Geo Factsheet

www.curriculum-press.co.uk Number 199

# Water issues in the Middle East

**Introduction**

The Middle East is shorter of water than most places, and getting shorter all the time. The region faces drought every few years. There are few unexploited sources of fresh water. It is not just the cost, but dealing with neighbouring countries, that creates problems in developing water resources.

Farming uses at least 80% of the region's water. In addition, population growth and rising standards of living increase the demand for water. Some cities such as Amman in Jordan, ration its piped supplies, and unrationed drinking water from tankers costs more than the poor can pay.

What water there is in the region is frequently in dispute. The area's biggest rivers rise from sources outside the Middle East, and the division of their waters is already quarrelled over. The only formal treaty in the region is a 1959 agreement on the Nile between Egypt and Sudan. Downstream states fear that their upstream neighbours may divert the headwaters.

In spite of many headlines on Water Wars, war is improbable. One reason is that in each of the three most disputed river basins, military power is not evenly balanced: one country is strong enough to get its own way, or most of its own way. In the Nile and Jordan basins, the dominant countries, Egypt and Israel, are downstream but through threat or military occupation have seen to it that upstream states leave the flow of the water alone. In the third dispute, over the Euphrates, Turkey is upstream-and strong enough to do what it wants despite the protests of downstream Iraq and Syria.

***Case Study 1: The Euphrates – a transnational river***

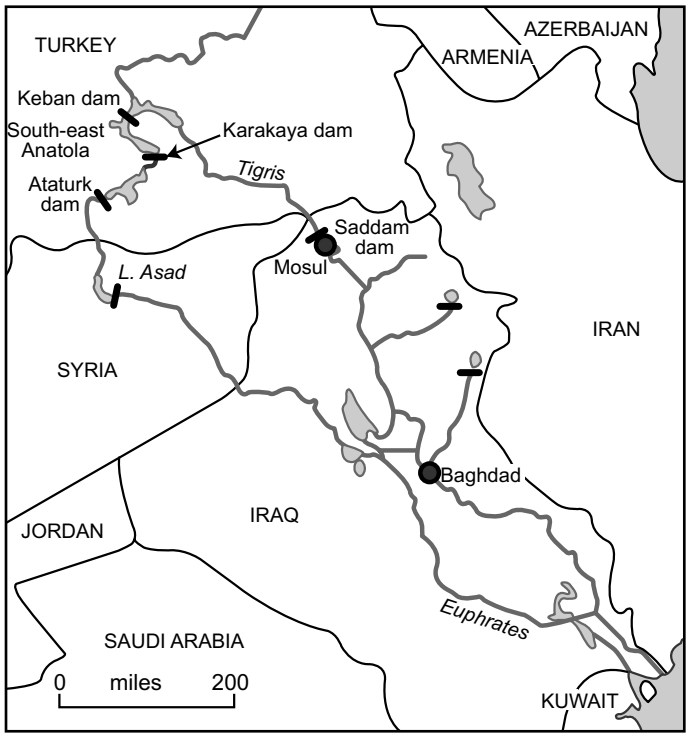
*Here, a powerful upstream state is determinedly diverting the flow of the river and the affected states downstream, weaker and quarrelling with each other, can do nothing about it. The Euphrates and the Tigris both rise in Turkey, in the hills of eastern Anatolia: the Tigris then gathers about half of its water from the mountains of northern Iraq, but the Euphrates remains 90% Turkish-supplied. This gives Turkey, an obvious advantage and, unlike Ethiopia and the Nile, Turkey can exploit it (Fig. 1).*

*Turkey is now embarked on a vast irrigation project in south-eastern Anatolia. If completed, this scheme could reduce Syria's and Iraq's share of the Euphrates by 40% and 60% respectively. Syria, which is shorter of water than Iraq, would be particularly badly hit. During the 1960s, Turkey began building a series of dams on the Euphrates, to generate electricity and increase the amount of farmland in the south-eastern Anatolia (the GAP Project). This culminated in 1990 with the completion of the Ataturk dam, which is 200m high and more than a 1.5km long. Before the dam was completed 30 cubic kilometres of water passed along the Euphrates each year. The dam has reduced that flow by almost a half, to 16 cubic kilometres a year - much to the annoyance of neighbouring Syria.*

*As Turkey began work on its dams, Syria was developing ambitious plans to harness the river for irrigation and electricity. The Thawra ('Revolution') dam at Tabaqa created an artificial lake 80 km long holding 12 billion cubic metres of water. Although Syria has had some success with power generation it has been less successful with irrigation. It has been trying to do this on poor saline land, with the result that irrigation gives bad yields.*

*In the early 1990s, reduced flows of Euphrates water from Turkey led to severe problems for Syria's electricity industry. Syria claims - with some justification - that it has been harmed by Turkey's use of the Euphrates, but its own behaviour has not been much better. On the Orontes, a much smaller river, it prevents all the water from flowing into Turkey.*

***Fig. 1 The Euphrates River.***




*Syria's construction of the Thawra dam angered Baghdad by reducing the amount of Euphrates water downstream. In 1974 Baghdad threatened to bomb the dam and moved troops to the border. In 1998 Syria and Iraq agreed to work together against Turkey's activities on the Euphrates and the Tigris, leading to a boycott of companies involved in the GAP project.*

***Case Study 1: The Euphrates – a transnational river (continued)***

*The proposed Ilisu dam is part of Turkey's Southeast Anatolia Project (GAP) is a scheme planned to revitalise the economy of the south east of the country. Eventually 22 dams in the Tigris and Euphrates rivers will provide irrigation and hydroelectric power to transform the local economy. However, in 2002 the people of Hasankeyf and the surrounding area won an important victory when a large campaign forced the British company Balfour Beatty and other European companies to withdraw from the project. Nevertheless, Turkey still has plans to develop the dam.*

*The south-east is Turkey's poorest region. The dam will bring jobs and the government plans to pay generous compensation to those displaced. However, in the feudal society of south-east Turkey, most of the land belongs to a few powerful landlords who stand to collect huge compensation sums. Most people will join the flood of migrants from the region to the suburbs of the large Turkish cities.*

*The dam's main function will be to produce hydro-electric power. Another advantage is better irrigation for local agriculture. However, irrigation benefits are likely to go mainly to already rich big landowners, not to poor small farmers near the river who will lose everything.*

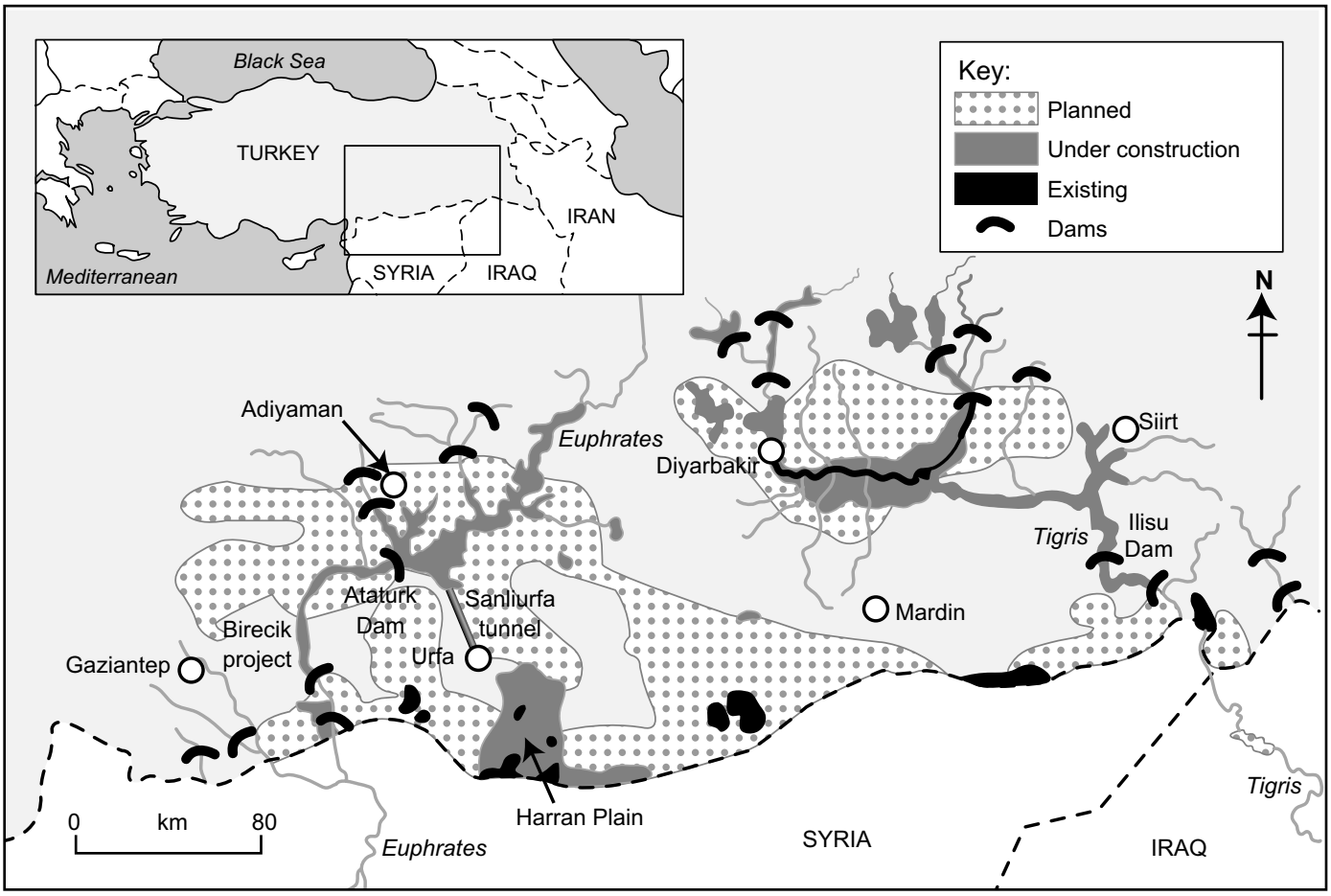
*The dams will allow Turkey to control the flow of water to Syria and Iraq and give the Turkish government important political leverage in the Middle East. Syria and Iraq have already protested at the threat to their water supplies and there are fears that GAP could spark a regional war.*

*The World Bank has refused to finance the Ilisu dam because of social and environmental concerns, as well as worries of conflict with the southern neighbours. For example, the completed Ataturk dam has already affected more than 50,000 people. The Ilisu dam will submerge 50 villages and displace 20,000 people. Hasankeyf is one of the oldest settlements in the world will be submerged. Archaeologists are undertaking emergency excavations to find what they can before the dam is built.*

*Recent precedents do not bode well: there are no examples of dam projects in Turkey where people have been happily and successfully resettled with acceptable compensation. The possibility of large numbers of ancient buildings being carefully transferred and rehoused without significant damage is low. Moreover, the dam will have a life of only fifty to seventy-five years because of sitting.*

*By the time the Euphrates reaches Iraq the quality of its water is relatively poor and, as in Syria, irrigation gives low crop yields. Before the invasion of Kuwait in 1990, Iraq was importing 90% of its food. About 70km north of Basra, water from the Tigris merges with the Euphrates in the region that was once famous for the Marsh Arabs, who lived in reed houses built on stilts. This 20,000 km² wetland was home to 250,000 Marsh Arabs though today, as a result of drainage and persecution, only 40,000 live there. Draining of the marshes was viewed as a way of punishing the people for their opposition to Saddam Hussain. The reduced flow in the Euphrates means that it will be difficult to restore the wetlands in the south of Iraq.*

***Fig. 2 Planned water developments in the Upper Euphrates and Upper Tigris.***



***Case Study 2: Managing the Jordan***

*The Jordan River is in danger of drying up after decades of conflict and intense agricultural use. In the early 1960s, the Jordan moved 1.3 billion cubic metres of water every year from the Sea of Galilee to the Dead Sea. But dams, canals and pumping stations built by Israel, Jordan and Syria to divert water for crops and drinking have reduced the flow by more than 90 percent to about 100 million cubic metres. The dramatic decline in the Jordan is the main reason why the Dead Sea is also vanishing. The level of the world's saltiest large body of water is falling by a metre each year and the sea could disappear by 2050.*

*On a per capita basis, Jordan has one of the lowest levels of water resources in the world. Most experts consider countries with a per capita water production below 1,000 cubic meters per year to be water-poor countries. By 2025 water availability per capita will fall from 200m³ person to 91m³ per person.*

*Almost all the tributaries that feed into the Jordan have been dammed or diverted, turning the river into a heavily polluted stream in parts, especially in summer. In the 1950s, Israel built a pipeline to pump water out of the Sea of Galilee, stopping its flow into the Jordan. Jordan then constructed a canal in the 1970s to divert water out of the Yarmouk River, a main tributary of the Jordan, to water its farmland.*

*The Jordan is fed by headwaters and tributaries rising in Lebanon, Syria, Jordan and Israel. Its total flow is only 1% that of the Nile. However, most of the flow from the Upper Jordan and its tributaries is stored in the Sea of Galilee, whence it is borne by Israel's national water carrier to Israel's cities, farms and deserts (Fig. 3).*

*When Jordan's last major potential water sources, Disi groundwater and the Al-Wuheda dam, are fully developed, there will be no alternatives except the use of non-conventional water resources and/or importation of water from other countries.*

*Surface water resources are dominated by the Yarmouk and Zarqa Rivers, which provide the majority of the irrigation water for the Jordan valley. Irrigation in the Jordan valley in the past has been made possible only by large-scale public investments in water diversion such as the East Ghor Main Canal (EGMC) and water storage dams, including the King Talal and the Wadi Arab, to utilise the potential of surface water resources.*

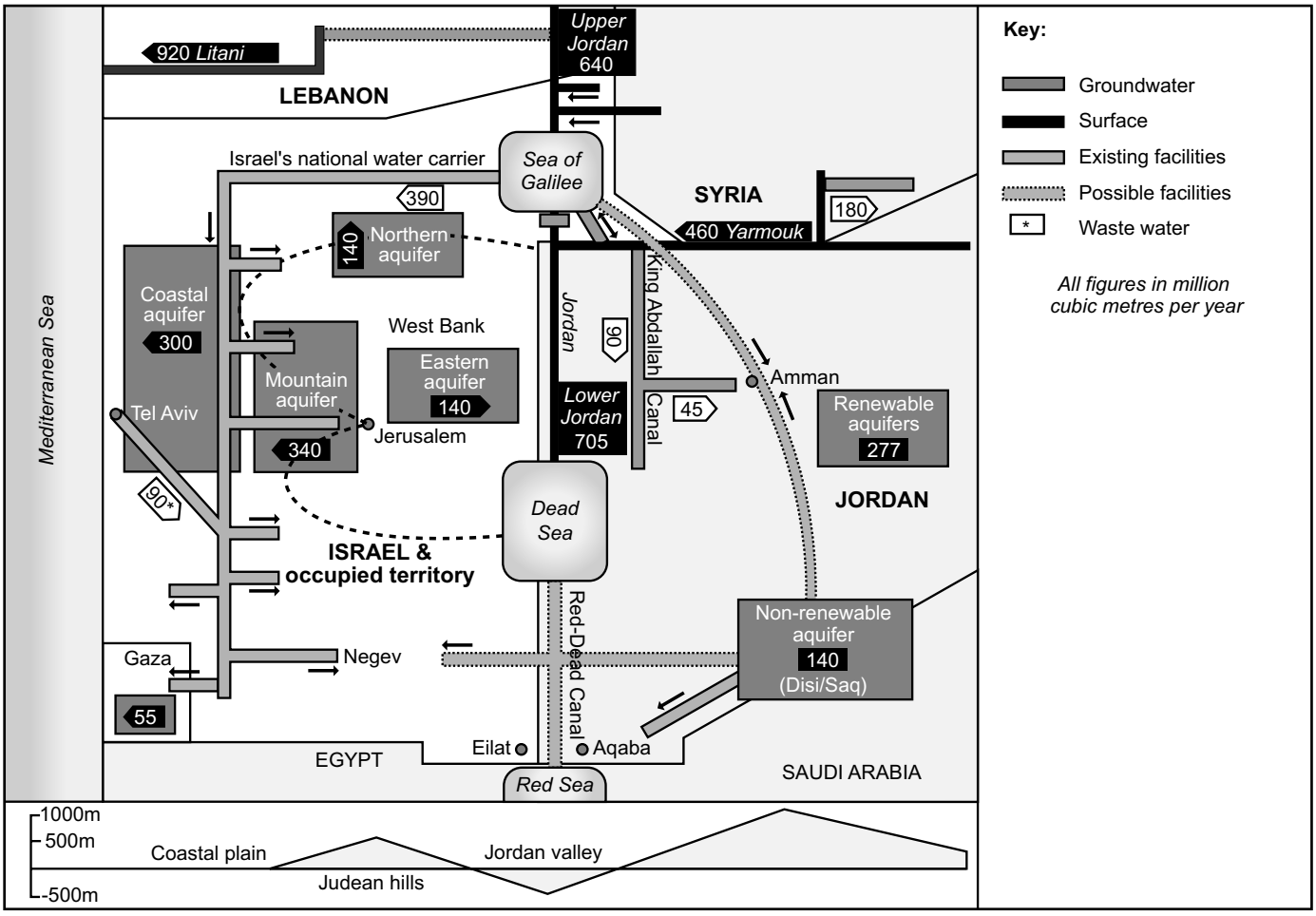
*The Yarmouk River, which has a mean discharge of 400 million m³ per year, provides almost half of Jordan's surface-water resources. The water in this river, after allowing some 17 million m³ per year for downstream users in neighbouring countries, is diverted through the EGMC, an irrigation canal that runs along the Jordan River to serve agricultural water needs in the Jordan valley.*

*The 1995 peace treaty between Jordan and Israel called for the rehabilitation of the river, but little has been done. As part of the Israeli-Jordan peace process, Israel agreed to provide Jordan with 150 million cubic meters of water per annum. This will be supplied by:*

- *diverting water*
- *building new dams and*
- *desalinisation.*

*Other possibilities include using the Litani and Awali rivers in Lebanon, cutting back on agriculture, and creating a regional water market whereby people pay for the water they use.*

***Fig. 3 Water supply in Israel and Jordan.***



***Case Study 3: Managing Israel's aquifers***

*For decades Israel has obtained up to 80% of the 670 cubic metres provided by the mountain aquifer. This aquifer is mostly located under the West Bank. The Israelis have occupied the West Bank since 1967 and have prevented the Palestinians from obtaining better access to the resource. The mountain aquifer is important for Israel as it provides*

- *one-third of its water consumption*
- *4% of its drinking water*
- *50% of its agricultural water.*

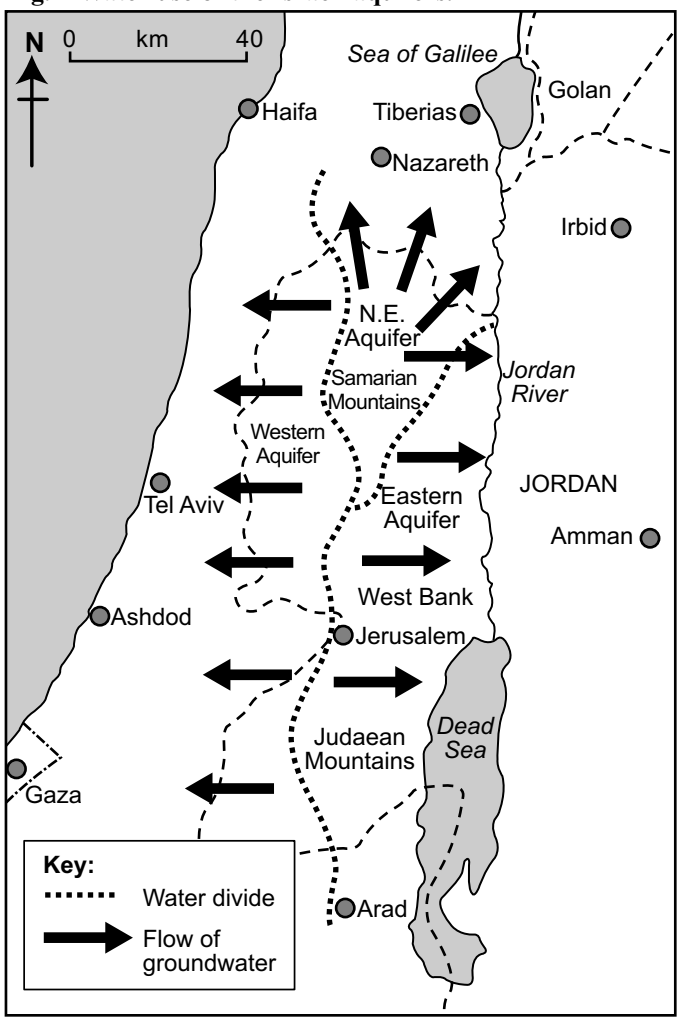
*The 120 000 Jewish settlers in the West Bank use about 60 cubic metres annually compared with the 137 million cubic metres used by 1.5 million West Bank Arabs. In addition the West Bank settlers irrigate 70% of their cultivated land, compared with just 6% of Palestinian land.*

*The West Bank, and Gaza, are served by Israel's water carrier and, more importantly, the groundwater in the region's aquifers. The West Bank's aquifers, replenished by the rainfall on its hills, flow west, north and east from the central watershed (Fig. 4). The eastern aquifer lies entirely within the West Bank, providing water for Palestinians and Israeli settlers; its usefulness is tempered by the fact that the main population centres are central or to the west.*

*Israel's 5.5 million people consume three or four times as much water per head as the 2m Palestinians. Forbidden to dig new wells or deepen old ones, Palestinians were kept very short, particularly for their crops (industry, under military occupation, barely existed).*

*What is bad in the West Bank is usually worse in Gaza; and water, or rather the lack of it, is no exception. The Gazans, like the West Bankers, get a little domestic water from Israel's national carrier but most of their meagre supplies come from an aquifer that has been grossly exploited and is in a badly dilapidated state. The Gazans pump out about twice as much as can be safely withdrawn. Seawater creeps in, making the water so saline that it kills the citrus trees.*

**Fig. 4 Water use of the Israeli aquifers.**




## The way forward?

Reallocation of water between countries can never make more than a minor contribution to the Middle East's overall water shortage. Reallocation between uses could make a difference. More than 80% of the Middle East's water goes on irrigating crops: if 10% of this were shifted to domestic and industrial use, governments might be on the way to meeting the increased demands from their towns and cities.

Ultimately the Middle East has two options: increase supplies by developing non-conventional resources; and/or change the way they use the water that they have. Finding untraditional new supplies, however difficult, is easier. Desalinating seawater or brackish water is an obvious, but expensive track. Waste water is much more promising. Half the water used in households could, if treated, be used again for irrigation. The trouble in many Arab towns is that there are virtually no facilities for collecting or treating waste water.

Farming is the main culprit. Here, water could be saved by innovative techniques. Israel, for example, has shown the way: doubling its yield for half the water. It achieved this partly through new methods, partly through changing the crops to be grown, and switching to high-value flowers or vegetables grown under glass. It makes no economic sense for countries that depend on irrigation to grow low-value food with high water needs.

But switching crops is only a start. Some experts now call for more fundamental changes in the Middle East's rural life. Water-short countries can best help themselves by importing cheap food grown with cheap water: instead of using their scarce and costly water to grow their own food, they can get 'virtual' water through world trade. It costs them less, and their water resources can be better used: the water that provides the livelihood of one farming family can keep ten non-farming families going.

Water remains one of the most widespread, sensitive and unsolvable problems in the Middle East. Water is inseparably bound up with the Arab-Israeli conflict, the conflict over who controls the Jordan river, and increasingly, the Nile, Tigris and Euphrates.

## Further Reading

*Rivers and water management*, G. Nagle (2003) Hodder
*Water wars,* M. de Villiers (2000) Weidenfeld and Nicolson

**Acknowledgements**
*This Factsheet was researched by Garrett Nagle, a well-known author.*
***Curriculum Press, Bank House, 105 King Street, Wellington, TF1 1NU. Tel. 01952 271318.***
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***ISSN 1351-5136***