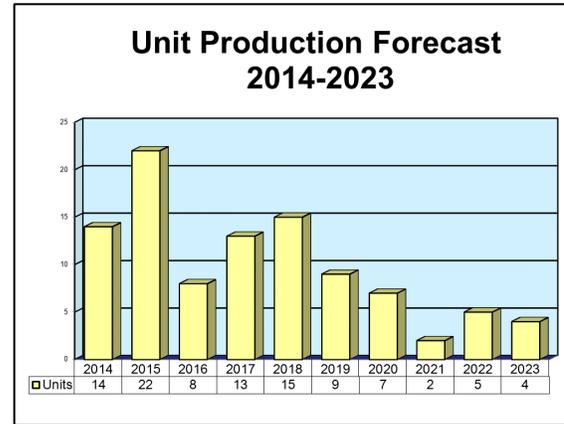


Shorland S Series

Outlook

- Production of S600 series continues on an as-needed basis for export; limited marketing continues
- In 2008, BAE Systems Australia completed its acquisition of Tenix Defence Systems, making BAE Systems the largest defense contractor in Australia
- Production reflects expectations for new orders during forecast period



Orientation

Description. Wheeled armored vehicles.

Sponsor. The contractors have sponsored production of the Shorland S series as private ventures.

Licensees. None.

Status. Development through as-needed serial production.

Total Produced. Through 2013, we estimate the contractors produced 1,469 Shorland S series vehicles.

Application. Light wheeled, multirole armored vehicles optimized for the scout/reconnaissance and armored personnel carrier missions in support of infantry offensive and defensive operations.

Price Range. In 2014 U.S. dollars, the Shorland S55 reportedly maintains an average unit price of \$94,600; the baseline Shorland S600 costs \$155,655.

Contractors

Prime

BAE Systems Australia	http://www.baesystems.com , Taranaki Rd, Edinburgh Parks, Edinburgh, 5111 SA, Australia, Tel: + 61 8 8480 8888, Fax: + 61 8 8480 8800, Email: auswebinfo@baesystems.com.au , Prime
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Subcontractor

Daimler AG	http://www.daimler.com , Mercedesstrasse 137, Stuttgart, 70327 Germany, Tel: + 49 711 17 0, Fax: + 49 711 1722 244, Email: dialog@daimler.com (OM 336 LA Diesel Engine)
Land Rover	http://www.jaguarlandrover.com , B523 Banbury Rd, Gaydon, CV35 ORR Warwickshire, United Kingdom, Tel: + 44 1926 641 111 (Tdi 2.5-Liter Diesel Engine)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Services/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Shorland S Series

Technical Data

Shorland S55

Crew. Two: commander and driver, plus six infantrymen.

Configuration. 4x4.

Armor. Steel alloy armor, providing protection against 7.62mm ball projectiles from 25 meters (27.3 yd), as

well as ballistic fragments. The bottom of the vehicle features glass-fiber reinforcement against the effects of land mines. The engine, radiator, and fuel access points are also armor-protected. The hull profile allows hand-thrown explosive devices to roll off.

Dimensions. The following data are for the baseline Shorland S55 armored personnel carrier. Height is to the top of the vehicle hull.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	4.25 m	13.94 ft
Width	1.81 m	5.93 ft
Height	2.28 m	7.48 ft
Combat weight	3.61 tonnes	3.98 tons
Fuel capacity	136 liters	36.17 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	120 kmph	74.50 mph
Maximum range	635 km	394.40 stat mi
Step	23 cm	9.06 in
Trench	42 cm	1.38 ft
Slope	41%	41%
Gradient	68%	68%
Fording	50 cm	1.64 ft

Engine. Land Rover Tdi 2.5-liter diesel engine. This powerplant generates 79.78 kilowatts (107 hp), with a power-to-weight ratio of 22.09 kilowatts/tonne (26.88 hp/ton).

Early versions use the Rover 3.5-liter V8 engine. This spark ignition engine generates 99.92 kilowatts (134 hp), with a power-to-weight ratio of 27.68 kilowatts/tonne (33.67 hp/ton).

The vehicle features a 12-volt electrical system as standard; a 24-volt system is available as an option.

Gearbox. Rover manually operated gearbox, with one reverse and five forward gear ratios. The drivetrain features a two-speed transfer case.

Suspension and Running Gear. Permanent 4x4 drive system. Each wheel station features a single coil spring, a hydraulic shock damper, and anti-roll bars. The vehicle mounts 9.00x16 run-flat tires.

Armament. One 7.62x51mm NATO (.308 Winchester) machine gun in a pintle mount on the vehicle roof. The vehicle carries 5,000 rounds of 7.62x51mm NATO (.308 Winchester) ammunition.

Several other armament options are also available.

Shorland S600

Crew. Two: commander and driver, plus 10 infantrymen.

Configuration. 4x4.

Armor. Same as the S55. Optional appliqué armor protects against 7.62mm armor-piercing projectiles.

Design Features. Improved, longer and wider vehicle than the earlier S55. Based on the Unimog heavy-duty vehicle chassis.

Shorland S Series

Dimensions. The following data are for the base version of the Shorland S600.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	5.76 m	18.89 ft
Width	2.95 m	9.68 ft
Height	2.69 m	8.82 ft
Combat weight	12.50 tonnes	13.78 tons
Fuel capacity	320 liters	85.11 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	110 kmph	68.31 mph
Maximum range	1,000 km	621 stat mi
Step	50 cm	1.64 ft
Trench	45 cm	1.48 ft
Slope	58%	58%
Gradient	75%	75%
Fording	1.20 m	3.94 ft

Engine. Mercedes-Benz OM 366LA six-cylinder supercharged diesel engine. This powerplant generates 159.58 kilowatts (214 hp), with a power-to-weight ratio of 12.76 kilowatts/tonne (15.53 hp/ton). The 24-volt electrical system features two 12-volt batteries.

Gearbox. Mercedes-Benz UG3/65 manually operated gearbox, with eight forward and four reverse gear ratios. The steering mechanism is hydraulically assisted.

Suspension and Running Gear. Single coil spring and a hydraulic shock damper on each wheel station. Both axles feature pneumatically operated differential locks. The 368/85 R 20 XZL tires can accommodate run-flat inserts.

Armament. One pintle-mounted weapon on the vehicle roof, as per the following options:

- One 7.62x51mm NATO (.308 Winchester) machine gun
- One 12.7x99mm (.50 cal) M2HB machine gun
- One 40mm Mk 19 automatic grenade launcher

The vehicle can also accommodate other armament options.



Shorland S600 Family of Vehicles

Source: Tenix Pty Ltd

Variants/Upgrades

Variants. The Shorland 5 series has spawned the following major variants.

<u>Designation</u>	<u>Description</u>
S55	Basic 4x4 armored vehicle. See Technical Data , above.
S52	Armored patrol car, with manual turret mounting a 7.62x51mm NATO (.308 Winchester) general-purpose machine gun.

Shorland S Series

<u>Designation</u>	<u>Description</u>
S53	Mobile air-defense vehicle, mounting Blowpipe/Javelin/Starburst anti-aircraft missile system.
S54	Anti-hijack vehicle, featuring additional vision blocks and a turret-mounted 5.56x45mm NATO (.223 Remington) HK33 assault weapon.
S600	Improved version of the Shorland armored vehicle. See Technical Data , above. Proposed variants include use as an 81mm mortar platform, command post vehicle, surveillance vehicle, internal security vehicle, airport security vehicle, barricade removal vehicle, and ambulance.

Modernization and Retrofit Overview. Not applicable at this time.

Program Review

Background. The popular Shorland series of light wheeled vehicles dates from the early 1960s with the Shorland Armored Car, a private development program by Short Brothers of Northern Ireland. Based on the well-proven Land Rover chassis, the 4x4 Shorland Armored Car was quite popular, especially with military police and other internal security forces.

In 1973, Short expanded the design with the prototype of the SB301; serial production commenced in 1974. Short continued development of the concept; the further-improved SB401 appeared in 1980. Further development resulted in the S55, one of the best-selling vehicles of its type. Short first offered the S600 in 1995.

Corporate Shuffle

In 1996, Short sold the entire Shorland program to British Aerospace Australia. In 1999, BAA sold the program to Tenix Defence Systems (Barton, Australia).

In 2008, BAE Systems Australia (Edinburgh, Australia) acquired Tenix Defence Systems, making BAE Systems the largest defense contractor in Australia.

Description. The Land Rover chassis serves as the basis for the S series Shorland vehicle; the S55 uses a strengthened version of the improved Defender 110 chassis. The larger and heavier S600, however, uses the Unimog U2150L chassis as its basis.

Conventional Layout

The engine mounts forward on the chassis. Immediately behind the engine compartment, the driver and commander sit side by side in the forward cab. A two-piece hatch cover mounts immediately to their rear, providing access to the pintle-mounted machine gun or automatic grenade launcher on the vehicle roof. Each of the forward cab positions features a side door with bullet-resistant glass; the windscreen is also bullet-resistant.

The rear troop compartment features three firing ports (with vision blocks) on each side of the vehicle. Two rear doors provide troop access/egress; each rear door also features a firing port and vision block.

The interior of the vehicle features fire-retardant materials. Fire extinguishers and an air conditioning system are standard equipment.

S600: Expanding on the Theme

By the early 1990s, Short perceived that a larger version of its Shorland vehicle would be viable on the international market. The Unimog-based Shorland S600 made its debut in 1995. The larger and heavier Shorland S600 is of an extremely flexible design; it can reportedly adapt to almost any customer-desired option. The prime contractor has proposed a line of specialized variants based on the S600.

Related News

BAE Land Systems South Africa Unveils New RG35 MIV Variant – BAE Land Systems South Africa has developed a new motorized infantry vehicle (MIV) variant of its RG35 mine-protected vehicle family.

The RG35 MIV has a larger hull but is similar to the reconnaissance, patrol and utility (RPU) variant that was offered to Canada for its Tactical Armored Patrol Vehicle project. It also has a door on the right side where the spare wheel is mounted on the RPU variant.

The vehicle, which was on display at the Eurosatory show in June, features seating for the driver and co-driver and for six to eight infantry in the back. According to BAE Systems, the RG35 MIV has various weapons options, including a two-man turret or a remotely operated weapon system featuring a 40mm automatic grenade launcher and 7.62mm machine gun.

Shorland S Series

The RG35 MIV weighs 21 tons and is 5.96 meters long, 2.6 meters wide, and 2.4 meters high. The height can be lowered to 2.25 meters for transport purposes, which, together with an empty mass of 14.1 tons, allows transportation by C-130 or similar aircraft. (Defense Web, 4/14)

Bushmaster Vehicles Headed to Japan – Japan's Ministry of Defence has ordered four Bushmaster vehicles for deployment with the Japan Ground Self-Defense Force (JGSDF). This is the first time that Thales is providing platforms to Japan.

The vehicles, all troop carrier variants, will be manufactured at the company's facility in Bendigo, Victoria, in Australia, for delivery in late 2014.

Thales Australia CEO Chris Jenkins said, "This new export order demonstrates the ongoing significance and versatility of the Bushmaster vehicle. With effective operational deployment across Afghanistan and Iraq, the Bushmaster has proven its effectiveness across urban landscapes as well as mountainous regions, making it uniquely suited to Japan's geographic and urban environments." (Thales Australia, 4/14)

Market Intelligence Service Subscribers: For additional news, go to the on-line E-Market Alert page located in the Intelligence Center at www.forecastinternational.com and click on the links to the products you subscribe to.

Funding

The prime contractor funds the development of the Shorland S series vehicles as a private venture.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1963	Development of Shorland light wheeled vehicles begins
	1973	Prototype of SB301 rolled out
	1974	Production of SB301 begins
	1980	SB401 appears on market
	1995	SB601 appears on market
	1996	Short sells Shorland program to British Aerospace Australia
Feb	1997	Kuwait orders S600
Jan	1999	British Aerospace Australia sells Shorland program to Tenix Defence Systems
Jul	2001	Belgium orders S600
	2008	BAE Systems Australia acquires Tenix Defence Systems
	2014	Production line available on an as-needed basis; development and marketing continue

Worldwide Distribution/Inventories

Export Potential. The Shorland vehicles have proved to be excellent revenue earners on the international market. BAE Systems Australia – the latest owner of the program – continues some promotion of the S600. Given the international reputation of the Shorland line and the low-end unit price, the Shorland S series should continue to secure at least a moderate level of export sales.

Countries. The following reflects our information through 2013: **Argentina** (3); **Bahrain** (10); **Belgium** (33 S600); **Botswana** (10); **Burundi** (7); **Cyprus** (8); **Guyana** (4); **Kenya** (8); **Kuwait** (22 S600); **Lesotho** (8); **Libya** (27); **Malaysia** (42); **Mali** (9); **Pakistan** (24 S55); **Papua New Guinea** (10); **Portugal** (24); **Singapore** (2 S600); **Syria** (100); **Thailand** (32); **Turkey** (40 S55); **United Arab Emirates** (16); and **United Kingdom** (120). At least three other users remain unidentified.

Shorland S Series

Forecast Rationale

Open-source reporting indicates that the Shorland S600 production line remains open on an as-needed basis for export orders.

Moving Forward

Although the Shorland series of vehicles are renowned for their ruggedness and reliability, serial production of the S600 vehicle rapidly diminished following its first order in 1999, due in large part to the tumultuous ownership history of the Shorland program throughout the late 1990s and into the 2000s.

Although ownership of the Shorland program has now stabilized under the ward of BAE Systems Australia, the years lost to ownership struggles have detrimentally impacted the long-term market potential of the S600 vehicle.

Nevertheless, production of the Shorland series should now be able to continue without hindrance through the forecast period.

The Forecast International Weapons Group anticipates that production of the S600 series will continue through the forecast period on an as-needed basis in order to meet modest demand on the export market.

Promoting the S600

The greatest asset of the Shorland S600 design is its operational flexibility. The model reportedly is capable

of being adapted to fulfill almost any customer-desired requirement and is suitable for use in both military and law-enforcement capacities.

Taking this primary strength into consideration, and hoping to capitalize on the surge in demand for heavily armored patrol vehicles on the international market, the prime contractor has developed a multitude of specialized S600 series variants in order to meet the varied requirements of international customers.

Banking on Reputation

The prime contractor retains expectations that the S600 Shorland vehicle line will secure a modest quantity of export sales through the forecast period.

Although the international market for armored vehicles has grown increasingly crowded in recent years, the proven lineage and distinguished performance history of the Shorland series have allowed the brand to maintain some of its unique allure despite its many market challenges.

In addition, the Shorland S600 boasts a highly favorable unit price relative to many of its market competitors, opening the vehicle up to a broad cross-section of potential customers.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program	High Confidence					Good Confidence			Speculative			Total
	Thru 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
BAE Systems Australia												
S55/S600												
	1,469	14	22	8	13	15	9	7	2	5	4	99
Total	1,469	14	22	8	13	15	9	7	2	5	4	99