



# ELISE

Model Update





## Contents

Elise Model Update

Project Headlines

Body

Headlights

Body

Powertrain

Performance Comparison

New Options and Accessories

Pricing

Summary

Specification Overview

## Elise Model Update

### Overview

- Facelift for the Elise
- Introduction of a new base Elise model
- The end of the Elise S (1ZZ-FE engine)
- 1ZR Powertrain introduced for the new Elise
- The Elise model update introduces changes that impact primarily in the areas of **Body** (in the case of the Elise range, including R and SC) and **Powertrain** (in the case of the new Elise)



## Project Headlines

- Project commenced March 2009
- First vehicles produced March 2010
- Dealer demonstrators and customer cars available from April 2010
- To be launched at Geneva Motorshow 2010
- Styling by Lotus Design
- The first visual change to the Elise since 2000, with the introduction of the Series 2

**ELISE**

1996-2000



**ELISE**

Rover - Engined 2000-2005



**ELISE**

Toyota - Engined 2005-2010



**ELISE**

2010 onwards



## Body

Key changes and improvements to the whole of the Elise range include new evolution body design, incorporating new front clamshell, rear bumper and engine cover, and all in one integrated headlights including LED daytime running lamps and LED direction indicators.

- As with all Lotus product the design is an exciting blend of dramatic style and functional efficiency.
- The new Elise body has a fresh sculptured front, including a new bumper, front clam and access panel that combine to give the Elise a wider more planted stance on the road.
- At the rear of the car the new engine has been encased by a distinctive “twin-spine” engine cover whilst lower down a more aggressive diffuser is tightly wrapped by an elegant new bumper design that now includes the rear licence plate.
- The theme of purity is carried through to the cooling apertures that are finished with a new lightweight aluminium mesh that gives the car a classically sporting character.
- The rear boot is now opened from the cockpit rather than via a separate key operation. The high quality feel of the Elise is continued throughout the car with the Elise graphic incorporated into the new side LED direction indicators, like those on the Evora.



## Body

The revised Elise features more new panels than carryover parts, with 254 new parts released for the vehicle, including:

- New headlights
- Front bumper
- Front clam
- Front access panel
- Front grilles
- Radiator exit grilles
- Side indicators
- Engine cover
- Engine grilles
- Rear bumper
- Diffuser
- Rear transom panel
- Wheels (new cast and forged wheel options)
- Side grilles and trim



## Body

**Those components that are carried over from the outgoing Elise models are:**

- Windscreen
- Side windows
- Rear glass
- Doors
- Sills
- Rear clam top
- Mirrors
- Roof
- Rear lights
- Standard Elise R and SC cast wheels



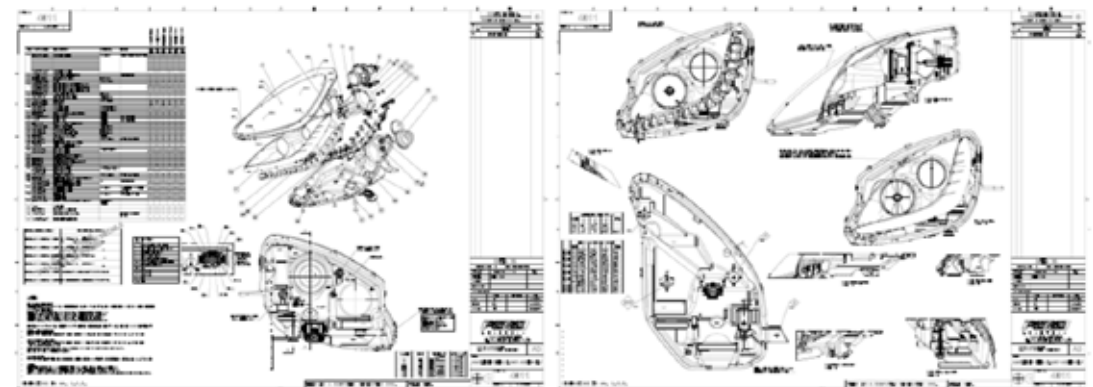
## Headlights

New headlamp units with distinctively sculptured LED lighting guides (incorporating daytime running lamps and direction indicators) give a contemporary twist to this classic design.

Elsewhere, the signature, Lotus “mouth” and familiar sculptured forms have been sensitively refined to give a crisper, more dynamic look.

The repositioning of lamp functions has enabled the creation of broad clean surface between the fenders which combines with sleek corner intakes and prominent splitter detail to give a broader more planted stance.

Also note there is a new side indicator, derived from the Evora with the new Elise logo integrated.





## Body

### Features

- The new Elise body has a fresh sculptured front, including a new bumper, front clam and access panel
- 254 new parts released for the vehicle
- New Halogen headlights, with integrated indicators
- Built in LED Daytime Running Lights (DRLs)

### Benefits

- A more planted, purposeful stance
- Styling cues link the Elise to the Evora, giving the vehicle a pure, contemporary look
- Aerodynamic refinements result in an impressive 4% reduction in drag coefficient
- Safety benefit of DRLs



## Powertrain (Elise 1ZR)

### Summary

Whilst the Elise R and SC derivatives will retain the established Toyota 2ZZ powertrain, the new Elise has a number of additional changes and improvements beyond the bodywork revisions mentioned previously, with the installation of a new advanced 1.6 litre Valvematic engine meeting EURO 5 regulations.

This new engine is 200cc smaller than the outgoing Elise S model and produces similar power (136 ps, 100 kW, 134 hp at 6800 rpm) with maximum torque of 160 Nm, 118 lbft at 4400 rpm, but offers a significant improvement to fuel economy of 23%\* (official combined figures) and a reduction in CO<sub>2</sub> emission by more than 15%\*.

This provides the new Lotus Elise with the lowest CO<sub>2</sub> per performance for any gasoline high performance sports car in the world.

This high technology engine is mated to a new 6-speed manual gearbox, providing closer and more performance orientated ratios than the outgoing 5 speed box.

\* Indicated figures are estimates at time of going to press (February 2010)



## Powertrain (Elise 1ZR)

### Summary

#### Specification

Toyota description: 1ZR-FAE

1.6 litre I6 DOHC Dual-VVT-I, 16 valve with Valvematic

Transverse installation mated to a 6-speed manual transmission

Unique installation and application controlled by Lotus T6 engine management system

#### Performance

Maximum Power: 100 kW @ 6800 rpm (136 ps, 134 hp)

Maximum Torque: 160 Nm @ 4400 rpm (118 lbft)

Homologated to Euro5 emission standards

#### Fuel Economy

Urban 8.07 l/100km (35 mpg)\*

Extra Urban 4.96 l/100km (57 mpg)\*

Combined 6.14 l/100km (46 mpg)\*

CO<sub>2</sub> <155 g/km\*

#### Rev Limit

Continuous 6800 rpm

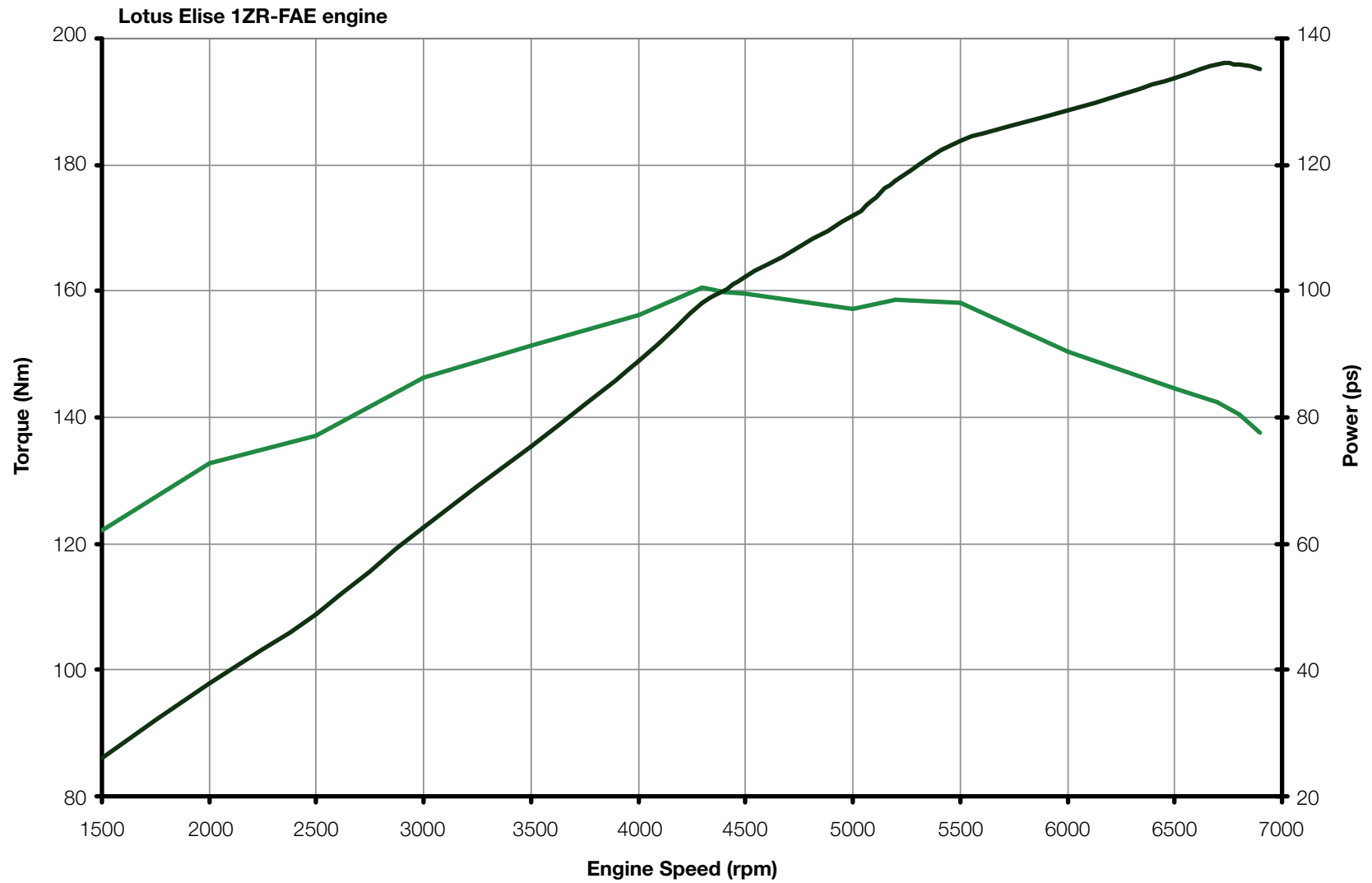
Intermittent 7000 rpm

\* Indicated figures are estimates at time of going to press (February 2010)



# Powertrain (Elise 1ZR)

## Performance



## Powertrain (Elise 1ZR)

### Lotus T6 Engine Management

- Unique Lotus electronic specification
- Conception and development of all control algorithms for engine operation, emissions control and diagnostic strategies
- Fully Lotus authored firmware by team at Hethel
- New advanced DSP-based knock control system developed for Evora applied in Elise
- All calibration parameters developed and validated by Lotus Engineering
- Same unit used in Evora
- 80 Mhz 32 bit main processor
- Second processor for safety supervision



## Powertrain (Elise 1ZR)

### History

One of the newest Toyota engines from the ZR family, utilising Toyota's most up-to-date technology.

Used in Toyota products including the Auris, Avensis and Verso.

Toyota rated at 97 kW and 160 Nm.

Produced by Toyota Manufacturing UK in the Deeside (North Wales) Plant, resulting in a lower carbon footprint.

### Technologies

Valvematic = Toyota's inlet valve lift system to improve efficiency through reducing "throttling losses", controlled by Lotus' T6 ECU

Dual VVT-i = Dual Variable Valve Timing (phasing) on both intake and exhaust camshafts enabling optimised power, torque and economy through the engine operating range.

ASIC = Acoustic Control Induction System, enabling optimised power and torque delivery through the engine operating range via variable length induction system.

DIS = Direct Ignition System



## Powertrain (Elise 1ZR)

### **Transmission**

Manual 6-speed transmission

Toyota designation: EC60

Compact and efficient manual transmission in a transverse installation.

Weight 42.3 kg

### Transmission Ratios

#### Overall gearing

1st	3.538 (4.7 mph (7.6 kph)/1000 rpm)
2nd	1.913 (8.7 mph (14.0 kph)/1000 rpm)
3rd	1.310 (12.7 mph (20.5 kph)/1000 rpm)
4th	0.971 (17.2 mph (27.7 kph)/1000 rpm)
5th	0.818 (20.4 mph (32.8 kph)/1000 rpm)
6th	0.700 (23.9 mph (38.4 kph)/1000 rpm)
Reverse	3.333
Final Drive	4.294



## Powertrain (Elise 1ZR)

### Features

- More effective combustion process
- Reduced pumping losses
- 136 ps from a 1.6 litre engine
- Manual 6-speed transmission
- Acoustic Control Induction System
- Unique Lotus electronic specification

### Benefits

- Lowest CO<sub>2</sub> per performance for any gasoline high performance sportscar in the world
- Emissions of less than 155 g/km\* – a 15% reduction compared to the previous generation Elise S
- Increased fuel efficiency - combined cycle of 6.14 l/100km (46 mpg)\*
- Increased power for an engine of this capacity
- Improved engine response due to reduced air intake delay
- Closer and more performance orientated ratios than the outgoing 5 speed box.
- Lotus DNA through bespoke ECU mapping

\* Indicated figures are estimates at time of going to press (February 2010)





## Performance Comparison

	<b>Elise</b>	<b>Elise R</b>	<b>Elise SC</b>
0-60 mph (seconds)	6.0*	5.1	4.3
0-100 km/h (seconds)	6.7*	5.4	4.6
0-100 mph (0-160 km/h) (seconds)	18.3*	13.4	10.8
Max speed	124 mph (200 km/h)*	138 mph (222 km/h)	145 mph (233 km/h)
Max power	134 hp at 6800 rpm (136 ps)	189 hp at 7800 rpm (192 ps)	217 hp at 8000 rpm (220 ps)
Max torque	118 lbft at 4400 rpm (160 Nm)	133 lbft at 6800 rpm (181 Nm)	155 lbft at 5000 rpm (210 Nm)
Fuel consumption			
Urban (mpg) (l/100km)	35 (8.07)*	24.4 (11.6)	23.9 (11.8)
Extra Urban (mpg) (l/100km)	57 (4.96)*	45.6 (6.2)	44.1 (6.4)
Combined (mpg) (l/100km)	46 (6.14)*	34.4 (8.2)	33.2 (8.5)
CO <sub>2</sub> Emissions (g/km)	<155*	196	199
Unladen vehicle mass (kg)	876	860	870



\* The Lotus Elise is currently undergoing EC Whole Vehicle Type Approval and therefore the official fuel consumption figures, CO<sub>2</sub> figures and performance figures are not yet available. The official figures for fuel consumption, CO<sub>2</sub> and performance will be published on the Group Lotus plc website as soon as they become available: [www.group Lotus.com](http://www.group Lotus.com) You may also obtain the figures once they become available by contacting Lotus Sales, Group Lotus plc, Potash Lane, Hethel, Norfolk, NR14 8EZ, United Kingdom.

## New Options and Accessories

### Cruise Control

- Included within Elise (1ZR only) Touring pack
- Integrated into centre console and LH stalk control

### Rear Parking Sensors

- Available on all models with the introduction of the new body
- Audio indication for proximity when reverse is engaged
- Optional feature, availability TBA

### Wheels

- New forged wheel (above, right), available as part of Sport Pack on all Elise models
- New standard cast wheel (below, right), available on new Elise

### Black Style Pack

- Black wheels (cast or forged) and black diffuser

### Other options are unaffected

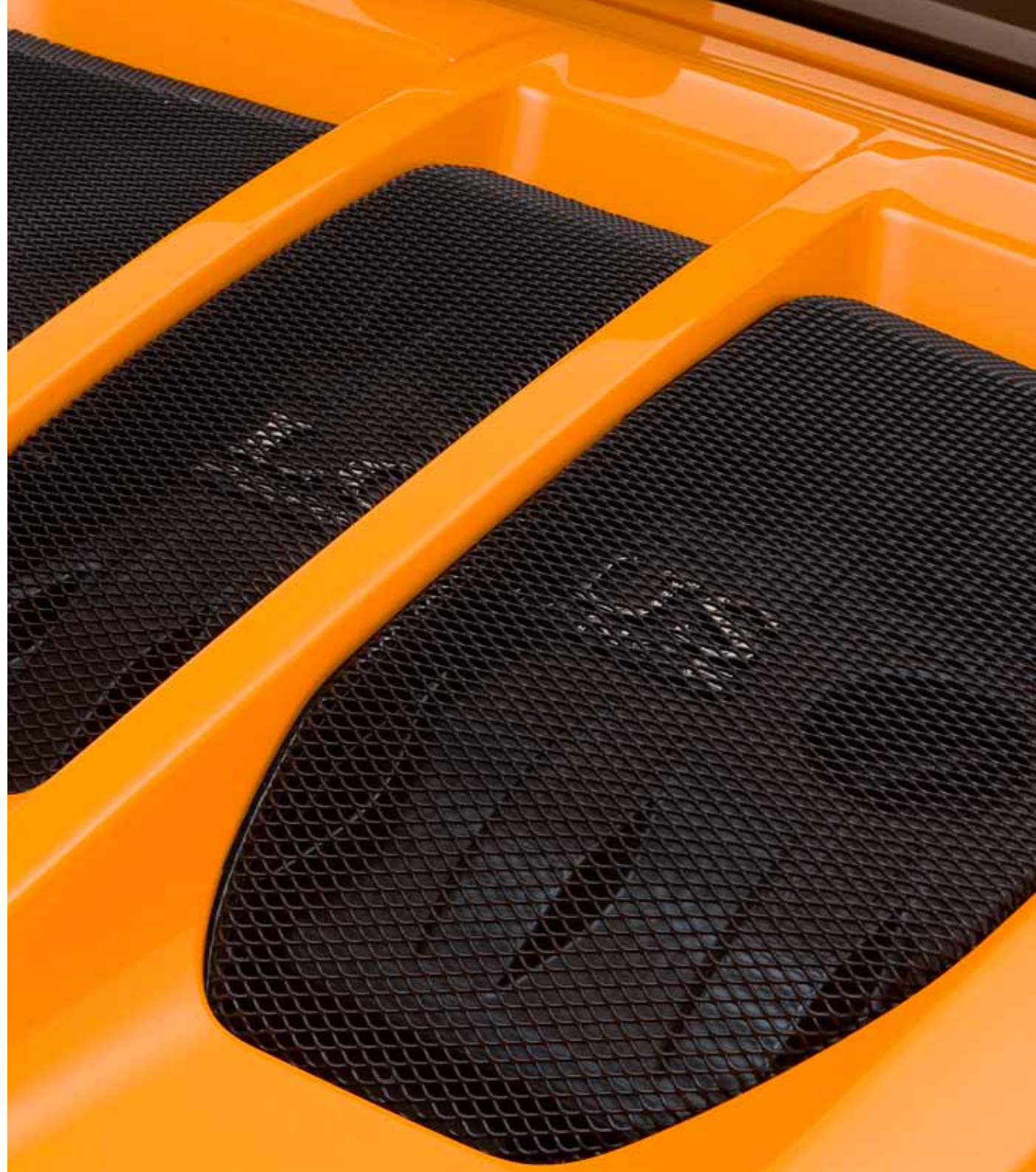
### ASO sports exhaust for the 1ZR Elise is available immediately.

- Approx 7 ps gain in power
- Noticeable improvement to acceleration performance



## Summary

- Facelift for the Elise range
- New base Elise model
- 1ZR Powertrain introduced for the new Elise, offering:
  - Lower CO<sub>2</sub>, through improved powertrain efficiency (<155g/km CO<sub>2</sub> target)
  - Future Homologation protection (Euro5)
- The end of the Elise S (1ZZ-FE engine)
- 3 year/ 36,000 mile warranty introduced across the EU





**LOTUS CARS LIMITED**

Potash Lane, Hethel, Norwich, England, NR14 8EZ  
[www.group Lotus.com](http://www.group Lotus.com)

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