APPENDIX 3 ADOPTED SCENARIOS IN DETAIL

Scenario 1 - Base Case

Vehicle assumptions

– ADR 37.01 and ADR 70 ongoing.

– Allowance of Euro 2 and 3 as alternates to ADR 37.01, from 2000.

– 10% NAFC reduction 1990 to 2000 for cars.

– Additional 10% NAFC reduction (1% per year) 2000 to 2010 for cars.

– Continuation of current trends in fuel mix (petrol/diesel/LPG/CNG).

– Business as usual growth scenario for VKT.

Petrol quality assumptions

– Current standards ongoing except –
  - – leaded petrol phased out by 1/1/2002;
  - – increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002;
  - – further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre;
  - – reductions in petrol volatility/sulfur in train or planned, following agreements with the States.

Road transport diesel quality assumptions

– Current standards ongoing except reductions in sulfur in train or planned, *as agreed by individual companies*.

– For BP, this will include –
  - – 500 ppm urban / 2000 ppm country in WA from 1/1/2000;
  - – 500 ppm urban in Brisbane from 1/7/2000, position on country level to be clarified by BP.

– For other refiners this will include –
  - – 1000 ppm pool average urban / 2000 ppm pool average country, with +500 ppm caps, from 1/1/2000.

Off-road diesel quality assumptions

– No changes from current standards.

Scenario 2 - MVEC/MBE (Explicit) Option

Vehicle assumptions

- ECE compliance allowed as an alternative to ADR 37.01 from 2000 (= base case).
- Euro 2 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2003/4.
- Euro 3 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2005/6.
- View to adopt Euro 4 for petrol vehicles at a later date (after review in 2000/2001). For the purposes of analysis of this scenario it is assumed that Euro 4 standards for petrol vehicle are not adopted prior to 2010.
- 10% NAFC reduction 1990 to 2000 for cars (= base case).
- Additional 10% NAFC reduction 2000 to 2010 for cars (= base case).
- Additional 15% NAFC reduction 2000 to 2010 for cars, 4WDs and LCVs >3.5 tonnes.
- Euro 3 for all medium and heavy diesel trucks (>3.5 tonnes)(with US 98 as alternate) from 2002/3.
- Euro 2 for diesel passenger cars, light trucks and buses (<3.5 tonnes) from 2002/3.
- Euro 4 for all diesel vehicles (with US 2004 as alternate) from 2006/7.
- Increasing conversions to CNG/LPG in response to Government subsidies for vehicles >3.5 tonnes. (Up to 800 buses, 4000 commercial vehicles per year over the first four years).
- Business as usual growth scenario for VKT (= base case).

Petrol quality assumptions

- Leaded petrol phased out by 1/1/2002 (= base case).
- Increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002 (= base case).
- Further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre (= base case).
- 95 RON for all new vehicles from 2005/6.

– Reductions in petrol volatility in train or planned, following agreements with the States (= base case).

– Euro 3 sulfur level (50 ppm) to be introduced in 2005, coinciding with MVEC’s proposed Euro 3 emission standards for petrol vehicles in 2005/6.

Road transport diesel quality assumptions

– Voluntary reduction of sulfur in urban areas to 500 ppm through 2000/2, on a best endeavours basis.

– Sulfur set at 500 ppm (= Euro 2 sulfur level) from 1/12/2002.

– 1 c/L excise advantage for 50 ppm sulfur diesel during 2003.

– 2 c/L excise advantage for 50 ppm sulfur diesel during 2004/5.

– Sulfur set at 50 ppm (= Euro 4 sulfur level) from 2006.

Off-road diesel quality assumptions

– Current specifications continuing prior to 2006.

– 50 ppm sulfur from 2006.

Scenario 3 – Best Endeavours - MVEC/MBE (Implicit) Option

Vehicle assumptions

– ECE compliance allowed as alternative to ADR 37.01 from 2000 (= base case).

– Euro 2 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2003/4 (= Scenario 2).

– Euro 3 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2005/6 (= Scenario 2).

– Euro 4 for all petrol vehicles from 2008/9.

– 10% NAFC reduction 1990 to 2000 for cars (= base case).

– Additional 10% NAFC reduction 2000 to 2010 for cars (= base case).

– Additional 15% NAFC reduction 2000 to 2010 for cars, 4WDs and LCVs >3.5 tonnes (= Scenario 2).

– Euro 3 for all medium and heavy diesel trucks (>3.5 tonnes)(with US 98 as alternate) from 2002/3 (= Scenario 2).

– Euro 2 for diesel passenger cars, light trucks and buses (<3.5 tonnes) from 2002/3 (= Scenario 2).

– Euro 4 for all diesel vehicles (with US 2004 as alternate) from 2006/7 (= Scenario 2).

– Increasing conversions to CNG/LPG in response to Government subsidies for vehicles >3.5 tonnes. (Up to 800 buses, 4000 commercial vehicles per year over the first four years) (= Scenario 2).

– Business as usual growth scenario for VKT (= base case).

Petrol quality assumptions

– Leaded petrol phased out by 1/1/2002 (= base case).

– Sulfur 500 ppm (= Euro 2 sulfur level) from 2002.

– Euro 3 petrol from 2005. Specifications for parameters other than sulfur concentration, RON and RVP to be set on a refinery best endeavours basis (based on best cost/benefits breakpoints for each refinery). Euro 3 specifications for petrol are outlined in Section Table 2.5.

– 95 RON for all new vehicles from 2005/6.

– Euro 4 petrol from 2008 on best endeavours basis, as for 2005 adoption of Euro 3. The Euro 4 specifications for petrol to be adopted for modelling purposes are outlined in Table 2.6a.

– Increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002 (= base case).

– Further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre (= base case).

– Reductions in petrol volatility in train or planned, following agreements with the States (= base case).

Road transport diesel quality assumptions

– Voluntary reduction of sulfur in urban areas to 500 ppm through 2000/2, on a best endeavours basis (= Scenario 2).

– Sulfur set at 500 ppm from 1/12/2002 (= Scenario 2).

– 1 c/L excise advantage for 50 ppm sulfur diesel during 2003 (= Scenario 2).

– 2 c/L excise advantage for 50 ppm sulfur diesel during 2004/5 (= Scenario 2).

– Euro 4 diesel from 2006, with specific requirement for 50 ppm sulfur. Specifications for parameters other than sulfur to be based on best cost/benefit breakpoints for each refinery. The Euro 4 specifications for diesel to be adopted for modelling purposes are outlined in Table 2.27.

Off-road diesel quality assumptions

– 50 ppm sulfur from 2006. Current specifications continuing prior to 2006.

Scenario 4 – Mandatory - MVEC/MBE (Implicit) Option

Vehicle assumptions

– ECE compliance allowed as an alternative to ADR 37.01 from 2000 (= base case).

– Euro 2 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2003/4 (= Scenario 2).

– Euro 3 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2005/6 (= Scenario 2).

– 10% NAFC reduction 1990 to 2000 for cars (= base case).

– Additional 10% NAFC reduction 2000 to 2010 for cars (= base case).

– Additional 15% NAFC reduction 2000 to 2010 for cars, 4WDs and LCVs >3.5 tonnes (= Scenario 2)

– Euro 3 for all medium and heavy diesel trucks (>3.5 tonnes)(with US 98 as alternate) from 2002/3 (= Scenario 2).

– Euro 2 for diesel cars, light trucks and buses (<3.5 tonnes) from 2002/3 (= Scenario 2).

– Euro 4 for all diesel vehicles (with US 2004 as alternate) from 2006/7 (= Scenario 2).

– Increasing conversions to CNG/LPG in response to Government subsidies for vehicles >3.5 tonnes. (Up to 800 buses, 4000 commercial vehicles per year over the first four years) (= Scenario 2).

– Business as usual growth scenario for VKT (= base case).

Petrol quality assumptions

– Leaded petrol phased out by 1/1/2002 (= base case).

– Sulfur 500 ppm (= Euro 2 sulfur level) from 2002.

– Euro 3 petrol from 2005. Specific, mandatory, requirements to be set for RVP, benzene, sulfur, aromatics and olefins, as outlined in Table 2.5.

– 95 RON for all new vehicles from 2005/6.

– Euro 4 petrol from 2008 (all specifications mandatory). The Euro 4 specifications for petrol to be used for modelling purposes are outlined in Table 2.6a.

– Increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002 (= base case).

– Further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre (= base case).

– Reductions in petrol volatility in train or planned, following agreements with the States (= base case).

Road transport diesel quality assumptions

– Voluntary reduction of sulfur in urban areas to 500 ppm through 2000/2, on a best endeavours basis (= Scenario 2)

– Sulfur set at 500 ppm from 1/12/2002 (= Scenario 2).

– 1 c/L excise advantage for 50 ppm sulfur diesel during 2003 (= Scenario 2).

– 2 c/L excise advantage for 50 ppm sulfur diesel during 2004/5 (= Scenario 2).

– Euro 4 diesel from 2006 (all specifications mandatory). The Euro 4 specifications for diesel to be used for modelling purposes are outlined in Table 2.6b.

Off-road diesel quality assumptions

– 50 ppm sulfur from 2006. Current specifications continuing prior to 2006.

Scenario 5 – Euro 4 Transport Fuels By 2006

Vehicle assumptions

– ECE compliance allowed as an alternative to ADR 37.01 from 2000 (= base case).

– Euro 2 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2003/4 (= Scenario 2).

– Euro 3 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2005/6 (= Scenario 2).

– Euro 4 for all petrol vehicles 2008/9 (= Scenario 3).

– 10% NAFC reduction 1990 to 2000 for cars (= base case).

– Additional 10% NAFC reduction 2000 to 2010 for cars (= base case).

– Additional 15% NAFC reduction 2000 to 2010 for cars, 4WDs and LCVs >3.5 tonnes (= Scenario 2).

– Euro 3 for all medium and heavy diesel trucks (>3.5 tonnes)(with US 98 as alternate) from 2002/3 (= Scenario 2).

– Euro 2 for diesel cars, light trucks and buses (<3.5 tonnes) from 2002/3(= Scenario 2).

– Euro 4 for all diesel vehicles (with US 2004 as alternate) from 2006/7 (= Scenario 2).

– Increasing conversions to CNG/LPG in response to Government subsidies for vehicles >3.5 tonnes. (Up to 800 buses, 4000 commercial vehicles per year) (= Scenario 2).

– Business as usual growth scenario (= base case).

Petrol quality assumptions

– Leaded petrol phased out by 1/1/2002 (= base case).

– Sulfur 500 ppm (= Euro 2 sulfur level) from 2002 (= Scenario 2).

– Euro 3 petrol from 2005. Specific, mandatory, requirements to be set for RVP, benzene, sulfur, aromatics and olefins, as outlined in Table 2.5.

– 95 RON for all new vehicles from 2005/6.

– 98 RON for all new vehicles from 2008/9.

– Euro 4 quality from 2006. The Euro 4 specifications for petrol to be used for modelling purposes are outlined in Table 2.6a.

– Increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002 (= base case).

– Further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre (= base case).

– Reductions in petrol volatility in train or planned, following agreements with the States (= base case).

Road transport diesel quality assumptions

– Voluntary reduction of sulfur in urban areas to 500 ppm through 2000/2, on a best endeavours basis (= Scenario 2).

– Sulfur set at 500 ppm from 1/12/2002 (= Scenario 2).

– 1 c/L excise advantage for 50 ppm sulfur diesel during 2003 (= Scenario 2).

– 2 c/L excise advantage for 50 ppm sulfur diesel during 2004/5 (= Scenario 2).

– Euro 4 diesel from 2006 (all specifications mandatory). The Euro 4 specifications for diesel to be used for modelling purposes are outlined in Table 2.6b.

Off-road diesel quality assumptions

– Current specifications continuing prior to 2006.

– 50 ppm sulfur from 2006.

Scenario 6 – Most Stringent Case

Vehicle assumptions

– ECE compliance allowed as an alternative to ADR 37.01 from 2000 (= base case).

– Euro 2 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2003/4 (= Scenario 2).

– Euro 3 for all petrol vehicles < 3.5 tonnes (US 1996 HDV for >3.5 tonnes) from 2005/6 (= Scenario 2).

– Euro 4 for all petrol vehicles 2008/9 (= Scenario 3).

– 10% NAFC reduction 1990 to 2000 for cars (= base case).

– Additional 10% NAFC reduction 2000 to 2010 for cars (= base case).

– Additional 15% NAFC reduction 2000 to 2010 for cars, 4WDs and LCVs >3.5 tonnes (= Scenario 2).

– Euro 3 for all medium and heavy diesel trucks (>3.5 tonnes)(with US 98 as alternate) from 2002/3 (= Scenario 2).

– Euro 2 for diesel passenger cars, light trucks and buses (<3.5 tonnes) from 2002/3(= Scenario 2).

– Euro 4 for all diesel vehicles (with US 2004 as alternate) from 2006/7 (= Scenario 2).

– Increasing conversions to CNG/LPG in response to Government subsidies for vehicles >3.5 tonnes. (Up to 800 buses, 4000 commercial vehicles per year) (= Scenario 2).

– Business as usual growth scenario (= base case).

Petrol quality assumptions

– Leaded petrol phased out by 1/1/2002 (= base case).

– Sulfur 500 ppm (= Euro 2 sulfur level) from 2002 (= Scenario 2).

– Euro 4 quality (all parameters including volatility) from 2005. Euro 4 specifications for petrol to be used for modelling purposes as outlined in Table 2.6a.

- Long term goal – 30 ppm sulfur by 2008.
- Increase in PULP demand for imported (and some locally produced) Euro 2/3 vehicles during 2000/2002 (= base case).
- Further increase in PULP demand from 2002, in response to a reduction in the PULP/ULP retail price differential to 2 c/litre (= base case).
- 95 RON for all new vehicles from 2005/6 (= Scenario 2).
- 98 RON for all new vehicles from 2008/9 (= Scenario 5).
- Reductions in petrol volatility in train or planned, following agreements with the States (= base case).

Diesel quality assumptions (road and off-road)

- Voluntary reduction of sulfur in urban areas to 500 ppm through 2000/2, on a best endeavours basis (= Scenario 2).
- Sulfur set at 500 ppm from end 2002 (= Scenario 2).
- 1 c/L excise advantage for 50 ppm sulfur diesel during 2003 (= Scenario 2).
- 2 c/L excise advantage for 50 ppm sulfur diesel during 2004/5 (= Scenario 2).
- Euro 4 quality from 2005. The Euro 4 specifications for diesel to be used for modelling purposes are outlined in Table 2.6b.
- Long term goal - 30 ppm sulfur by 2008.