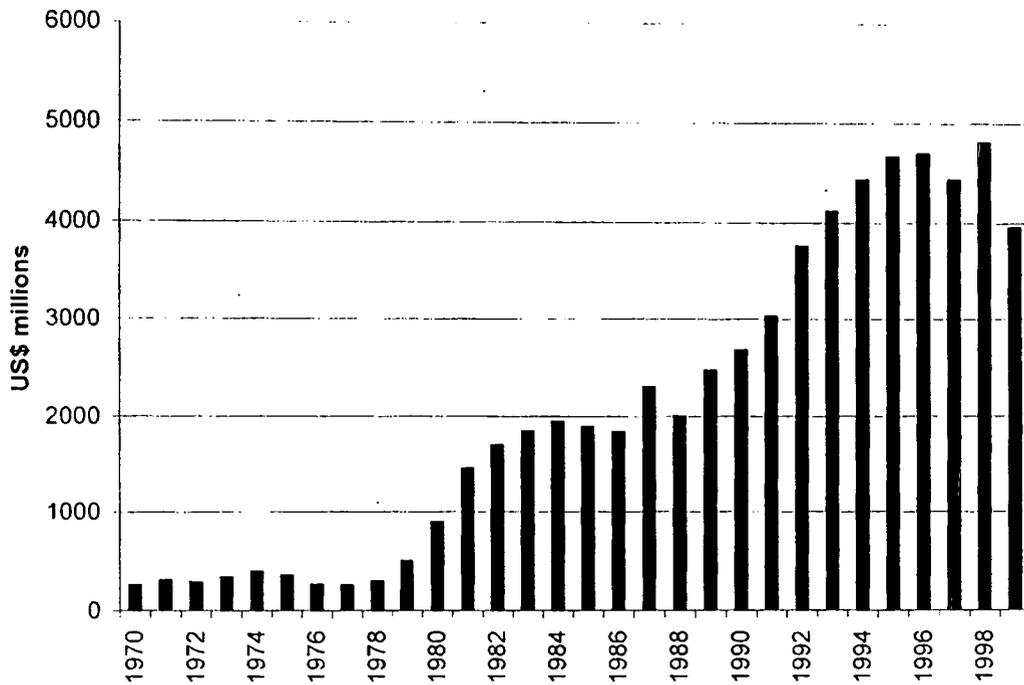
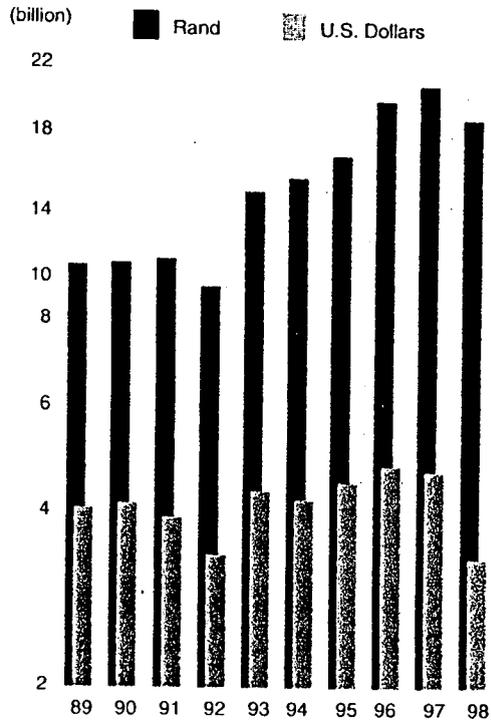


Exhibit 7 Value of De Beers's Rough Diamond Stockpile



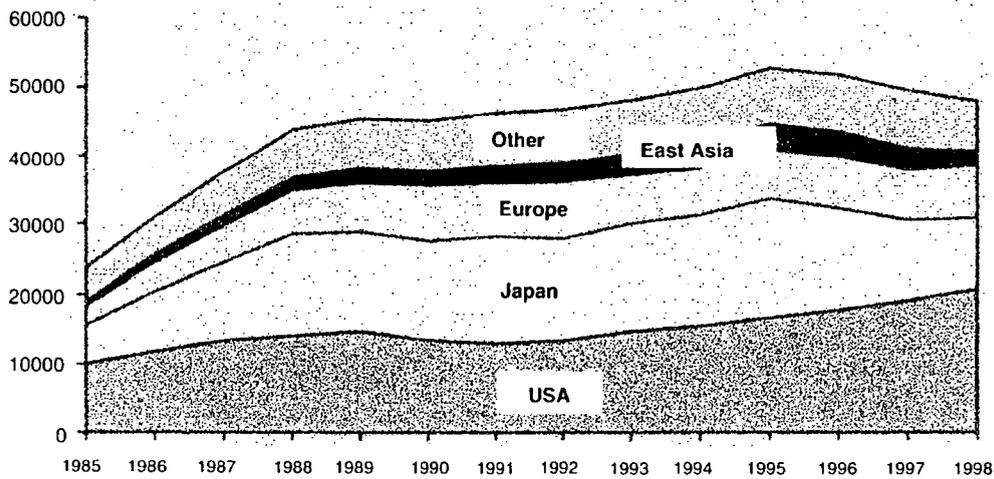
Source: De Beers

Exhibit 8 CSO Rough Diamond Sales, 1989-1998



Source: De Beers Annual Report, 1998

Exhibit 9 Retail Diamond Sales by Region (\$million)



Source: De Beers

## Exhibit 10 Diamond Jewelry Market in the United States, 1996 - 1998

## Total Diamond Jewelry Market—by Pieces

Pieces (000)	1996		1997		1998		% Chg 1997-98
	# Pieces	% Pieces	# Pieces	% Pieces	# Pieces	% Pieces	
<b>Total Women's</b>	<b>23,367</b>	<b>75%</b>	<b>25,007</b>	<b>77%</b>	<b>26,415</b>	<b>78%</b>	<b>6%</b>
Married women	14,513	47%	15,368	47%	16,264	48%	6%
Single women	8,854	28%	9,639	30%	10,151	30%	5%
<b>Bridal</b>	<b>3,133</b>	<b>10%</b>	<b>3,051</b>	<b>9%</b>	<b>3,134</b>	<b>9%</b>	<b>3%</b>
Engagement Ring	1,675	5%	1,663	5%	1,659	5%	--
Wedding Band	977	3%	889	3%	963	3%	8%
Men's Wedding Band	481	2%	499	1%	512	1%	3%
<b>Teens</b>	<b>1,582</b>	<b>5%</b>	<b>1,736</b>	<b>5%</b>	<b>1,649</b>	<b>5%</b>	<b>-5%</b>
<b>Men's</b>	<b>3,046</b>	<b>10%</b>	<b>2,834</b>	<b>9%</b>	<b>2,697</b>	<b>8%</b>	<b>-5%</b>
<b>Total</b>	<b>31,128</b>	<b>100%</b>	<b>32,628</b>	<b>100%</b>	<b>33,895</b>	<b>100%</b>	<b>4%</b>

## Total Diamond Jewelry Market—by Value

Value (\$ million)	1996		1997		1998		% Chg 1997-98
	\$ Value	% Value	\$ Value	% Value	\$ Value	% Value	
<b>Total Women's</b>	<b>\$13,158</b>	<b>69%</b>	<b>\$14,631</b>	<b>72%</b>	<b>\$16,234</b>	<b>73%</b>	<b>11%</b>
Married women	\$9,404	49%	\$10,573	52%	\$11,970	54%	13%
Single women	\$3,754	20%	\$4,058	20%	\$4,263	19%	5%
<b>Bridal</b>	<b>\$4,025</b>	<b>21%</b>	<b>\$3,919</b>	<b>19%</b>	<b>\$4,329</b>	<b>20%</b>	<b>10%</b>
Engagement Ring	\$3,022	16%	\$2,998	15%	\$3,318	15%	11%
Wedding Band	\$761	4%	\$688	3%	\$715	4%	4%
Men's Wedding Band	\$242	1%	\$233	1%	\$296	1%	27%
<b>Teen's</b>	<b>\$302</b>	<b>2%</b>	<b>\$290</b>	<b>1%</b>	<b>\$284</b>	<b>1%</b>	<b>-2%</b>
<b>Men's</b>	<b>\$1,496</b>	<b>8%</b>	<b>\$1,564</b>	<b>8%</b>	<b>\$1,340</b>	<b>6%</b>	<b>-14%</b>
<b>Total</b>	<b>\$18,981</b>	<b>100%</b>	<b>\$20,405</b>	<b>100%</b>	<b>\$22,186</b>	<b>100%</b>	<b>9%</b>

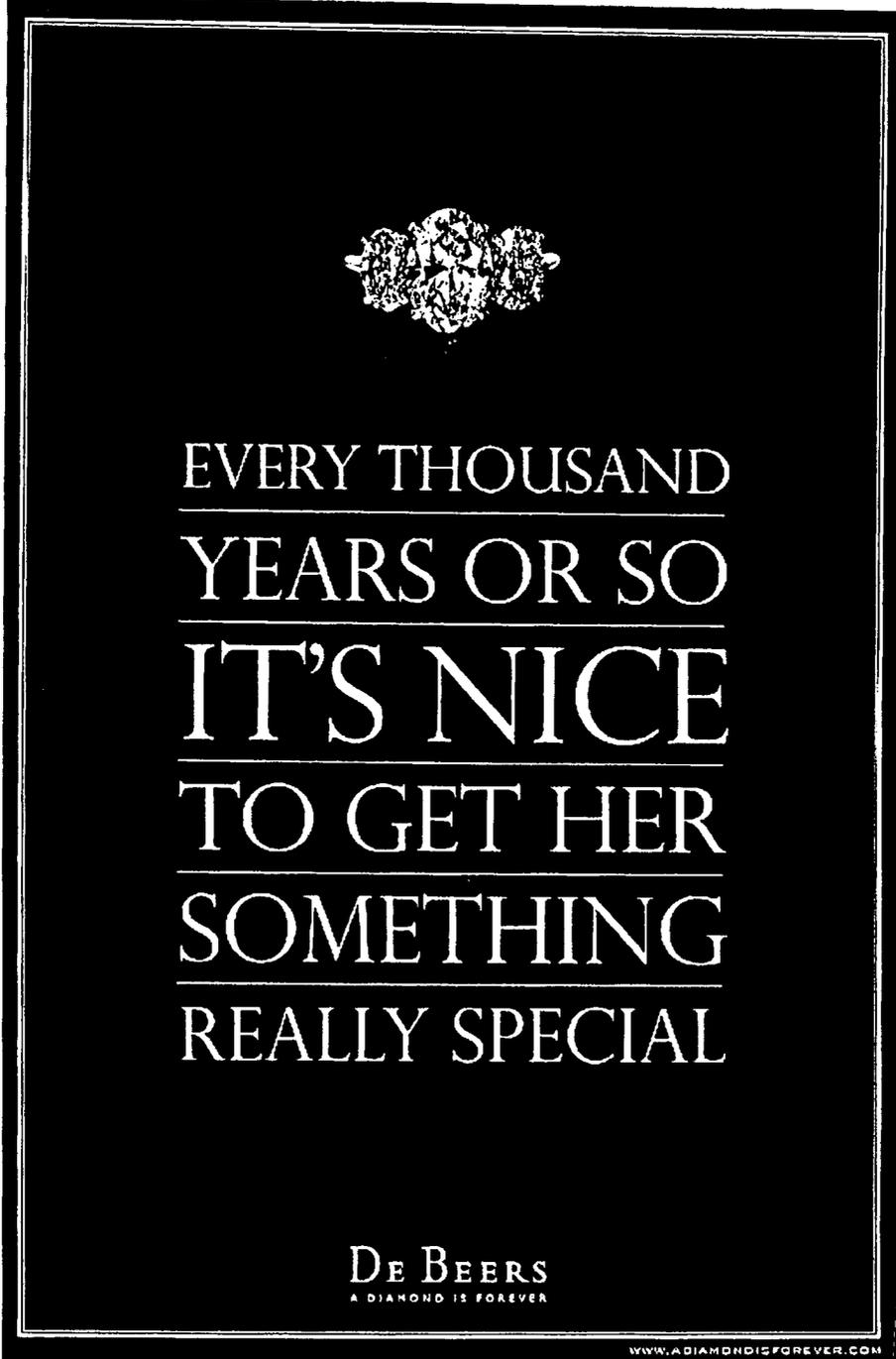
## Total Diamond Jewelry Market—by Average Price

Average Price (\$)	1996	1997	1998	% Chg 1997-98
<b>Total Women's</b>	<b>\$563</b>	<b>\$585</b>	<b>\$615</b>	<b>5%</b>
Married women	\$648	\$688	\$736	7%
Single women	\$424	\$421	\$420	--
<b>Bridal</b>	<b>\$1,285</b>	<b>\$1,284</b>	<b>\$1,381</b>	<b>8%</b>
Engagement Ring	\$1,804	\$1,803	\$2,000	11%
Wedding Band	\$779	\$774	\$742	-4%
Men's Wedding Band	\$503	\$467	\$578	24%
<b>Teen's</b>	<b>\$191</b>	<b>\$167</b>	<b>\$172</b>	<b>3%</b>
<b>Men's</b>	<b>\$491</b>	<b>\$552</b>	<b>\$497</b>	<b>-10%</b>
<b>Total</b>	<b>\$610</b>	<b>\$625</b>	<b>\$655</b>	<b>5%</b>

1 Diamond jewelry is defined as any jewelry piece with at least one real new diamond, regardless of the diamond's size or value.

Source: J. Walter Thompson, Inc.

Exhibit 11 De Beers Millennial Campaign Advertisement



EVERY THOUSAND  
YEARS OR SO  
IT'S NICE  
TO GET HER  
SOMETHING  
REALLY SPECIAL

DE BEERS  
A DIAMOND IS FOREVER

WWW.ADIAMONDISFOREVER.COM

Source: J. Walter Thompson, Inc.