

How Can Menorca Progress Towards Sustainable Transport?

Discussion Paper

January 2002

Version 3

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Contents	Page
1. INTRODUCTION	1
2. MENORCA'S TRANSPORT AS SEEN FROM A DISTANCE	2
3. COMPARISON OF ISLANDS.....	4
4. SUSTAINABLE TRANSPORT	8
5. ACCESSIBILITY	10
6. REQUIREMENTS	12
7. REVIEW OF OPTIONS.....	13
8. CONCLUSIONS	17

1. INTRODUCTION

- 1.1 Kilsby Australia is a consulting firm specialising in transport policy, planning and management¹. Our base is in Sydney but our experience² is international.
- 1.2 In this paper we put forward some thoughts on the transport future for the island of Menorca. The paper has been prompted by a challenge, from a Menorcan resident, to suggest how the damage to sustainability from the island's transport could be reversed.
- 1.3 These thoughts have been generated by perceived connections between a number of separate fields in which we are active, including:
- *Sustainability* – its meaning, effective strategies
 - *Behaviour Patterns* – what people actually do
 - *Car Dependency* – its reduction
 - *Transport Energy* – future price and availability
 - *Islands* – their special constraints and opportunities
 - *Integrated Transport Planning* – all modes, land use, funding
 - *Transport Technology* – established and emerging systems
- 1.4 The long-term outlook for transport in Menorca is not good if current trends continue. We offer these thoughts to the island community in the hope of adding something useful to the debate and to the search for an acceptable future for the island's transport.
- 1.5 A basic profile of the island will be found at the end of this paper, for anyone interested in sustainable transport but unfamiliar with Menorca.

2. MENORCA'S TRANSPORT AS SEEN FROM A DISTANCE

- 2.1 With an island visit still in the future, we have relied so far on data from secondary sources and on anecdotal evidence. The issues that we have been able to identify include those listed below. We expect that there are others of which we are not aware.
- 2.2 *Car ownership*: this is extraordinarily high in Menorca, practically at saturation level. The availability of a car usually makes it the automatic choice for all personal transport requirements.
- 2.3 *Parking constraints*: a car is a large physical object that requires storage (parking) when it is not in use. The amount of parking space in public areas is limited. A car is not so convenient if it cannot be parked.
- 2.4 *Erosion of public domain³*: car use is destroying the amenity and accessibility of public space, particularly in the historic centres of Mahon and Ciudadela. Enjoyment of the squares and narrow roads on foot without being squashed, hooted at and asphyxiated by traffic seems a requirement for civilised life.
- 2.5 *Unsafe roads* : the mismatch between high car use and a relatively undeveloped road system gives rise to a high number of accidents, producing human tragedy and financial costs alike.
- 2.6 *Motor bikes* : these are usually perceived (and rightly) as dangerous, noisy and smelly. If these three attributes were addressed, the motor bike could be an economical element in the island transport system. Low-powered bikes give independent mobility to adolescents otherwise too young for a driving licence.
- 2.7 *Tourists* : during the summer season the island population more than doubles with visitors, many of whom hire cars. A substantial number of UK visitors unused to driving on the right is an extra safety hazard during this period, both for residents and the visitors themselves. More than a million people a year visit the island.
- 2.8 *Coastal development*: one of Menorca's prime assets is its environmental quality, with many secluded coves and beaches around the coast being potentially attractive to visitors. The management of this asset is a challenge, as providing car access to such locations tends to nullify the reasons for potential development.
- 2.9 *Land use structure*: the two principal urban areas on the island are at opposite ends, with one inadequate road linking them, prone to congestion and accidents (especially in the tourist season).
- 2.10 *Activity corridor*: the main inter-urban road on the island is also the spine for activity as most inland development lies on this route (Alaior, Mercadal, Ferrerías). Access

to practically all coastal development outside the main urban areas is also from this central spine.

- 2.11 *Seasonal influx of vehicles:* The resident car fleet is boosted by additional for-hire vehicles from the mainland during the tourist season and by ferry-borne visitors with cars, increasing the pressure on scarce road space and parking.
- 2.12 *Institutions:* It is unclear to us how responsibility for the performance of the island's transport is split between the EC in Brussels, national government in Madrid, autonomous government in Palma and organisations on Menorca itself. It is also unclear how the funding of transport is related to desired outcomes.
- 2.13 *Reserva de la Biosfera:* In 1993, Menorca was officially designated a Biosphere Reserve⁴ by UNESCO. The island is now an international reference for sustainable development. Protected areas occupy 46% of the surface area and another large proportion is represented by the singular agricultural landscape with World Heritage value as a cultural landscape. The island's transport does not reflect this status.
- 2.14 *Energy security*⁵: all fossil-fuel energy used in Menorca has to be imported. The island is vulnerable if the price of fossil fuel on the world market goes up or its availability goes down (or both). The Renewable Energy Plan⁶, a key part of the Sustainable Development Plan, seems to be formulated around stationary uses of energy rather than mobile ones.
- 2.15 *Behaviour:* The dominance of the private motor car in the island transport scene stems from the outstanding privacy, power and convenience benefits that car use brings. Alternatives which cannot compete with this will continue to lose out.

3. COMPARISON OF ISLANDS

3.1 Menorca is a small island, and Australia is a very big island. Comparison of the two could involve much that is irrelevant. Nevertheless, the simple tables below give an unusual external perspective on transport in Menorca.

Table 1 – Comparison of Menorcan and Australian Geography/Demography

	Menorca 1999	Australia 1998
Area (km ²)	700	7,687,000
Population	69,000	18,872,000
% in urban areas	64% ¹	64% ²
Overall density	1.0 person/ha	0.02 person/ha
Urban density	Not known	12.2 person/ha ³

¹ Mahon, Ciudadela

² Capital cities – Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart, Canberra, Darwin

³ From "Sustainability and Cities", Peter Newman & Jeffrey Kenworthy, 1999

3.2 Clearly there is a massive difference in scale. But the distribution of population between urban and non-urban areas is the same in both cases, which suggests that at the broadest level per capita comparisons may have some relevance. The major differences suggest further conclusions. For instance, because of the greater distances in Australia, one would expect car dependency to be much higher.

3.3 Even Australian urban areas, a tiny fraction of the continent, dwarf the island of Menorca. Figure 1 compares the size of Menorca with urban Sydney.

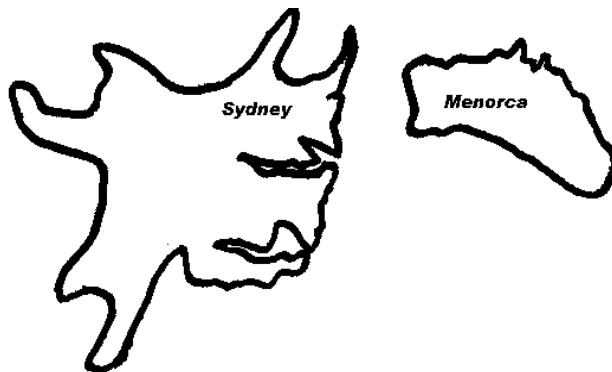


Figure 1 – Comparative sizes of Menorca and urban areas of Sydney

3.4 The five biggest Australian cities also have urban railways, and in Melbourne's case tramways as well. However for our comparison their existence is not relevant - rail carries about 5% of weekday trips in Sydney, and less elsewhere.

- 3.5 Given that the balance between urban and non-urban areas is similar in Menorca and Australia, it seems acceptable to make vehicle fleet comparisons on a per capita basis as shown in Table 2.

Table 2 – Comparison of Menorcan and Australian Motor Vehicle Fleets

Vehicle (000)	Fleet	Menorca 1999	per 1000 population	Australia 1998	per 1000 population
Cars		49.5	717	9,527	505
Motorcycles/motos		5.8	84	329	17
Commercial vehicles		7.7	111	2,147	113
Buses		0.2	3	64	3
Other		0.5	8	-	-
All Vehicles		63.8	924	12,067	639

- 3.6 For commercial transport – and buses – the per capita vehicle provision of the two islands is practically the same despite the differences of scale.
- 3.7 For personal transport, the picture is very different. Car registrations per capita in Menorca are over 40% higher than in Australia, and there are five times as many powered two-wheelers per capita – a total of 53% more private motor vehicles per capita. Australian national car ownership rates are considered very high by world standards but Menorcans have a much higher provision of private vehicles. More vehicles do not necessarily mean greater mobility, if congestion and parking shortages limit the potential use of the vehicles.
- 3.8 This excludes cars registered off-island. Some 16,000 vehicles enter and leave the port of Mahon annually. While some will be island cars going to the mainland and back, the majority belong to incoming visitors or extra hire cars for the summer peak.
- 3.9 It has not proved easy to get a simple answer to the simple question “How many people are killed and injured on the roads in Menorca per year?” It is surprising that such a serious and partially preventable public health hazard is apparently not officially monitored in more detail than the provincial total (dominated by Mallorca). From indirect sources we estimate⁷ that the annual road toll for Menorca is in the order of 16 fatalities per year. Data for the whole Balearic province show 30 injuries for every death.
- 3.10 This is a level of danger for Menorca far higher than that for Australia. However, the balance between urban and non-urban population is comparable, as has been noted. The distribution of fatalities in Australia and in Spain (nationally) between vehicle users (drivers and passengers), motorcyclists and vulnerable road users (pedestrians and cyclists) is also similar⁸. Conclusions from a breakdown of

Australian road deaths into where they occurred and who they affected (Table 3) may also have some validity for Menorca.

Table 3 – Road Fatalities in Menorca and Australia

	Balears 1999	Menorca (estimate)	Australia 1998		Total
			Urban	Non- Urban	
Vehicle Users			511	703	1214
Motor Cyclists			112	69	181
Vulnerable Road Users			304	59	363
All	153	16	927	831	1758
Per 1000 population	0.192	0.233	0.077	0.122	0.093

3.11 It can be seen that in Australia car drivers and their passengers are more likely to perish on the open road (where just over 30% of national car travel occurs) than in towns and cities, but in towns and cities they also kill many pedestrians and cyclists. Combined accident data can hide the extent of danger to people walking and riding bicycles in urban areas – activities that threaten nobody. It is social acceptance of the pre-eminence of the automobile that endangers, seriously injures and kills walkers and cyclists, not “bad luck”.

3.12 The importance of tourism to the economy of Menorca is evident from Table 4. This brings major opportunities (a healthy base for future development) but also major constraints (tourist numbers swamping available infrastructure and services).

Table 4 – Comparison of Menorcan and Australian Tourism Intensity

	Population (000)	Non-Resident visitors at height of peak (000)	Visitors per resident	Comment
Menorca	70 (2000)	102 (2000) - less than half were in registered tourist beds	1.46	Reported in <i>Diario de Menorca</i> 2/6/01
Australia	18,872 (1998)	461 (1999)	0.02	Visitor total for month of December (busiest month)

3.13 Mahon airport and ferry terminal, and to a lesser degree the ports of Ciudadela and Fornells, are critical gateways for tourist transport. Some 2.6 million travellers a year enter or leave by the airport, with over 450,000 in the busiest month (August). Nearly three quarters of foreign air visitors are British. Some 125,000 passengers a year enter or leave by the Port of Mahon, with over 40,000 in the busiest month (also August).

- 3.14 From an Australian perspective, the general picture of Menorca is one of an island with high private motor vehicle density, poor safety, no credible alternative to car use and a car-dependent summer tourism sector a vital part of the local economy. This does not seem a recipe for sustainability.

4. SUSTAINABLE TRANSPORT

4.1 Sustainability⁹ is a difficult concept, it means different things to different people. There is considerable debate about whether it should be interpreted as a relative or an absolute. Pragmatists favour a relative interpretation, and concentrate on improving accessibility and on reducing the environmental impacts of transport. Purists favour a target-driven approach, arguing that sustaining the unsustainable postpones crisis but makes it harder to deal with when it does eventually come.

4.2 Our view is that transport is but one of the functions that society encompasses, and sustainability is a concept that applies to society as a whole rather than transport specifically. "A sustainable society is one which can function and change and adapt without damaging its capacity to further renew itself."¹⁰

4.3 The Warren Centre for Advanced Engineering at Sydney University is nearing the end of a substantial three-year inquiry into "Sustainable Transport in Sustainable Cities"¹¹. It is expected to report before mid 2002. In its early stages this probed extensively into what sustainable transport actually meant (if anything) and in what areas policy development should concentrate. This led to five distinct areas being prioritised. The applicability of the framework they provide is not limited to cities. The five elements are:

- community values
- education/awareness
- technology
- land use
- institutional/legal arrangements

4.4 How would Menorca rate in these five areas? Here our opinion is of no more value than that of any other remote observer, but from a distance the picture appears to be:

- *community values*: a society that is wedded to the car but increasingly unhappy about the effects of that relationship;
- *education/awareness*: no significant leadership effort to change resident or visitor perceptions of transport choices and their consequences;
- *technology*: reliance on traditional automotive technology;
- *land use*: no attempt to integrate transport provision with the unusual land use structure of the island, where Mahon and Ciudadela provide anchors at each end of a link joining several inland towns and to which most coastal settlements are or could be connected; and

- *institutional/legal arrangements*: a hierarchical public sector, with resources and skills inversely proportional to local knowledge, an active private sector pursuing purely commercial objectives, and little relation between economic transport costs and financial transport charges.

4.5 It is not only the framework adopted by the Warren Centre inquiry that is relevant for Menorca. Most of the strategies that are emerging are also highly relevant. It is premature to describe their final form, but broadly they will cover the six areas of:

- *community support*: increase in the community's "ownership" of their transport future through more involvement, in the sense of commitment to making it work.
- *system management*: better management of what is already there, for functional accessibility rather than mobility.
- *land use and transport*: modification of the form and structure of the city. This is perhaps the least applicable strategy to Menorca as its structure has been inherited from centuries past. The problem is that the transport system evolved over the last few decades does not complement this older structure well.
- *accessibility*: modification of the transport system to improve ability to reach places, especially by walking and other relatively sustainable modes, rather than just ability to move
- *change*: reduction of the intrinsic inertia of present arrangements, to make it easier for things to change.
- *performance*: monitoring and reporting on performance in a relevant way.

5. ACCESSIBILITY

- 5.1 “Transport is a derived demand”. This is one of the basic truths for transport planners. In general people do not use transport for its own sake, but to get somewhere to do something. For goods, the issue is moving something to the right place for a purpose. Transport provides mobility, but mobility is only the means to an end. The end is accessibility.
- 5.2 Accessibility can be improved by greater mobility (making it easier to move around), but also by greater proximity (putting things closer together) or greater substitutability (doing things without requiring travel – for instance remotely by electronics).
- 5.3 Accessibility is a fairly specific concept. We should really talk about accessibility to something (a specific type of activity) for somebody (a specific type of person) by something (a specific means of transport). One person’s accessibility may be another person’s inaccessibility, when “improvements” are monopolised by one social group or another. Keeping the traffic moving in towns by ever-escalating use of roundabouts, for instance, can make it much more difficult to move around on foot or by light vehicle (bicycle or moto).
- 5.4 Even accessibility by car may not necessarily be to the advantage of the car owner. In Sydney in 1999, some 20% of weekday person trips and 17% of weekend person trips were for the purpose of “serve passenger”, i.e. taking somebody else somewhere to do something that (in many cases) they could not reach by other means. This is just the privatisation of what used to be a public task.
- 5.5 There are many groups of transport users, including residents of all types, island businesses and visitors. People travel in order to do things, not for the sake of travelling. Therefore being able to carry out the functions which give rise to travel is more important than just being able to move around by car ... To illustrate this point, a scan elsewhere¹² of transport functions has suggested that planning should think about personal travel, goods movement and service provision separately, and that a relevant framework might be as shown in Table 5.
- 5.6 Accessibility *to* transport rather than *by* transport may be an issue for some transport users. Sometimes the design of transport systems – including the pedestrian environment - can discriminate against its use by people with various physical, sensory, intellectual or social difficulties. It is often as much effort to design for exclusion, without thinking, as it is to design for inclusion. “Universal design” principles¹³ are essential to maximise usefulness.

Table 5 Functional classification of transport tasks

Class	Principal functions	Examples
Personal travel	Access primary activities	Work Education
	Access personal maintenance activities	Shopping Medical Exercise
	Access experiences	Leisure Social visits Tourism
Goods movement	Make goods	Manufacturing Construction
	Distribute goods for consumption	Deliveries
	Export goods	Bulk products Perishables Manufactured products
Service provision	Respond to emergencies	Fire fighters Police Ambulances
	Maintain infrastructure	Waste disposal Tradespeople
	Support economy/society	Trips at work, eg couriers “Serve passenger” trips

6. REQUIREMENTS

- 6.1 If Menorca is ever to loosen the grip of car dependency, it seems to require the encouragement of walking and cycling for short trips plus a complementary transport system with the following ideal characteristics.
- 6.2 Like any transport system it should be safe, reliable, affordable to use and capable of handling peak demand. To be competitive with the car it should also be available 24 hours a day, be flexible in its timing and offer access to most areas of the island.
- 6.3 It should be available for use by the greatest number of people, to the greatest extent possible, without any need for adaptation.
- 6.4 The system should be able to meet the travel needs of island visitors as well as residents, and to support the tourism industry through its character and integration with tourist developments.
- 6.5 The system should not depend on consumption of fossil fuel. Ideally power generation should come from renewable sources available locally. If electricity is generated off-island and transmitted by submarine cable – as is planned - the sustainability of power generation becomes a general issue and not one specific to Menorca.
- 6.6 The whole transport system should be less profligate with physical resources and energy and involve lower social impacts, when each additional element is integrated with a modified roads and traffic system, than the present performance of a road and traffic system alone.
- 6.7 There must be a well-structured growth path to progress from the present (no alternative) to the future (fully functional) with each phase justified in its own right as well as part of the incremental growth of the system.

7. REVIEW OF OPTIONS

- 7.1 Transport systems should be considered holistically. In English it is common to discuss “rail” and “bus” as comparable transport modes. But one is infrastructure and the other is a vehicle. A railway needs a train or tram to be functional, just as a bus needs roads to run on.
- 7.2 Roads are the foundation of island transport. The economic cost of maintaining and operating the road system includes the costs of using it – vehicle ownership, operation, maintenance (which is affected by road surface quality) and eventual disposal, travel time, accidents, support services such as policing, fuelling, parking, and so on. Private vehicle users often perceive little relation between what they pay for their transport and the public costs that must be met.
- 7.3 Many roads are also streets, places for living in as well as moving on. Where possible, in such areas walkers and cyclists should be regarded as more important than motorised travellers.
- 7.4 Cars provide for high levels of personal security and comfort, and convenience if parking and road space are available. However reliance on cars brings a high social cost in terms of efficiency, equity, environment and safety. It is possible that in future technological development will reduce the environmental impact – via engine technology, alternative fuels or whatever – but the car will remain a large physical object ill-adapted to use in large numbers in a confined area. For many tasks – especially those involving carrying goods – there is no alternative to a private or commercial road vehicle.
- 7.5 Increasing the use of motorcycles and motos is an opportunity to be considered. A package that favoured light two-wheeled vehicles would promote sustainability provided that it was able to improve noise and emission standards (amenable to policy) and safety (not very amenable to policy while large numbers of lightly controlled car drivers are at large).
- 7.6 Bicycles are clearly an ideal vehicle from a sustainability viewpoint. Most people have an opinion on whether they would personally ride a bike if it were feasible – either strongly for or strongly against. The bicycle is unlikely to be the core element in a sustainable system for this reason. However such a system must certainly include provision for cycling. The ability to cycle the length of the island without serious fear of death or injury will be a major indicator of progress. With 46% of the island’s surface protected because of its environmental quality, the bicycle may be the only acceptable means of independent vehicular access to many areas and could open up a lower-impact tourism sector oriented towards ecological values.
- 7.7 The encouragement of walking is even more desirable than that of cycling, with none of the inherent opposition from non-walkers. Nearly everyone walks. The potential benefits from encouragement of walking are many – individual economic and health

benefits, greater safety and social cohesion, livelier urban areas and more accessible areas of environmental sensitivity (both of interest to the tourist industry), lower public costs for providing and maintaining infrastructure.

- 7.8 Railways are an expensive option. Heavy rail is best suited to moving relatively large numbers of people between a relatively limited number of points which lie in a straight line. Travel volumes and patterns in Menorca seem quite unsuited to heavy rail development. Light rail might be considered as the core of an island public transport system, running between Mahon and Ciudadela. This could be suitable for a corridor which generated a lot of short-distance overlapping trips, and relatively little non-corridor movement. If there is non-corridor movement, a light rail line either would not serve it at all or would require very good integration with complementary connections, probably by bus services. The latter would require passengers to interchange, which does not help the competitiveness of the public transport system relative to the car.
- 7.9 The structure of the island network is much more amenable to the development of some form of road-based public transport, with public priority over private traffic on the Mahon-Ciudadela link, direct connections between coastal settlements and the main towns via the link, and a simple ticketing system allowing “go-anywhere” travel as much as possible. While all this is technically possible, there remains an image problem for bus-based systems. They tend to lack excitement or interest, factors which may be particularly important for holidaymakers.
- 7.10 Buses will always be required for many of the everyday tasks of any public transport system.
- 7.11 Coastal transport is an option that could be considered for an island. With the exception of Mahon and Ciudadela, coastal settlements are small and increased use of sea transport is probably both economically infeasible and vulnerable to disruption by bad weather.
- 7.12 This exhausts the conventional possibilities, but there remain the unconventional. These are often regarded as the lunatic fringe of transport, even though the internal combustion engine, the railway and the aeroplane were once similarly considered. For land transport, there are perhaps two main categories of system – those that depend on new technology (sometimes involving its own track, sometimes not) and those that use existing technology in new ways. There are many concepts circulating internationally¹⁴ and we monitor progress with interest.
- 7.13 Options should not be limited to the categories successful in the past. To illustrate the range of unconventional alternatives, we will briefly describe three very different approaches: car sharing, motorised pedestrians, and ultra-light rail. There are many others.
- “Car sharing” is a mechanism that allows a smaller number of more efficiently used shared cars to replace a larger number of less efficiently used private cars.

Successful adoption so far seems confined to Western European countries¹⁵ with good social discipline and quality public transport (eg Germany, Austria, Switzerland, Netherlands). In Germany the *Drive Stadtauto* organisation has 300 cars and about 7,000 members ; in Switzerland 30,000 members share 1,400 cars. Once the strong bond between car ownership and car use is broken, travel decisions can be made on the basis of realistic average costs, to the benefit of both individuals and society.

- As this paper was being finalised, US engineers revealed an intriguing device named Segway¹⁶. This (see Figure 2) is basically a small gyroscopically-balanced electrically-powered platform intended for use at up to 20 kph in a pedestrian environment. While some niche applications can readily be seen (eg internal movement within large industrial sites), professional opinion is divided as to whether this heralds the revolution its advocates claim or is merely another expensive fad. If it does nothing else it should promote significant discussion about the philosophy of movement in public spaces.
- Ultra-light rail is a fairly new concept, potentially offering low waiting times and fast non-stop travel in small vehicles. A good example is the “Austrans” system¹⁷. This (see Figure 3) features driverless electric 9-seater vehicles on rails, with considerable flexibility both in physical installation and operating method. The performance of this system is currently being explored at a test track in Sydney. Past and current feasibility studies include potential installations in Australia, Asia and South America.



**Figure 2 – The “Segway Human Transporter”
(source: Segway web site)**

Figure 3 - Austrans prototype vehicles take to the track in Sydney (photo: Bishop Austrans)



8. CONCLUSIONS

- 8.1 Transport issues are pressing for resolution. Determining what immediate measures should be implemented requires careful planning and attention to detail beyond the scope of a simple discussion paper. But there is *short-term* urgency in setting *long-term* strategic directions. If measures are taken without a long-term vision of the best future for Menorca, they can make things worse in the long run.
- 8.2 These concluding comments are offered from a distance. We do not know to what extent they may support, or conflict with, directions already being followed locally. The purpose of a Discussion Paper is to generate discussion.
- 8.3 “More of the same” does not seem the best option for the future of Menorca’s transport system. That is likely to have adverse effects on the local economy, public health, social amenity, equity and, in particular, environmental quality.
- 8.4 Community involvement in planning processes is perhaps the most important requirement for changing direction. Community objectives may not correspond with those of higher levels of government, professional specialists or commercial interests. It may not be easy to determine just what those community objectives are but it is the first step. If you do not know where you want to go, you may end up anywhere.
- 8.5 A broad perspective is essential in planning. Existing systems should not be demonised or rejected but better managed in the interests of all transport users. Future enhancements should consider all feasible options, including management of demand rather than supply.
- 8.6 New transport technology may offer further options not previously feasible and to illustrate this we have outlined one such option in this paper. It is premature to recommend it for adoption.
- 8.7 The structure of island activity was determined long ago and seems amenable to the provision of a more sustainable transport system than complete reliance on private motor vehicles.
- 8.8 Improvement of accessibility rather than mobility should be the basis of future planning, and priority given to pedestrian accessibility in urban areas.
- 8.9 Vehicles and infrastructure already in use are a major economic asset whose continuing value must be recognised. Change may require decades to make an appreciable difference. The sooner barriers to change are lowered, however, the sooner the difference will be felt. Great care is required in planning for change, to minimise the strategic risk of irreversible failure.

- 8.10 The performance of the transport system should be monitored in ways relevant to the objectives and accountability established (who is responsible for action if the system does not perform as desired?). Making future funding dependent on satisfactory performance is a good motivator.
- 8.11 The motor car is a fine servant but a poor master. The needs of its users should be assessed relative to other community requirements, not satisfied at all costs. Menorca is no different from many other parts of the developed world in its surrender to motorists.
- 8.12 How long before the character of Menorca is irrecoverably lost? A small island, Menorca does not have the resources and resilience of larger and more prosperous areas. Island residents should be sure that the path they are following is one that they would want to choose for themselves and, more importantly, for future generations.

MENORCA – Basic Outline¹⁸



Geography	Island in Balearic Archipelago (Mallorca, Menorca, Ibiza, Formentera, Cabrera) in western Mediterranean. 48 km long by 20 km wide. Mostly flat, exposed to north winds in winter. Map shows Catalan names, not Spanish. Population (1999) 69,000.
Structure	Main settlements are Cuidadela (22,000) in west and Mahon (25,000) at east, linked by principal road on island. The road also connects three smaller inland market towns. The access to many small coastal settlements stems from this main east-west link.
Economy	Main sectors are tourism (hotels, restaurants, bars etc – about 50,000 registered tourist beds, plus many unregistered), costume jewellery, leather and shoe factories and the production of Mahon cheese.
Transport	Roads, private vehicles, hire cars, bus services. Island airport is at Mahon. Car ferry services between mainland Spain and Mahon, Mahon and Palma de Mallorca, Ciutadela and the east coast of Mallorca.
Culture	Island has rich cultural heritage. Two languages (Spanish and Menorquin which is a dialect of Catalan). Island was ruled by Carthaginians, Romans, Vandals and Moors before becoming part of the Kingdom of Aragon (Spain) in 13 th century. In the 18 th century the island was occupied for a total of 72 years by both the British and the French till it was finally returned to the Spanish crown in 1802.

NOTES

¹ For general information about Kilsby Australia see www.kilsby.com.au

² See “Capability” in www.kilsby.com.au

³ For further thoughts see “Brain Food - Car Space” in www.kilsby.com.au

⁴ For further information, see www.excellence.es/fornells/menorca/biosfera_eng.htm

⁵ For further thoughts, see “Archive – Transport Energy Futures” in www.kilsby.com.au

⁶ For further information, see www.insula.org/solar/proceedi43.htm.

⁷ Road fatalities for the Balearic province in 1999 were equivalent to 192 deaths per million. This is higher than the Spanish national average of 151.

Given that 80% of the Balearic provincial population lives on Mallorca, any deviation in Mallorca from the provincial average would be balanced by a much bigger deviation from average on one or more of the smaller islands, including Menorca. This cannot be established from existing sources. Island accident records are sent to a central government department for processing, where the data are aggregated within a provincial total and the records are then discarded.

An independent estimate suggests that the fatality rate could be as high as 233 per million per year for Menorca, or around 16 deaths per year. This estimate results considering the Isle of Man, which in many ways is similar to Menorca.

	Menorca	Man
Area	700 km ²	572 km ²
Resident population	69,000	75,000
Air distance to nearest mainland city with international connections	250 km	170 km
	(Barcelona)	(Manchester)
Summer tourist peak	100,000	40,000
Proportion of tourists used to driving on opposite side of road	significant	significant
Cultural heritage	rich	rich
Development	relatively low	relatively low

The annual road fatality rate for Man was equivalent to 133 per million in 1999. However 58% of Manx road deaths 1993-99 were motorcyclists. Man has a strong local motorcycle culture and we should discount part of the motorcycle toll for this reason. If we consider half is due to specific local factors, then the adjusted fatality rate reduces to 94 deaths per million per year. If adjusted Man bears the same relation to Menorca as the UK nationally (at 61 deaths per million per year) to Spain nationally (151), then the annual rate for Menorca could be in the region of 233 deaths per million.

We express our thanks to the Manx Department of Highways for their informative response to our queries.

⁸ Motos – light powered two-wheelers which can be used by riders as young as 14 - are unknown in Australia. Like motorcycles, their riders are both “vehicle users” and “vulnerable road users”. Both are specifically identified in the table below.

Annual Fatalities by road user type

Road User Type	Spain 1999	Australia 1998
Vehicle Users (drivers, passengers)	66%	69%
Motorcycle Riders	9%	10%
Moto Riders	7%	-
Vulnerable Road Users (pedestrians, cyclists)	18%	21%
	100%	100%

⁹ For further thoughts, see “Brain Food – Sustainability” in www.kilsby.com.au

¹⁰ Peter Ellyard, in “Ideas for the New Millenium” (1998)

¹¹ For further description, see www.warren.usyd.edu.au/transport

¹² For further thoughts, see “Brain Food – Transport Functions” in www.kilsby.com.au

¹³ For further thoughts, see “Brain Food – Access for All” in www.kilsby.com.au or various papers in the site Archive :

- “Show Me the Way to Go Home: Designing for Inclusion”
- “Foot’n’Mouth: Talking Walking”
- “Smart Answers Deserve Smart Questions: ITS in the Service of Pedestrians and Cyclists”
- “Footpaths Need to be Improved for Motorised Chairs”.

¹⁴ For a comprehensive review see <http://faculty.washington.edu/~jbs/itrans>

¹⁵ For further description see www.smartmoves.co.uk/carclubs/europe.html

¹⁶ For further description, see www.segway.com/consumer/home_flash.html

¹⁷ For further description see www.austrans.com

¹⁸ Source of map: Balearics Guide, www.balearics.com