UK automotive supply chain: Input to its future direction and opportunities for growth

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Commissioned by The Society of Motor Manufacturers and Traders Ltd

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1 Report objectives and participants

The principal aims of the research behind this report were as follows:

- To help identify supply gaps in the UK automotive industry, both for current technology and for future technology to be used on electric vehicles (EVs) and hybrids as the market moves towards the new low carbon era.
- To recommend to The Society of Motor Manufacturers and Traders (SMMT) what it can do to help vehicle manufacturers (VMs) and tier 1s already in the UK increase their level of UK sourcing.

This report was commissioned as a direct response to the New Automotive Innovation and Growth Team (NAIGT) report and the specific recommendations made at the front of this report, especially on pages 10-14 inclusive.

The following companies were interviewed:

- Vehicle manufacturers

  BMW
  Ford
  GM
  Honda
  Jaguar Land Rover
  Nissan
  Toyota

- Tier 1s

  Calsonic
  Continental
  GKN
  Magna Intier
  ZF

We interviewed 16 senior respondents at the VMs and eight at the tier 1s, either the UK CEO or equivalent or senior executives in purchasing and manufacturing.

2 Executive summary

There is a genuine wish from all the vehicle manufacturers and most of the tier 1 component suppliers interviewed to increase their level of sourcing in the UK, subject to the business case for each sourcing decision being made.

The principal reasons are:

- To reduce the costs and logistics strain which arise from importing components, often over long distances.
- To reduce or avoid currency exchange risks.

While vehicle manufacturers have rationalised their supply base in recent years, they are willing to consider new suppliers for new and established technologies.

UK supply gaps and opportunities

The following supply gaps were identified during the interviews for both conventional technologies and new low carbon technology. The list should not be regarded as exhaustive with further gaps likely to emerge once more detailed discussions are held with the vehicle manufacturers and tier 1 component suppliers:

- Basic automotive components: alloy wheels; alternators and starter motors; brake components; castings and forgings; fasteners, nuts and bolts; plastic mouldings in general; large stampings; sheet steel and aluminium; transmission components; wiring harnesses.
- Higher technology areas of cars and engines: electronic control units (ECUs) in general; satellite navigation systems; advanced air conditioning; safety systems - especially airbags.

The new era of low carbon vehicles represents a great opportunity for UK suppliers.
Alongside batteries, vehicle manufacturers also wish to source the following related components as close as possible to either the battery plant or the vehicle assembly plant:

- Specific wiring harnesses which should ideally be finally configured close to the point of use.
- The large motor(s) needed to drive an electric vehicle.
- The reducer, which we understand effectively replaces the gearbox in a conventionally powered vehicle.
- The inverter, which we understand effectively replaces the electronic engine controls in a conventionally powered vehicle.
- Heavy and difficult to transport components are also viewed as priority for local sourcing.

UK sourcing - Level of spend in the UK

We estimate the vehicle manufacturers' UK spend at the tier 1 level is around €8.4bn (pre-recession). Looking down the supply chain, the tier 1 component suppliers only spend around €3bn (pre-recession) in UK sourcing with the rest spent outside the UK. UK sourcing accounts for circa one third to one fifth of total spend for UK vehicle and engine assembly.

The UK supply base is fragmented as a result of UK vehicle manufacturers historically and continuing to use different suppliers. While the UK benefits from so many different vehicle manufacturers operating here, the production volumes of the indigenous models are low by international standards. This fragmentation leads to a lack of resilience in the supply chain.

- Nissan Qashqai and MINI are the only two models which are produced in the region of 200,000 units per year.
- The Vauxhall Astra is the only other model to exceed 100,000 units per year.
- The consequence of this is that UK-based component suppliers deliver on low volume programmes (i.e. 75,000 units per year or below) so cannot operate on the same economies of scales and volume efficiencies as those supplying much higher volumes.

The main reasons for the low proportion of UK sourcing by the major tier 1 component suppliers are:

- The perceived and/or lack of suitable tier 2 and 3 suppliers. An example of this is the assembly of seats where components are increasingly manufactured from outside the UK.
- Even where appropriate UK suppliers exist, they lack economies of scale compared to overseas competitors and are perceived as being unable to compete on price, even when taking transport costs into account.
- JLR models and MINI apart, most vehicles manufactured in the UK are based on international platforms. Vehicle manufacturers increasingly choose suppliers with international manufacturing footprints.

The need for an integrated supply chain

There is a need to ensure that an integrated supply chain is developed in the UK. Producing basic components is not always enough. The availability of ancillary, often critical, processes is equally important. An example which highlights this well is the case of a company wishing to source castings. The final purchasing decision not only revolves around the presence of a suitable castings company, but more importantly, the availability of a critical ancillary process - in this case, anodising.

3 Recommendations

3.1 Our recommendations fall into three main areas:

3.1.1 **Entering into a detailed and ongoing dialogue with the purchasing directors of the UK VMs and major tier 1s, including the Japanese tier 1s which were** covered in the Department for Business Enterprise and Regulatory reform (BERR now known as BIS) report on the business environment for Japanese automotive supply companies in the UK, "the Sakamoto report". This should encompass their wish to increase sourcing of established technologies (ie the gaps referred to in sections 4.14 and 4.16 later in this report) and new, low carbon-related components; this is a matter for SMMT, industry bodies and government.

3.1.2 **Developing better information sources for VMs and tier 1s** alike on the tier 2 and 3 suppliers already present in the UK; this is a matter primarily for SMMT and other bodies, such as Industry Forum (IF).

3.1.3 **Working closely with the tier 2s and 3s**, in connection with the continuous improvement in the supply chain; this must focus on helping these sub-suppliers develop into companies that the tier 1s want to use and which the VMs will accept.

3.2 Detailed, **ongoing dialogue with VMs and tier 1s regarding their sourcing needs**:

3.2.1 This needs to cover the problem areas for both existing technologies and new EV or hybrid related technology.

3.2.2 **Protecting the existing supply base delivering established automotive technology**:

3.2.2.1 All our respondents expressed a fear that a heavy focus on EV/hybrid technology could mean that the matter of protecting the existing UK supply base receives insufficient attention.

3.2.2.2 SMMT and government need to understand in greater detail what specific components the VMs and the tier 1s are actively looking at for re-sourcing – this includes potential re-sourcing away from the UK and potential sourcing into the UK.

3.2.2.3 We understand that currently all the major VMs and certain tier 1s with a manufacturing presence in the UK have a designated "account manager" in the Automotive Unit, BIS. We would recommend that BIS, UKTI and the Automotive Council make contact with other tier 1s. In this way, the voice of the industry can be directly communicated to government.

3.2.2.4 In parallel, a system needs to be set up to ensure that the findings from this on-going dialogue are communicated to tier 2s and 3s on an on-going basis. There is clearly a role for SMMT here, the details of which need to be further developed.

3.2.2.5 In section 4.31, we have highlighted in this report the abruptness with which Ogihara announced its plans to close its UK component production activity and highlighted the potential for another major supplier to do the same thing. This illustrates the inherent mobility of the components industry.

3.2.2.6 The decline in vehicle production in the last year, both here and across Europe, means that suppliers will be feeling tremendous pressure with regard to their financial position and likely excess capacity.

3.2.2.7 The relocation of component production to Eastern Europe in the last decade has highlighted the inherent mobility of component production, the wish of the VMs to source close to the assembly plants notwithstanding.

3.2.2.8 Accordingly, we recommend that specific resources, from SMMT, Industry Forum, government and other industry bodies/councils, are allocated to:

3.2.2.8.1 Understanding the production location plans of the tier 1s still in this country and ensuring this demand is communicated to the tier 2 and 3 supply base. This will almost certainly involve discussions with the tier 1s at the headquarters in continental Europe.

3.2.2.8.2 Identifying what are the problems the tier 1s are facing with regard to continued UK production.

3.2.2.8.3 And developing strategies to help these companies overcome these problems so that they can remain here and, hopefully, grow their UK business activity **– this work will have to have an international dimension as most of the key decision-makers at the component companies concerned are based outside the UK**. The specific resources required for this work need to be defined and this work needs to begin this international activity at the earliest opportunity.

3.2.2.8.4 When speaking to tier 1s' international HQs, the opportunity should not be lost to try to begin the process of persuading companies who have left the UK to consider a return, even if such a possibility is a long-term one. We recognise that UK Trade & Investment (UKTI) has been undertaking this dialogue with investors and potential investors for many years, and this work will be enhanced by the support of members of the new Automotive Council.

3.2.3 **New Electric vehicle/hybrid technology**:

3.2.3.1 Dialogue needs to be started with each VM to understand in detail and on an individual basis which components/technologies they would need to source in the UK; and moreover which potential suppliers they would like to come to the UK to supply them.

3.2.3.2 We understand that the sourcing process is beginning now for the Nissan battery programme and other VMs will be working on their plans for as yet unannounced programmes.

3.2.3.3 From our interviews we know that VMs intend to use industry leaders – these companies need to be identified and approached as soon as possible.

3.2.3.4 The Office of Low Emission Vehicles (OLEV) was established in April 2009 and is a cross-Whitehall team dedicated to making the UK a world-leader in the development, demonstration, manufacture and use of ultra-low carbon automotive technology. We understand that one of its objectives is to help stimulate a new supply chain for these components/technologies.

3.3 **Specific actions for SMMT**:

3.3.1 In addition to continuing with its role in lobbying and liaising with government on behalf of the industry, there are three specific sets of activities on which we believe SMMT should focus specifically in the near term.

3.3.2 SMMT needs to act as a conduit for information flows between the VMs or tier 1s and the sub-supplier network. There is a crucial communications role for SMMT to play ensuring that the supply base understands the potential demand from either VMs or tier 1s.

3.3.3 **Provision of information on UK suppliers**:

3.3.3.1 We are aware that SMMT has been developing its database of UK automotive suppliers and their capabilities. This database, The Automotive Supplier Finder (ASF), is a very good start in this area – this database needs to be expanded, continuously developed and maintained.

3.3.3.2 This database needs to be actively promoted to the VMs and specifically the tier 1s in the UK; as noted in this report (and based on conversations we have had on other projects) many tier 1s said that they either lack information on potential tier 2s and 3s in the UK or they do not have the time or resources to develop this information.

3.3.3.3 SMMT needs to demonstrate to the tier 1s what information is potentially available, and through discussion with these companies, identify what other information would be helpful for them in finding potential UK suppliers.

3.3.3.4 From our understanding of the ASF database in its current guise, our view is that SMMT has made a very good start in this regard and now needs to ensure the database is used and developed in accordance with the users' expectations and needs.

3.3.3.5 SMMT needs, furthermore, to communicate the ASF's existence and capability to the purchasing departments of the tier 1s which produce in the UK but which have increasingly centralised purchasing functions based in continental Europe. This applies, for example, to Johnson Controls and Faurecia among others.

3.3.4 **Facilitating dialogue between tier 1s and potential sub-suppliers**:

3.3.4.1 It is apparent from the Sakamoto report and in particular from our discussions with the Japanese VMs that the tier 1s in the UK (especially the Japanese companies located here) do not know as much as they would like about potential sub-suppliers.

3.3.4.2 In addition to the promotion and further development of the ASF database referred to above, SMMT should develop means for introducing tier 2s and 3s to the tier 1s.

3.3.4.3 Such work could be via a combination of promotional days (ie mini trade fairs) at regional locations (perhaps in association with RDAs or similar bodies), or at the HQ in London, or via on-line webinars.

3.3.4.4 We believe SMMT has a potentially significant role to play in facilitating the marketing and promotion of small tier 2s and 3s to their larger potential customers. SMMT should look to act as a conduit through which tier 1s can make potential contracts for tier 2s and 3s known to potential suppliers.

3.3.4.5 On the basis of our interviews with the VMs and tier 1s, there appears to be a distinct lack of understanding of the potential capabilities and offering from the tier 2 and 3 suppliers; SMMT is ideally placed to help bridge the gap in understanding.

3.3.5 **Making expertise within SMMT known to members, ie VMs and tier 1s alike:**

3.3.5.1 A number of respondents suggested that SMMT could be of greater help on technical matters, especially the practical implementation of EU directives.

3.3.5.2 For example, one VM respondent who was involved with implementing the EU directive on reducing the use of chrome said he would have liked technical

support in understanding the practical implications of the specific directive concerned from SMMT.

3.3.5.3 We understand that this, and similar, technical expertise, may well be available within SMMT. However, we suggest that the presence of such expertise is not well or widely known. This is an area in which greater self-promotion for SMMT is recommended.

3.4 Specific actions for government:

3.4.1 Although this report was not commissioned by or for government directly, it is apparent that a number of issues arising from the research involve recommendations for government.

3.4.2 Specific resources need to be allocated to:

3.4.2.1 **Engage with VMs** – specific discussions need to be held with the VMs' purchasing executives to understand:

3.4.2.1.1 Their needs and expectations from potential suppliers of new, low carbon technology and what help government can give to maximise the chances of getting these suppliers to invest in component production here in the UK.

3.4.2.1.2 How government can help support the remaining UK sourcing which the VMs undertake and in particular, how government can help increase the degree of tier 2 and 3 sourcing.

3.4.2.2 **Engage with tier 1s** – these discussions need to focus on understanding how government can assist these companies to:

3.4.2.2.1 Ensure they remain in the UK and production is not moved overseas – this will undoubtedly require discussions with the international operations of some of these companies as their HQs or relevant decision-makers are often not based in the UK.

3.4.2.2.2 Increase (or indeed simply maintain) the existing UK sourcing at the tier 2 and 3 level.

3.4.2.3 **Market the UK to EV and hybrid companies** – we have identified the specific component areas within the EV and hybrid areas which we believe the VMs would like to source here in the UK for future vehicle programmes:

3.4.2.3.1 Potential investing companies now need to be identified, independently and in association with discussions with the VMs.

3.4.2.3.2 These companies need to be visited and the UK needs to be promoted to them – decisions regarding sourcing for such programmes are beginning to be made and now is exactly the right time to begin this

active promotional campaign. There will be a role here for UKTI and government's network of Embassies as well as members of the Automotive Council. In addition, government at trade shows such as the annual JSAE (Society of Automotive Engineers of Japan) and the bi-annual Auto Expo in India.

3.4.2.3.3 The UK has achieved much success in terms of attracting inward investment in the automotive industry in the past and, despite the problems with the overall economic environment at the present time, there is no reason why the UK cannot be successful again.

3.4.3 In addition, government needs to **co-ordinate the activities of the various RDAs**; this should cover the work of the RDAs to help protect the existing supply base and the work they will do in the coming months and years to attract new investment in EV and hybrid component production.

3.5 **The potential long-term threat to engine production**:

3.5.1 The UK has substantial engine production through Ford, BMW and the three Japanese VMs. This is a major strength and amounts to a critical mass of production capability. The work which SMMT and government bodies do from hereon has to build on this strength – bringing more companies in the powertrain supply chain into the UK and helping to grow those which are here already will be critical to ensuring this strength is built upon and maintained. The NAIGT technology roadmap recognised the importance of the internal combustion engine.

3.5.2 There is a risk that if the vehicles which use these UK-built engines switch in large part to full electric power, then engine production is likely to fall in direct proportion to the rise in EV production. In terms of hybrids, these vehicles will require either different engines or modified engines versions of those currently made in the UK. Different or modified engines will, of course, represent a potential opportunity for new investment in the UK; this may well mean mainly additional investment in existing engine plants to produce modified versions of conventional engines, as opposed to all-new engine programmes.

3.5.3 Given the still nascent status of the EV and hybrid market and the consequent lack of certainty regarding each VM's intentions, quantifying this risk at the present time is very difficult. There are simply too many unknowns at this stage. However, hybrids are going to be very important to some, if not all, the VMs and so the UK should have a strong base from which to build its capabilities in this area.

3.5.4 Accordingly, we recommend strongly that SMMT and government or industry councils or bodies which will be acting on this report, maintain a careful watching brief on this matter.

3.5.5 From our conversations with the VMs on this study and our general understanding of VMs' broad strategies, we believe that for most of the current decade the overwhelming majority of vehicles will remain with essentially conventional engines.

3.5.6 However, the dynamic and uncertain nature of the VMs' plans in this area and the lack of certainty across Europe regarding changes to the infrastructure of individual countries to support EVs or plug-in hybrids mean that detailed forecasting for the penetration of these vehicles is fraught with difficulty:

3.5.6.1 Renault, for example, has committed to four EV programmes and is working closely with the authorities in Israel and Denmark to facilitate these countries' rapid adoption of EVs.

3.5.6.2 Success in either or both of these markets could act as the spur for other countries to accelerate work to facilitate widespread adoption of EVs elsewhere; however, we are still some years away from seeing these initiatives in action, so their success is, for now, assumed, rather than guaranteed or proven.

3.5.7 Those charged with maintaining this watching brief need to recognise that this is a very fluid issue and a change in government policy in one or two major countries, or in the product policies of a couple of volume VMs, could trigger a fundamental shift in market dynamics in favour of EVs especially.

3.5.8 At the present time, we believe VMs in general are continuing to develop EVs and hybrids **in parallel** with high-efficiency petrol and diesel engines. The future automotive market will have a mix of powertrains; the question as to which powertrain format will dominate is unanswerable at the moment. Similarly, there is no clear guidance as to what the balance between the different powertrain formats will actually be.

4 Industry dynamics: the voice of the automotive industry

4.1 **Across the VMs and the tier 1s interviewed, there is a real wish to raise the level of UK sourcing, subject to the business case for UK sourcing being made**. However, a number of factors, ranging from the VMs' or tier 1s' own global sourcing and manufacturing strategies to the business environment in the UK militate against this happening easily and quickly. It is clear that improvements and changes to the UK business environment are needed:

4.1.1 Government cannot realistically change VMs' or tier 1s' sourcing strategies per se, but it can make changes to the business environment in the UK.

4.1.2 Our recommendations above include suggestions along these lines. The background to these necessary changes is explained in the rest of this report.

4.2 Despite the globalisation of supply arrangements and the rationalisation of supply chains which have taken place in recent years**, VMs and tier 1s remain open to new suppliers, even of established technologies**:

4.2.1 To quote one VM: "In the last 4-5 years, over 400 UK companies have actually approached us or been introduced to us as potential new suppliers; some of these have been entirely new suppliers and some have been divisions of existing suppliers which we hadn't previously used. However, once we have gone through the filtering process, less than 20 companies actually passed the tests to become one of our approved suppliers and then only half a dozen have actually been awarded business."

4.3 **UK sourcing by the VMs ranges from one-third to around half of their spend at the tier 1 level.** However, within this figure, a large part of their spending at the tier 2 or tier 3 level is with suppliers based outside the UK. In other words, the level of UK value-added is, in practice, around a third of total purchasing spend. To quote two VMs:

4.3.1 "The UK represents just over half of our sourcing, with Germany representing around one-third" – "but quite a lot of this UK sourcing includes sub-components which come from outside the UK."

4.3.2 "For practical reasons, we want to source as much as possible in the UK, as close as possible to the vehicle assembly plant" – this comment refers to the tier 1 delivery of the final, assembled system/sub-assembly. This same VM admitted that its tier 1s' sourcing from within the UK is, "much lower than we would like."

4.3.3 Another VM added: "The more we can source from the UK and specifically from within an hour and a half of the plant the better – we do not have a specifically 'Buy British' policy, but if we can, we will buy here."

4.4 **For some VMs, however, sourcing in the UK is not of paramount importance**. One said as follows: "We do not look at the UK as a major sourcing location … in fact we are sourcing more and more outside the UK … the trend to sourcing from low cost countries is unstoppable".

4.5 **The main reason for tier 1 sourcing being lower than ideal is the lack, or perceived lack, of suitable tier 2 and tier 3 suppliers in the UK across a wide range of component sectors**:

4.5.1 One VM also explained how, if suitably qualified tier 2 and 3 suppliers were here, UK sourcing could rise "significantly". Moreover, this company added that:

4.5.1.1 "We want to protect ourselves and our tier 1s from currency fluctuations, reduce our logistics costs and minimise the amount of capital tied up in stocks which are on ships around the world."

4.5.1.2 And this same respondent added how, for some specialist components: "We have a three month supply chain which means we have to fix the production of certain variants a long time in advance – and that is not a very efficient way of working either."

4.5.2 Another VM added: "We have been talking to some of the Japanese tier 1s about working for us … they have told us they don't have the time or the resources to find good UK sub-suppliers who can work to their standards … they don't think they exist … so they have to import a lot of the sub-components."

4.6 **Even where there are suppliers of certain components in the UK, these may be sourced abroad.** We cannot, in this public document, cite specific examples which our respondents gave us, but we know there are some components which are not sourced here, but for which suppliers do exist. The question is, therefore, for those components that can be sourced here, could actual sourcing be higher than it is?

4.6.1 There are many inter-related reasons for UK sourcing being as low as it is; the exact reasons vary from company to company.

4.6.2 The first issue to recognise is the international sourcing arrangements of most of the VMs located in the UK; most of the vehicles assembled in the UK are also assembled in other locations so their sourcing arrangements are part of global programmes.

4.6.3 VMs often find that production sites outside the UK are more economic supply points than potential UK supply locations. This is because of the greater production volumes made at such locations. In many cases the business case for having one central European supply point and shipping components into the UK is more economic than having a UK supply point with duplicate tooling.

4.6.4 One VM summed up the situation as follows: "Our vehicles are made on global platforms and we now use suppliers with global footprints as far as possible. There are very few UK-owned suppliers with global footprints."

4.6.5 The size or scale issue is the second factor which limits potential UK sourcing; specifically, many UK suppliers are seen as sub-scale. The UK is, moreover, perceived as having a very fragmented supply base, a perception which may seem surprising given the steady rise in UK vehicle production in recent years (at least until the recent recession).

4.6.6 One VM's comments reflect the situation very aptly: "We still get approached by a lot of companies who are just too small and who only want to supply us because our plant is close by theirs. We can't work with companies like this."

4.7 A common theme from the interviews with the VM respondents was how even now**, the VMs know that they tend to use different suppliers**:

4.7.1 While the Japanese VMs have used UK suppliers in many cases, they have also brought over their own keiretsu suppliers from Japan, and for the three Japanese VMs producing in the UK, these suppliers are often different.

4.7.2 The GM plants generally use the same suppliers as the GM plants elsewhere in Europe, while Jaguar-Land Rover uses a mix of "legacy" suppliers from the old MG Rover-Land Rover network and some former BMW and Ford suppliers given its past ownership.

4.7.3 BMW-MINI uses a mix of its own suppliers and some legacy suppliers from the MG Rover era.

4.8 As a result of their using different suppliers, the **VMs believe that the collective UK supply base is "too fragmented"**:

4.8.1 There appears to be a very clear wish to use larger, stronger UK suppliers, even if these are UK operations of foreign-owned companies.

4.8.2 As one of the VMs explained: "We need larger, bigger, stronger suppliers here … but we're not sure how to get to this position …"

4.8.3 Whether this is done on a co-ordinated basis or individually, we believe that the VMs as a group will increasingly look to give a reduced number of suppliers more business. This means that VMs will rationalise their suppliers in the near term.

4.8.4 As one VM put it: "We have too many suppliers, and we need to give a smaller number of them more volume." There is no doubt in our mind that a number of UK suppliers will lose business with the UK VMs in the near future – and those which are heavily dependent on just one VM customer will suffer most.

4.9 Because of the lack of suitable tier 2 and 3 suppliers, and the fragmented nature of the supply base, **UK sourcing is lower than it could be**. Moreover, the proportion of UK sourcing by the newest VMs in the UK, ie the Japanese, has declined since their arrival:

4.9.1 Local content rules meant that when they first built their plants in Europe, the Japanese VMs had to use a mix of their own suppliers brought over from Japan along with some European suppliers.

4.9.2 For practical reasons their sourcing was mainly UK-based to begin with, but in recent years, sourcing has been expanded across Europe as they have each sought to balance Euro-Sterling sourcing and, in the case of Toyota especially, production has been expanded into continental Europe.

4.9.3 Moreover, a combination of currency factors (strong sterling and a weak yen) meant sourcing in Japan, even allowing for extra transport costs, could still be more economic than localised sourcing in the UK.

4.10 Moreover, as the Sakamoto report has highlighted, **the Japanese tier 1s have found it difficult to find tier 2 and tier 3 suppliers who are capable of meeting their standards and expectations**. This has resulted in continued sourcing at the tier 2 and 3 level in Japan, or elsewhere in Asia or in Eastern Europe.

4.11 A further issue determining sourcing for UK-built vehicles **is the global nature of vehicle manufacturing**:

4.11.1 The vehicles made by the Japanese VMs in the UK are global models which are made in Japan and at least one or two other major production locations. In most cases, UK production started **after** production elsewhere; in turn, this means that for each vehicle made by a Japanese VM in the UK, there is invariably an established international supply chain in existence from which the UK assembly plant can source components which are most economically supplied from a single source.

4.11.2 Production volumes for the Japanese vehicles made in the UK are also normally much lower than the production of the same model in Japan or even North America. This means that, depending on the tooling and transport costs, it may not actually be economical to source components in the UK.

4.12 Although all VMs said that they would, in theory, like to increase UK sourcing, it is worth noting the variety of components which are made in the UK, either in-house at the VMs or at their suppliers. One Japanese VM explained that the following components were all either made in-house in the UK or sourced from UK suppliers:

4.12.1 Engines, body pressings, chassis components, exhausts, radiators and engine cooling systems, instrument panel assemblies, bumpers, door linings, instrumentation, most interior trim, carpets, seat assemblies (including foam), hoses, seals, power steering and glass.

4.12.2 Moreover, although there are many other components which come from outside the UK, notably safety systems (airbags and seatbelts), wiring harnesses, a large part of the metal sub-assemblies for seats and most (but not all) electronic control units (ECUs), the VM concerned said "**it would be wrong to suggest that there is anything that we don't get in the UK that would make a big difference to our operations here …**"

4.13 Although they may not admit this officially, there seems little doubt that the **VMs believe that on occasion their tier 1s find it easier to centralise production in continental Europe and import components into the UK**:

4.13.1 For example, the seats for at least two vehicles made in the UK receive almost all their components from sub-suppliers on the continent, ie foam, metal components, head rests, fabric cover, motors etc.

4.13.2 The tier 1, ie the location from which the seats are delivered, is located in the UK, but this is purely an assembly operation with limited value-added. This same tier 1 used to make a number of seat components in the UK, but has gradually wound down these operations to gain better economies of scale at its component plants in continental Europe.

4.14 **Supply gaps in the UK include both high-technology components and many more fundamental basic automotive components**:

4.14.1 Almost all VMs observed how the UK had lost an overwhelmingly proportion of its capacity in forgings and castings; this was especially the case for small components which the VMs would normally buy in to fit to their own engines.

4.14.2 To quote one VM: "There's a complete dearth of modern forging capacity in the UK."

4.14.3 In addition to castings and forgings, our interviews revealed that the VMs and major tier 1s believe there is a lack of capacity in the UK for the manufacture of the following "basic" automotive components:

4.14.3.1 Alloy wheels
4.14.3.2 Alternators and starter motors
4.14.3.3 Brake components
4.14.3.4 Fasteners, nuts and bolts
4.14.3.5 Plastic mouldings in general
4.14.3.6 Large stampings
4.14.3.7 Sheet steel and aluminium
4.14.3.8 Transmission components
4.14.3.9 Wiring harnesses.

4.14.4 From the "higher technology" areas of cars and engines, with conventional powertrains, the UK lacks capacity in:

4.14.4.1 ECUs in general
4.14.4.2 Satellite navigation systems
4.14.4.3 Advanced air conditioning
4.14.4.4 Safety systems, especially airbags.

4.15 For forgings, castings and brake components, several VM respondents observed how the **manufacturing processes are highly automated, so labour costs should not be a major factor**:

4.15.1 The same VMs observed how most of the forgings and castings that they used to source in the UK now come from France or Germany, locations with similar or even higher labour costs than the UK.

4.15.2 The suppliers in these countries are seen as having invested in modern, automated production equipment to retain this business.

4.16 From the viewpoint of the tier 1s interviewed, **the following supply gaps were identified**:

4.16.1 Castings and forgings are a common problem: "We cannot source castings and forgings in the UK at a sensible cost – but we would like to."

4.16.1.1 One supplier added how it was currently undertaking a sourcing exercise for aluminium castings; for the part concerned a crucial stage in the whole manufacturing process is anodising – the process is understood to be

available in the UK and this is likely to be a major factor in the final sourcing decision.

4.16.1.2 Not only does the tier 1 concerned need castings, but it needs them to arrive at its factory prepared (ie anodised) and ready to use. The availability of anodising in the UK means that tier 1 will be more likely to source the castings here as the transport costs involved will be much lower than they could have been if anodising were only available in continental Europe.

4.16.1.3 This example highlights the importance of the supply chain being integrated – it is not just the production of individual component which is necessary for a modern and competitive supply chain, but also the facilities to carry out related, yet critical processes.

4.16.2 Tool making is another area where the UK supply base is lacking: most of the tool makers have closed:

4.16.2.1 "We now source tooling in Turkey. We have sourced in China, but the quality was dreadful."

4.16.3 Even basic components, such as nuts, bolts and fasteners, can be difficult to source in the UK:

4.16.3.1 "Nowadays we source these in Taiwan and China and specials in Germany. Many UK companies have gone into administration or simply closed."

4.16.4 Highly technical plastic mouldings were also cited as an area where it is difficult to find suppliers:

4.16.4.1 A particular problem is finding suppliers who have 2000t moulding capability.

4.16.4.2 The company which complained of the lack of large moulding capability added that the UK has few suppliers with automated paint lines, assembly facilities, gas injection moulding, all of which need to be allied to local design capability.

4.16.5 Another tier 1 claimed that the UK was not competitive in general plastic mouldings:

4.16.5.1 "We cannot get competitively priced mouldings here. The Spanish are very good in this area. In Spain you can get one person running eight machines, whereas in the UK one person running two machines is considered advanced."

4.16.6 Aluminium is considered as available at competitive prices:

4.16.6.1 "The UK used to roll aluminium, but the big players have exited the business. There is nothing here now for the automotive industry."

4.16.7 Printed circuit boards (PCBs) and some electro-mechanical items, such as clocks, speedometers and similar components, are also imported due to a lack of UK sources.

4.16.8 The issue of stampings is an interesting one:

4.16.8.1 According to more than one tier 1: "Stampings are also a problem … there are no large tool stamping companies in the UK … we use UK suppliers for smaller stamping and would like to do so for large stampings".

4.16.8.2 This "complaint" raises another issue, namely the lack of awareness of existing suppliers in the UK; we think that there are quite possibly a couple of UK suppliers with large enough stamping machines to support this tier 1, but the tier 1 itself may well not have adequate resources to find these companies.

4.16.8.3 Helping tier 1s find tier 2 and 3 suppliers is clearly something with which government and/or SMMT could assist.

4.17 **The above-mentioned gaps in the UK supply base are illustrative and they are far from exclusive**. Moreover, the actual gaps will vary from VM to VM, depending on the specific circumstances of the vehicle concerned. **One VM explained how it is currently analysing what it could potentially source in the UK, using the following criteria** (a similar approach is used by all VMs, naturally, but we are aware of at least one VM engaged in an active programme along these lines at the present time):

4.17.1 Is it large and bulky, and therefore difficult to transport?

4.17.2 Is it a problem to pack, ie when packing multiple sets of components, are we shipping a lot of air?

4.17.3 Is the component vehicle specific, ie it is only used on the model(s) made in the UK?

4.17.4 Is the component variant specific, ie it is only used on certain versions of the model(s) made in the UK?

4.17.5 And does it have a low labour content?

4.18 If a component meets most or ideally all of these criteria, then it is deemed to be suitable for re-sourcing to the UK.

4.19 One VM also explained to us how, having identified components which met these criteria, it would then look at **whether these same components were locally sourced by the other VMs here**. If this were the case, it would in turn try to identify who the other VMs used as suppliers, moving on to assess if these suppliers could be used rather than incumbent suppliers based on the continent:

4.19.1 "We have put a lot of time and resource into this … it should be easier to find this information … it's like looking through fog … it shouldn't have to be so difficult."

4.20 Bearing in mind the above gaps, **are there significant disadvantages to the VMs of not being able to source all that they might like from within UK**?

4.20.1 In general, the VMs said they had established ways of working which mean they could cope without sourcing certain components in the UK, we found evident frustration with this situation.

4.20.2 This frustration reflects three issues in particular:

4.20.2.1 Logistics – ie having what some VMs – and some tier 1s – regard as too long a supply chain and having too much of their components' stock stuck on a ship at sea.

4.20.2.2 Currency risk – given that most of their costs here are still in sterling, they would, on balance prefer to maximise UK sourcing:

4.20.2.2.1 The tier 1s find the currency issue a particular problem, with exchange rate volatility a common concern. For practical reasons, UK sourcing is preferable, but this has been on the back of a stable currency.

4.20.2.2.2 As one tier 1 put it: "In the recent past we were at a disadvantage sourcing in the UK. At present that is not the case but what will happen to exchange rates in the future? It is very difficult to operate in these conditions."

4.20.2.3 Finally, there is the issue of supplier management in the event of a production or manufacturing problem. As one VM put it: "If the supplier is in this country, we can normally get there in an hour or two if there is a problem which requires our presence, but when the supplier is on the continent or further afield we can't act so quickly and we may not have someone from our global operations available to help."

4.21 Taking into account the sourcing strategies of the VMs and supply gaps identified, what can be done to help UK sourcing to rise? And, what are the issues preventing this rise?

4.22 These issues need to be tackled from the point of view of both sourcing existing technologies and attracting investment in new technologies.

4.23 In terms of existing technologies, the VMs' overall policies were summed up in one VM's comment as follows:

4.23.1 "We no longer have a footprint target for UK sourcing. We used to try to balance our UK sourcing with our UK sales and did this for all major markets. We no longer work like this. Increased UK sourcing requires changes to the overall business environment here or the need for a special technology or product which has to be delivered from within the UK for logistical reasons."

4.23.2 There are some components/assemblies which have to be sourced close to the car plants for practical reasons: "We have to source the bulky items as close as possible to the plant, such as the seats, bumpers and fuel tanks. However, a lot of the components which make up the seats come from outside the UK. The UK is just an assembly location for many large assemblies."

4.24 From the tier 1s', the following comments were made:

4.24.1 For the proportion of UK sourcing to rise significantly, both the VM and the tier 1s need to see a willingness to invest among the tier 2 and 3 suppliers. There is a real fear that small suppliers are falling behind their competitors, both on the continent and in developing nations such as Turkey, India and China.

4.24.2 One tier 1 told us how: "One of our [Japanese] VM customers is very concerned about the tier 2 and 3 supply base in the UK. It sees no investment at this level or evidence of future change."

4.24.3 A critical current factor militating against tier 2 and 3 companies investing for growth and thereby making themselves available as potential suppliers is the lack of credit guarantee insurance:

4.24.3.1 Several of our respondents emphasised how this is a serious problem for the UK automotive industry in general and for the tier 2s and 3s in particular.

4.24.3.2 The UK division of a global tier 1 had experienced difficulty in this regard and was "shocked to find that all companies in the sector were classified as "high risk". Government help in this area is seen as essential.

4.25 In the current climate, and given the excess capacity which exists within the component supply base in general**, it is unrealistic to expect significant major investment in new UK production of existing, established technologies**:

4.25.1.1 Such investments may occur, but they will be rare and difficult to predict or identify with certainty.

4.25.1.2 It is possible, for example, that new vehicle programmes such as the upcoming facelift to the Honda Jazz, the next Civic and the small Nissan vehicle (Juke) which will replace the Micra will use suppliers of existing technology which do not currently have UK facilities.

4.25.2 To maximise the UK's chances of winning such potential investment, government and the RDAs need to make a dedicated effort with Honda and Nissan to understand which components might be under consideration for UK sourcing and therefore which might need new suppliers. Honda and Nissan have a history of bringing suppliers to the UK to support them and accordingly there is a chance that new suppliers will still be required.

4.25.3 In addition, there will be new models coming in the next few years at Jaguar-Land Rover: for example, the LRX, a small vehicle based on the Freelander platform, has been confirmed. The UK needs to have a dedicated approach with JLR to identify the possible need for new suppliers, or if not all-new suppliers, then the possibility of new factories for existing suppliers who will need to be located near the Halewood assembly plant.

4.25.4 There will, in all likelihood, be other new vehicle programmes from JLR and possibly other VMs too, which could need new suppliers:

4.25.4.1 We were not provided with such details in our interviews, and had we been provided with this information, this public document would not be an appropriate place in which to report such information.

4.25.4.2 The point is, however, that government, the RDAs and SMMT need to engage directly with the UK VMs on an individual basis to explore what help they or their suppliers might need to facilitate either new investment or the retention and expansion of existing facilities. This requires dedicated and sustained effort and resources.

4.26 **The biggest opportunity, however, for new sourcing potential in the UK will come from the hybrid and EV market segments**. Although, Toyota has announced it will make a hybrid Auris and Nissan has announced its plans to build a battery plant, the

information on which elements of the hybrid and EV markets could involve the need to source components in the UK would apply equally to any VM.

4.27 **For a UK-built EV or hybrid vehicle, numerous components will need to be sourced in the UK, for practical reasons above all**. These will include basic components (metal housings, and simple plastic components for which a UK supply base potentially exists) and "new technology" components. For the latter, a strategy needs to be developed to identify potential suppliers and approach them, both directly and in accordance with the major VMs as appropriate:

4.27.1 The batteries themselves, plus associated components, especially charging technology.

4.27.2 Specific wiring harnesses.

4.27.3 A large motor, effectively (we understand) replacing the engine.

4.27.4 The reducer, effectively (we understand) replacing the gear box.

4.27.5 An inverter, effectively (we understand) replacing the electronic controls.

4.28 Most of these components were described to us as "**heavy and difficult to transport long distances**, so we would like to get them from a supplier located as close to the vehicle assembly plant as we can …"

4.29 To maximise the chances of the UK winning investment from suppliers of these components, the **UK (ie BIS and the RDAs) needs to identify potential suppliers of these technologies** and start actively promoting the UK to these companies:

4.29.1 The sourcing process for these components is now beginning and so now is the time for government and the RDAs to ramp up their activities in this area.

4.29.2 One VM explained the situation as follows: "Decisions on which suppliers will be used won't be made for a year or more, but now is the time to get out there and talk to potential investing companies."

4.29.3 While the sourcing process is only just beginning, there is no doubt in our minds that the suppliers chosen will be industry leaders, and this will mean companies outside the UK.

4.29.4 In our opinion the VMs will use international companies, from Asia, Europe or North America – so now is the time to begin to attract them to the UK.

4.29.5 To quote another VM: "We haven't decided who will be our battery supplier for our hybrids or EVs, but when we have chosen it, you can be sure it will be a global supplier and they will supply us from wherever it is most efficient to do so."

4.29.6 Another said: "We know who our preferred [hybrid or EV] technology supplier will be, but we haven't decided on either the final technology solution or the optimal production location … when we make those decisions [within the next two years], the UK will then have to compete against other countries in Europe to win this investment."

4.29.7 The UK has a good record of winning inward investment projects in the past, so there is no reason why it cannot do so again.

4.29.8 Moreover, while there may well be a number of highly innovative, technology companies in the UK already operating in the hybrid and EV sectors, we believe it would be a mistake to rely on these companies being chosen as suppliers for hybrid and EV technology by the international VMs operating here.

4.29.9 The UK-based VMs will use major international suppliers for the bulk of these new technologies and these global companies should be the principal targets for inward investment.

4.30 While it needs to develop and implement its strategies to attract investment in new technologies, ie EVs and hybrids**, the UK also needs to protect the capacity which the country still retains in component manufacture**. A common theme across all the VMs interviewed is that government should focus on boosting the existing supply base's "defences" to prevent further losses of capacity.

4.31 For many of the major suppliers operating in the UK**, the key decision-makers regarding these companies' production plans are not based here**:

4.31.1 The overseas ownership of much of the supply base in the UK means that decisions regarding which supplier plants are kept open or closed are made outside the UK. This means that UK customers and government are often not aware of such decisions until very late in the day and accordingly have limited opportunities to influence such decisions.

4.31.2 Ogihara's recent decision to close its UK manufacturing activity is a case in point, with customers receiving less than three months' notice of the company's plans to stop UK production.

4.31.3 We understand that a major German supplier is planning to close two UK plants "in the near term" which will have a direct impact on the supply arrangements for at least one of the UK vehicle plants:

4.31.3.1 To quote one respondent: "Are government or the RDAs in the areas are aware of this and what are they doing?"

4.31.3.2 The same respondent added: "As far as we understand the company is just going through the standard 90 days' consultation process and then the plants are likely to close…"

4.31.4 The reluctance of tier 2 and 3 suppliers to invest more in the UK is partly the result of foreign ownership and attendant decision making of the VMs. To quote one major VM:

4.31.4.1 "As the last remaining UK based car producers have fallen into foreign ownership the situation has got worse."

4.31.4.2 "Our tier 2s and 3s are convinced that all their business will go to abroad and therefore they are not prepared to invest."

4.31.4.3 The increasing moves of which decision-making overseas increases the vulnerability of the UK supply chain.

4.31.5 The UK is seen to be at a further disadvantage because so few engineering and decision-making centres are located in the UK. As one tier 1 explained: "The main decisions are made in Germany and Japan [which is where the main VM engineering centres are also based]. One needs to be close to these centres and be in regular close contact with the people there. One must not underestimate the importance of having the R&D close to hand from a supplier standpoint."

4.32 Other issues: from the tier 1s, a **number of other problems were identified**, limiting the amount of UK sourcing, ie:

4.32.1 **Electronic Data Interchange (EDI)** is a real issue for the tier 2 and 3 suppliers. Tier 1s still find that tier 2s and 3s lack modern, high-powered IT systems for data exchange. The tier 2s and 3s need to install higher capacity systems and ensure their staff are trained in the use of such systems if they are going to be competitive: "There is a general lack of technical ability and systems competence among the smaller automotive suppliers. In Europe the majority of small companies are much more technically competent and the bulk of suppliers have moved into EDI."

4.32.2 **Directed sourcing** (ie when a VM tells the tier 1 which sub-supplier to use) is an issue for most of the tier 1s interviewed:

4.32.2.1 The degree to which directed sourcing impacts upon purchasing patterns varies according to the individual VMs. The percentage of directed purchasing among the tier 1s interviewed ranged from 55%-60% in one instance to less than 5% in another.

4.32.2.2 The issue of directed sourcing and the flexibility which tier 1s have to source from their own choice of suppliers varies from VM to VM, and from component to component, but it is clear that it can be a limiting factor on increasing UK sourcing.

4.32.2.3 One tier 1 respondent explained, moreover, how his own company was adopting directed sourcing itself. While they did not have to follow directed sourcing policies from their customers, common components used at production sites across Europe used common suppliers, directed centrally. The UK plant, therefore, did not have purchasing decision independence and has to use centrally approved suppliers: "If we could find a competitive UK tier 2 supplier, they could win business not just with our plant in the UK, but export business across Europe as well."