

# Patent filing and granting process law constitutional administrative essay

[Law](#)



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maTarmac Ltd. Patent PortfolioGroup ProjectMSc Management of Intellectual PropertyCentre for Commercial Law StudiesQueen Mary University of LondonThis document provides an analysis of the patent portfolio of Tarmac Ltd. with special focus on the patents protected within the UK jurisdiction along with a overview of legal procedures concerned with the patent granting process. A. Anvari, M. Black, Y. Chen, M. Fatokimi, M. Kokubunn K. Mejnertsen, X. Miao, K. Murphy, H. ShiraziWord count: 10, 257

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## **Executive summary**

This report profiles the Tarmac Ltd. patent portfolio in the United Kingdom. It provides an overview of relevant patent law and analyses the granted and pending patents assigned to Tarmac. In summary, Tarmac possesses four interrelated patents in force related to Water Management Systems and a fifth patent which is focused on changing the temperature of a thermal load, which is pending with apparent commercial value. At one point it owned a sixth patent improving moulding segments of lining for tunnel or pipeline that was allowed to expire due to non-payment of renewal fees. In line with the patent portfolio analysis, this report first provides an overview of the legal procedures applied in the patent systems particularly in the EU and UK. The patent portfolio analysis is based upon the search results of Tarmac patents and applications registered in the IPO and Espacenet databases. Each patent is analysed based upon its legal merits considering the independent claims and their scope of protections along with the patent validity analysis wherein the strength of litigation, novelty, inventive step are analysed. For each patent, a comparison matrix is also developed to clarify the inventiveness of the patent with reference to the documents cited on the above mentioned sources. The report found that the four related patents have not undergone any major challenges which may mean that they have been strong enough to deter invalidity proceedings. However, it also means that they are fundamentally untested. This is particularly relevant to patent GB2410282 (referred as Case 1 herein), which was found to be potentially vulnerable to legal challenges on the basis of obviousness. This report therefore makes three central recommendations: That GB2410282 (Case 1)

be assessed by a competent technical expert for its vulnerability to a charge of obviousness, and if necessary defences be prepared. If it has commercial potential, the progress of the pending patent EP2118580 (referred as Case 5 herein) through the grant process should be closely followed, and amendments made as necessary. That the renewal status of commercially significant patents be continually monitored and fees paid in a timely manner, to prevent accidental lapsing of patents.

## **Legal Discourse Section**

### **Patent Filing and Granting Process**

#### **2. 1. 1. Overview of Patent Filing Options**

There are several patent filing options available when filing for patent protection, an overview of these options is described below. Mainly there are two key decisions to make: 1. When to file for patent protection, and 2. Where to file for patent protection. 'When to file' considers both the timing of commercial exploitation of the invention and the "technology readiness" of the invention. The maximum lifetime of any patent, in any country is 20 years. Therefore, when determining when to file, one should first consider how ready their invention is for exploitation. If there is no possible way for a company or its competitors to exploit the invention within 20 years, it will not be commercially valuable to file as there will be no infringing activity to stop (Supplementary Protection Certificates can provide up to a 5 year extension to the patent lifetime, but these are not discussed in any further detail as they are only available for some medical or biological plant protection inventions). If the invention is capable of being exploited within a 20 year time frame, "technology readiness" of the invention should be then <https://assignbuster.com/patent-filing-and-granting-process-law-constitutional-administrative-essay/>

considered. As technology is being developed the associated enabling invention(s) can change form or adapt new and unforeseen features between initial R&D stages and final production solution. With regards the timing of filing a patent, there is a saying in the IP industry that you always file too soon, until you file too late. It refers to the fact that there is an optimum filing date for patent protection. The optimum filing date is to file as close to the commercialization date of the product, where a known production solution has been achieved, and yet before any of competitors who may file any patent for similar inventions. The reason why this issue becomes so important is because of section 72(1)d of the UK Patents Act 1977 which states that there can be no added matter to the patent after the priority date of the patent. It means that all information for which you are allowed protection must be included in the first filing. Sometimes, production ready products or processes fall outside the scope of patent protection because the patent(s) filed in relation to these products or processes were filed before necessary adjustments to the invention could have been predicted. A simple remedy of filing for additional patent protection for such adjustments is not always a possibility due to "inventive step" requirements which are discussed report. 'Where to file' is jurisdiction decision. A patent must be applied for in every country in which patent protection is sought. In other words, a UK patent will only provide patent protection in the UK. In order to stop others from making or selling a patented product or process in or to places outside of the UK, the patented product must be also filed in those countries. A collection of patents, all of which protect a single invention in multiple countries, is called a "patent family". According to Article 4 of the

Paris Convention for the Protection of Intellectual Property Rights, all countries member to the Paris Convention will assume the same priority date, and that is the date of filing of the first application. Following options are generally available when deciding where to file the first patent application: File for patent protection in a country of your choice; File for patent protection in a regional patent office (e. g. European Patent Office); File for an International Patent Application, a PCT (Patent Cooperation Treaty) application. The costs and associated deadlines for further filings in other countries or regions need to be taken into account. When deciding where to file the first patent application, the following considerations need to be accounted: File for patent protection in a country of your choice: Filing in the UK first is the recommended option. This is because filing in the UK still enables a PCT to be filed if patent protection in multiple foreign countries is desired. Filing in the UK first, whether you want patent protection in other countries or not is a very cost effective way to get quick patent protection for inventions; File for patent protection in a regional patent office (e. g. European Patent Office): Filing at the European Patent Office is the option which is likely to be the least appealing option as it is more expensive than applying at the UK patent office and also susceptible to central attack. However, if there is a high level of confidence that the patent will be granted and if it is likely that 3 or more member countries of the EPO are targeted for patent filing, then filing for a European patent may be justified; Filing for a European Patent enables one central application to be made initially which upon grant is then nationalised into individual patents that are member countries of the EPO. During the opposition phase, 8 months after the

announcement of the intention to grant the patent, there is a risk of central attack which ought to be highlighted when determining where to file first.

File for an International Patent Application, a PCT (Patent Cooperation Treaty) application: Filing for a PCT initially is not the most cost effective option for a first filing. Again, if protection in 3 or more countries/regions is sought, and there is a high level of confidence on patentability of the invention, then the PCT is a viable option for a first filing. The Patent Cooperation Treaty or PCT is an international agreement for filing patent applications having effect in up to 146 countries. It does not actually provide for global patent protection, instead it is a mechanism to enable patent protection in multiple countries which simplifies the process of filing internationally and delays the cost of foreign filings as well as provides patent owners with more time to assess if and where they want to make foreign filings. The PCT timeline as shown in Fig. 1[1] illustrates the procedures and underlying timeline of a PCT application. Figure : PCT Timeline for a patent application

A PCT application enables national phase filing decisions to be made as late as 30 months (31 months in some countries) after the priority date. If a PCT is not applied for, national phase filing decisions must be made within 1 year after the priority date. This means that the PCT provides a patent owner with an additional 18 months before beginning the process of filing for patent protection in other countries. Table 1 (next page) provides a summary for comparing the aspects of different filing options. This table has been permitted by WIPO to be included as a part of this document, and is available on the WIPO website. Table : A comparison between different filing patent options

Applications filed

separately in individual countries European Patent designating (choosing) which member countries you wish to include. Patent Cooperation Treaty application designating which countries you wish to include Fees Every country has its own fees (For up to date information please refer to European Patent Office website [www.epo.org](http://www.epo.org)). Typically £1764 up to the search stage and then examination fees in each country for the national phase as of 1 June 2007 £1727. Language of application Language of each individual country. English English Verified translations The expense of translations may be required at a very early stage. Translations of claims only required into French and German just before the grant. Translations required by many countries during national phase. Address for service In general you need to supply address of service within each country you to which you apply. In general, an address in the UK is sufficient for obtaining a European Patent. In general you need to supply address of service within each country you designate during the national phase. Advantages Greatest flexibility regarding where to apply for the patent protection. With a single application you can obtain, at grant, patent protection in all the countries of the EPC you have designated. A single search suffices for all PCT countries designated giving the opportunity for evaluation of the search report and amendment of the claims prior to further commitment. Disadvantages You will need to pay official fees in each country. If your EP application is turned down, or successfully opposed, you will fail to gain protection in any of the states designated. There is no single substantive examination, so the PCT application must then be pursued through the national offices of each



designated country separately (national phase) with fees and translations where necessary

## **2. 1. 2. Prosecution Process**

There are several major steps of the patent prosecution process prior to obtaining a granted patent. Patent Filing Stage (Initial Filing and National/Regional Filings) Search and Examination Stage Foreign Filing Decisions Patent Publication Patent Grant Typically the UK patent filing stage would mean filing a completed patent with a full description and set of drawings, and a set of claims, as well as an abstract summarizing the invention, full bibliographic information including assignee name(s), inventor name(s), and contact information. The patent office will respond to the patent filing with a patent filing receipt confirming the date of filing and an application number. It is important that the invention is not disclosed outside of a confidentiality agreement prior to the filing date, or else the patent will not be able to be granted. After the filing date, the inventor and assignee can openly share information about the invention in the public domain. A search must be requested usually within 12 months of the filing date, and the UK Intellectual Property Office (UKIPO) will then search for related prior art so that the patent office can then carry out a preliminary examination report to determine if the patent application meets certain formal requirements. 12 months after the date of filing, other national/regional filing decisions need to be made if the application is going to be filed outside of the UK for foreign patent protection. 18 months after filing the patent application will be published by the UKIPO so long as patent formal requirements have been met. Publication is a very important milestone in

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the patent prosecution process. Publication date is the date from which the patent proprietor can stop others from infringing the patent after the patent application grants, it is also important as the patent is now in the public domain. A substantive examination report will be carried out by the UKIPO to determine if the application meets patentability requirements. The patent application may need to be amended as a result of the report, before the patent can be approved for grant. The patent may be continuously amended at the UKIPO until it is deemed ready for grant. When a patent is finally granted, a notification of grant will be sent to the patent proprietor and republished as a granted patent. National/regional filings will go through a similar search and examination process, which may result in slightly different versions of granted patents. The stages of patent prosecution can take variable duration depending on the speed of the applicant's response, patent office speed, and above all stages may not happen in the order described above. A patent will typically take between 1-3 years to grant at the UKIPO, but to get a full granted patent family in place it can take between 3-8 years and in some cases more.

## **The Claims**

As a property deed defines, in a very precise manner, the boundaries of the land to which the deed claims legal rights to; a set of patent claims defines the scope of legal protection that a patent provides its proprietor with. As a further comparison, if a patent is to be looked at as a bargain between the State and a patent proprietor, the patent description would be the portion of the patent that fulfils its obligation to the State and society by disclosing enough details, the ability for a person skilled in the art to recreate the

invention. The patent claim set would define precisely what legal protection the State provides the patent proprietor with from others infringing upon his or her invention. More details on how to interpret such scope of protection are provided hereinafter.

## **Independent and Dependent Claims**

There are two types of claims in any patent, either independent or dependent claims. According to the EPO Examination Guidelines, " All applications will contain one or more 'independent' claims directed to the essential features of the invention. Any such claim may be followed by one or more claims concerning 'particular embodiments' of that invention" (chapter 3. 4). In other words, the independent claims define the necessary aspects of the invention, and the dependent claims are optional, more detailed aspects of the invention. When reading a granted patent, it is the independent claims that need to be considered by anyone reading the patent to understand the scope of the legal protection provided by the patent. If one is trying to determine if a product or process fits within the scope of a patent's protection, they need to read all of the independent claims and determine if the features of that product or process can be described by the independent claims. In other words, break down the independent claims phrase by phrase, and if the answer, " does this phrase describe the product or process I am trying to determine is patent protected?" is yes in all instances, then the product or process lies within the scope of patent protection of that particular patent. The dependent claims play an important role in the patent application process. When a patent is first filed, it should be filed to provide the proprietor with the broadest scope

possible. During the patent prosecution process, the patent office narrow the scope of this initial application by identifying related prior art as part of the patent office search, and therefore identifying which dependent claims identifying " alternative embodiments" are actually necessary or essential features of the invention and that differentiate this invention from prior art. As part of this prosecution process portions of or entire dependent claims will be merged with independent claims to more appropriately define the scope of the patent's protection.

## **Patent construction under the EPC**

### **Definition of construction**

One of the most important issues in patent claims is the construction. In litigation process for patent infringement, it is required to define what is meant by the terms in the patent claims. Each country has its own standard for claim construction. The overarching principle of the claim construction has been established by Article 69 (1) of the European Patent Convention, which is aiming to create harmonization and consistency in patent system across Europe. However, some differences in approach still remain on patent claim construction issues.

### **Article 69**

#### **Extent of protection**

(1)The extent of the protection conferred by a European patent or a European patent application shall be determined by the claims.

Nevertheless, the description and drawings shall be used to interpret the claims. In the UK, The Patents Act 1977 is the main patent law, which

harmonised UK patent law and the European Patent Convention. It provides the construction of patent claims in Article 125 (1) and (3).

## **125 Extent of invention**

(1) For the purposes of this Act an invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly. (3) The Protocol on the Interpretation of Article 69 of the European Patent Convention (which Article contains a provision corresponding to subsection (1) above) shall, as for the time being in force, apply for the purposes of subsection (1) above as it applies for the purposes of that Article.

## **EPC Protocol, article 1—Interpretation of EPC article 69**

Protocol on the interpretation of Article 69 EPC defining the extent of protection was set out to improve uniformity of interpretation of Article 69 among courts of contracting states to the EPC. This protocol provides the aid of patent claim construction; the claims are to be construed in context based on a middle position between a strict literal meaning and a use only as a guideline.

## **Article 1**

### **General principles**

Article 69 should not be interpreted as meaning that the extent of the protection conferred by a European patent is to be understood as that defined by the strict, literal meaning of the wording used in the claims, the description and drawings being employed only for the purpose of resolving an ambiguity found in the claims. Nor should it be taken to mean that the claims serve only as a guideline and that the actual protection conferred may extend to what, from a consideration of the description and drawings by a person skilled in the art, the patent proprietor has contemplated. On the contrary, it is to be interpreted as defining a position between these extremes which combines a fair protection for the patent proprietor with a reasonable degree of legal certainty for third parties.

### **Equivalent terminology**

Article 69 does not approve doctrine of equivalents extending the construction outside the claims, however, the Protocol has been amended aiming to achieve further harmonisation under the EPC by adding Article 2 which is dealing with equivalence. Article 2 indicates the possibility of the equivalence test being applied in future cases, yet it does not mean that doctrine of equivalents should be applied. Furthermore, it is difficult to project how this test will be applied by EPO.

## **Article 2**

### **Equivalents**

For the purpose of determining the extent of protection conferred by a European patent, due account shall be taken of any element which is equivalent to an element specified in the claims.

### **The current approach to construction**

In the case of *Catnic v Hill & Smith* [1982] RPC 183, the new approach was applied to patent claim construction by establishment of the principle of "purposive construction"; "a patent should be given a purposive construction rather than a purely literal one". The case of *Improver Corporation v Remington Consumer Product Limited* [1990] F. S. R. 181 reformulated the *Catnic* decision as a series of three questions to decide whether a variation of an invention infringes the claims of a patent. The variant will not infringe if any of the following are true; 1. The variant has a material effect upon the way the invention works. 2. This fact that the variant has no material effect would not have been obvious to a person skilled in the art at the date of the publication of the patent. 3. The person skilled in the art would have understood from the language used in the claim that the patentee intended that strict compliance with the primary meaning was an essential requirement of the invention. The case of *Kirin-Amgen Inc v Hoechst Marion Roussel Limited* [2005] RPC 169 is one of the most noticeable in current approach to patent claim construction. In this case, the House of Lords stated the *Improver* question is not always appropriate for application especially new technology. Thus, the new test was applied instead of the old *Improver* test to clarify how the scope of protection of a patent should be

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determined. The fundamental question in patent construction was " what would a skilled person understand the author of the patent to have meant?" The ' Skilled person' was identified in the case of Catnic v Hill & Smith [1982] RPC 183 as " someone likely to have a practical interest in the subject matter of the invention". In addition, ' purposive construction' established in the Catnic case was approved in this case, yet it was confirmed that there is no doctrine of equivalents in UK law.

## **Patentability**

### **Applications to the EPO**

Depending on the geographical scope of protection sought, there are various routes by which to obtain patent protection under the EPO. Specifically, if protection is sought internationally then application should be made via the international patent system - Patent Co-operation Treaty (PCT). If however protection throughout the European Union is preferred then an application should be filed directly to the EPO by regulation of the European Patent Convention (EPC). Conversely if protection is important only in some countries it may be advisable to file at the national office level.

## **Patentability**

The importance of this section is to ensure that pending patents (European or UK) in the portfolio are considered within the corresponding guidelines which follow in order to assess likelihood of grant. Although there are general principles to what is and what is not patentable, in practice there are differences in methods of testing subject matter in terms grant by the EPO and the UK patent office. It should also be noted that the UK patent office is



bound by the decisions of the UK courts. The important administrative differences however are that the patent office examiners assess the common general knowledge at the time of application with multiple prior art documents, whereas UK court judges will employ the opinion of an expert witness and look at one piece of prior art to assess obviousness. The patent office assesses suitability of claims within applications for the grant of a patent and subsequently the courts are where a patent may stand or be revoked if litigation commences post grant. Within the UK, in order to be eligible for grant, a functional or technical aspect of a product for which a patent is sought must satisfy three criteria: The invention must be new; The invention must involve an 'inventive step', and The invention must be capable of industrial application. An invention that at the time of application is part of the 'prior art' is not eligible for patenting. Matter which falls under the term 'prior art' or 'state of the art' is matter that is part of or available to the collective knowledge in any given field. Contrastingly matter which, upon examination, does not form part of prior art is considered a new invention and therefore satisfies the first of the aforementioned criteria. Furthermore, this new concept must not consist of an obvious modification or combination of elements which a person skilled in the art pertaining to the invention would consider obvious or lacking in a creative thought. An invention that would not be obvious to a skilled person in the art can be considered 'innovative'. Finally, the invention must be either capable of production (i. e. be a product) or a process of making a product, and have a commercial application. An approach of particular importance to UK is 'Windsurfer' approach as restated in *Pozzoli SpA v. BDMO* [2007] by Lord

Justice Jacob, for non-obviousness comprises of: Identifying the ' person skilled in the art' and the relevant general knowledge of said person Identify or interpret the inventive concept within the claim Identify the differences between what forms " state of the art" and the inventive step within the claim Assess whether these differences would have been obvious to the skilled person without having knowledge of the alleged invention, essentially testing whether there is a degree of invention In any case it could be that the product or process at hand would be better protected by secrecy and confidentiality. This is mainly because all patents disclose the nature of manufacture of the product which can then be subjected to reverse engineering in a country in which the patent is not in force. The EPO uses what is called the ' problem-solution approach' to assess inventive step in an objective and predictable manner, it comprises of three main stages: determining the " closest prior art", establishing the " objective technical problem" to be solved, and considering whether or not the claimed invention, starting from the closest prior art and the objective technical problem, would have been obvious to the skilled person. A person skilled in the art must be required to decipher whether the closest prior art, from view on the day before the filing or priority date, is valid for the claimed invention. The reason for altering the closest prior art to solve a new problem is what is meant by the " objective technical problem". The third and final point is not whether the skilled person could have conceptualised the invention by changing the closest prior art, but whether they would have done this due to the prior art driving them to do so in order to resolve the objective technical problem, as mentioned previously, or in pursuit of a particular advantage.

## **Unity of Invention**

### **Unity of Invention**

During the preliminary examination and search an investigation as to whether an invention is novel and includes an inventive step, the test of 'unity of invention' is applied. A patentable invention must contain one inventive step or consist of several elements which must all be present to produce one inventive step or concept. Essentially if a patent lacks unity there is a plurality of invention within the patent application.

### **Dealing with objections**

Within nine months of post-grant an opposition from third parties, especially competitors in the field of commercialisation of product in question, may lead to the revocation of the opposed granted patent. Examiners will, during this process, examine the validity of the patent and remedy the opposition by limitation of the scope (by the proprietor) of the patent if complete revocation is not found to be necessary. A limit to the scope of the patent may be requested at any time post-grant and takes effect on the date of publication in the European Patent Bulletin. This alteration then applies to all contracting states in which the patent had been granted.

### **Divisional patent applications**

As provided in section 15(9) of the Patents Act 1977, in cases where there is a lack of unity of invention, a divisional patent application (referred to as 'new application' in the Act) may be filed whilst maintaining the priority of the parent's application (original application). These applications cannot contain added matter, meaning no change to the concept or technicalities must be

made which create additional specifications. The purpose is to narrow specificity and resolve overlap or two new innovative concepts. Given the parent application is pending, these applications may be filed within three months of the compliance date which is either: 2 months from date of notification if the Patent examiner has issued an Examination report which notifies the applicant that the earlier application complies with the Act, then any divisional must be filed within and up to 2 months from the date of notification, or in any other case the period is 3 months before the compliance date of the 'parent' application.

## **Patent Families**

'Patent families' include several applications or publications for a single invention in different countries which claim the same priority or priorities. These all relate to each other via shared priority numbers and associated priority dates. However some may be defined differently according to how complex the patent application is, specifically if the applications are filed in a number of countries. These may cite earlier applications as priorities, or patent offices within different countries may accept or refuse different patent claims leading to patents which have differing scopes of protection. As a result of this any database, including those used in this report, used to collect information regarding patent families cannot guarantee encompassing results.

## Patent Analysis

### Case 1 – Patent GB2410282

#### " Water management system"

Next renewal date: 20 /01/2014Opposed: N/AAmended: No

### Summary of Patent

This invention is a water management system for managing storm water and/or spillage on a surfaced area. The system includes a permeable surface course which is comprised of porous concrete which includes a strengthening additive which allows the system to be used in heavy duty applications such as traffic on the system comprising of heavily laden commercial vehicles.

This patent was filed in 2004 and granted in 2009.

### Independent Claims

Claim No. 1. A water management system for managing storm water over a surfaced area, the system including a permeable surface course comprising porous concrete including a strengthening additive capable of withstanding traffic loading in excess of 20 million standard axles, a permeable understructure beneath the surface course, the permeable understructure including a porous foundation layer, there being a drainage conduit from the foundation layer to beyond the boundary of the surfaced area, and wherein the strengthening additive comprises a micro silica additive, which comprises 5% to 15% by weight of cement in the porous concrete. Claim No. 30. A water management system for a surfaced area substantially as hereinbefore described with reference to and/or as shown in the accompanying drawings.

## **Scope of Claims**

The first independent claim in this patent appears to have broad enough scope of protection. However, there are a few points that should be considered: Could the invention still work with a different composition of the strengthening additive?" Comprises 5% to 15% by weight of cement", would it be possible to use different percentage values? These questions would have to be answered by an expert in the field. If one or more of the points raised is answered positively, it would mean that there is a limit to the protection of this invention and a competitor could patent or use a similar invention without infringing. Also, " traffic loading in excess of 20 million standard axles" will exclude weaker traffic loading. This means it would be possible to make an invention that is less resistant to traffic loading which would not infringe this patent. The last independent claim is an old British style claim stating the invention is what was shown in the drawings.

## **Validity of Patents**

### **Strength in Litigation**

As this patent has not been challenged as infringing or invalid and the document cited is a previous patent owned by Tarmac, suggesting the patent might be strong in litigation.

### **Novelty**

No prior art document discloses an apparatus/method which has all the technical features described in the independent claims of this patent.

Therefore this patent appears to satisfy the criteria of novelty.

## **Inventive Step**

The distinguishing feature of the patent from prior art GB2390867 is that the system has a strengthening additive which allows the system to withstand heavy traffic and so able to be used in heavy duty applications. If the addition of this feature is held to be "obvious" by a person skilled in the art, then the patent would lack inventive step and could be held to be invalid. It requires the attention of a technical expert to decide whether this is likely to be considered an obvious addition to the invention.

## **Conclusion**

GB2410282 appears to have useful and a broad enough scope, and be strong for the purposes of litigation. However, the patent could be held to be invalid if the addition of a strengthening additive is deemed to be obvious.

## **Case 2 Patent GB2396379**

### **" WATER MANAGEMENT SYSTEM"**

Expiry: 16/07/2013Opposed: 0Amended: 0

## **Summary of Patent**

This patent is an invention designed for managing storm water or spillages on a surfaced area, particularly in urban regions. It comprises of a permeable surface continuous layer and a permeable under structure including a porous foundation layer, in which there is a drainage pipe from the foundation layer to beyond the boundary of the surface area. The foundation comprises of a filter layer to help filter storm water that would otherwise be rich in contaminants.

## **Independent Claims**

Claim No. 1. A water management system for managing storm water over a surfaced area, the system including a permeable surface course of a settable material having a thickness of between 100mm and 300mm, the settable material having been laid on-site in a flow able state, a permeable under structure beneath the surface course, the permeable under structure including a porous foundation layer, there being a drainage conduit from the foundation layer to beyond the boundary of the surfaced area, and wherein the permeable surface course includes porous concrete aggregate having a minimum particle size of 5 mm and a maximum particle size of 40mm, and less than 8% by weight of fine aggregate having a particle size of 3mm or less.

## **Scope of Claims**

This patent is made up of one independent claim, which appears to be well worded. Only minor deviations as described, would nullify the benefit of the device." Settable material" is a broad enough description that trying to avoid infringement however changing the type of material used could also nullify the benefit of the invention;" Drainage Conduit" may be a point of weakness as an individual would not necessarily have to use a pipe to control the flow of the water;" Flowable state" could be a point of weakness, as the invention could still maintain its function if the settable material is laid on-site in a state that is not flowable. This may require technical expertise to assess, as meanings of claims in infringement proceedings are legally construed according to how a relevant technical expert would understand the intended meaning.



## **Validity of Patent**

### **Strength in Litigation**

This patent has neither been challenged nor amended. It has not infringed nor been deemed invalid by prior art. This patent is probably therefore quite resilient to invalidity proceedings.

### **Novelty**

There are five prior art documents cited for this patent. However, none of the prior art document discloses an apparatus/method which has all the technical features described in the independent claims of this patent. Therefore this patent appears to satisfy the criteria of novelty.

### **Inventive Step**

A principal distinguishing feature from the prior art is the permeable surface course of a settable material having a thickness of between 100mm and 300mm. It includes porous concrete aggregate having a minimum particle size of 5mm and a maximum particle size of 40mm, and less than 8% by weight of fine aggregate having a particle size of 3mm or less. The structure and arrangement of the surface course provides its specific function.

### **Conclusion**

GB2396379 appears to have useful scope, and be moderately strong for the purposes of litigation.

## Case 3 Patent GB2390867

### " Water management system for managing storm water, spillages etc."

Expiry: N/A Opposed: NON/A Amended: NON/A

### Summary of Patent

This invention relates to a water management system for managing storm water and spillage on a surface area. Particularly for use in urban areas to filter the water to stop the contaminants such as bacteria sending to the watercourses and the like, and stop the sewage contaminate the ground.

### Independent Claims

Claim No. 1. A water management system for managing storm water over a surfaced area, the system including a permeable surface course of porous asphalt which includes penetration grade bitumen modified with fibers and/or polymer modified bitumen which is laid on-site in a flowable state, a permeable understructure beneath the surface course, the permeable understructure including a porous foundation layer, there being a drainage conduit from the foundation layer to beyond the boundary of the surface area. Claim No. 31. A water management system for a surfaced area substantially as hereinbefore described with reference to and/or as shown in the accompanying drawings.

### Scope of Claims

The independent claim in this patent appears to be well worded. Minor deviations in the shape and component structure of the invention as described, would nullify the benefit of the device." Porous asphalt" is a broad

description that trying to circumvent by changing the variety of material used would nullify the benefit of the invention. The material "penetration grade bitumen" and "polymer modified bitumen" are broad enough description that trying to avoid infringement by changing the type and by changing the grade of material used would also nullify the benefit of the invention." The permeable under structure" could be a point of weakness that trying to circumvent by changing the type of structure and the variety of the material used would nullify the benefit of the invention." a drainage conduit from the foundation layer to beyond the boundary of the surface area" could be a point of weakness as the drainage could be connected to different points stated if it is technically advantageous." Generally rectangular" may be a point of weakness - would the invention not be beneficial if the segment is not rectangular in plan view? This may require technical expertise to assess, as meanings of claims in infringement proceedings are legally construed according to how a relevant technical expert would understand the intended meaning.

## **Validity of Patent**

### **Novelty**

No prior art document discloses an apparatus/method, which has all the technical features, described in the independent claims of this patent.

Therefore this patent appears to satisfy the criteria of novelty.

### **Strength in Litigation**

This patent has neither been challenged nor amended, it has not infringed or been invalidated by the cited documents. Therefore the patent's claims have

proven strong enough during both the examination process and in opposition proceeding.

## **Inventive Step**

A principal distinguishing feature of the patent from prior art GB20050002831 (" A water detention system incorporating a composite drainage membrane") appears to be the similar function of operation as the technical. And the principal distinguishing feature of the patent from prior art from FR19780022463 (" Dalle en béton de ciment"), GB19570019489 (" Road construction") and GB20060002831 (" A water detention system incorporating a composite ") appear to be having different purposes and locations. There is a potential opening for a legal challenge based on combining this with prior art from GB20010008701 (" A reinforced permeable paving structure") and from GB20040001180 (" Water Management System"); they require the attention of a technical expert to decide whether this is likely to be considered " obvious" or not. If such a combination of elements were held to be " obvious", then the patent would lack inventive step and could be held to be invalid.

## **Conclusion**

This patent appears to have useful scope, and be moderately strong for the purposes of litigation.

## **Case 4 Patent GB2404213**

### **" WATER MANAGEMENT SYSTEM"**

Next Renewal Date: 16/07/2013Opposed: N/AAmended: N/AStatusIn Force

## **Summary of Patent**

This invention is a water management system for managing storm water and/or spillage on a surfaced area. The main advantage of this invention is that the thickness of the first course and the construction of the various layers may be adjusted to suit specific site traffic requirements.

## **Independent Claims**

Claim No. 1. A water management system for managing storm water over a surfaced area, the system including a first course comprising one or more areas of permeable material the or each of which comprises one of porous asphalt and porous concrete, and one or more areas of impermeable material, the or each of which comprises one of impermeable asphalt and impermeable concrete, the system further including a permeable understructure beneath the first course, the permeable understructure including a porous foundation layer, there being a drainage conduit from the foundation layer to beyond the boundary of the surfaced area.

## **Scope of Claims**

This patent made up of one independent claim, which appears to be well worded. Minor deviations in the shape and component structure of the invention as described might nullify the benefit of the device.' Porous asphalt' and ' porous concrete' is a broad description that trying to circumvent by changing the variety of material used would nullify the benefit of the invention. The ' Impermeable material' and ' Permeable understructure' are broad enough descriptions that an attempt to avoid infringement by changing the types would nullify the benefit of the

invention.' Drainage conduit' maybe a weakness point would nullify the benefit of the invention due to the variety types and of that position in the similar system.

## **Validity of Patent**

### **Novelty**

No prior art document discloses an apparatus/method, which has all the technical features, described in the independent claims of this patent. Therefore this patent appears to satisfy the criteria of novelty.

### **Strength in Litigation**

This patent has neither been challenged nor amended, it has not infringed or been invalidated by the cited documents. Therefore the patent's claims have proven strong enough during both the examination process and in opposition proceeding.

### **Inventive Step**

A principal distinguishing feature of the patent from prior art from JP 2000345504 (Pavement structure of floor surface or road surface) and FR 002384917 (Dalle en béton de ciment) appear to be having different purposes and locations. Also, a notable distinguishing feature of the patent from prior from JP 2000345504, FR 002384917 and WO 02/081822 (A reinforced permeable paving structure) appear to be used in different situation, which is also to provide the impermeable pavement of the floor surface or the road surface hard to accumulate dust or water and excellent in durability. If such a combination of elements were held to be "obvious", then the patent would lack inventive step and could be held to be invalid.

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## **Conclusion**

This patent appears to have useful scope, and be moderately strong for the purposes of litigation.

## **Case 5 Patent EP2118580**

### **" A METHOD OF CHANGING THE TEMPERATURE OF A THERMAL LOAD"**

Expiry:

### **PATENT STILL PENDING**

Opposed: Amended:

## **Summary of Patent**

This patent consists of three inventions with a single inventive concept: A method of using a phase change material to augment the effectiveness of a subterranean duct used to influence the temperature of a thermal load (usually a building structure) characterized to take advantage of the daily temperature cycle to help reset the phase change material; An apparatus to carry out the above; A method of calculating an effective phase-transition temperature for a given temperature scenario, using average ambient air and ground temperatures, so that the phase changing material deployed can be chosen to approximate this value and hence give good performance.

## **Independent Claims**

Claim No. 1. A method of changing the temperature of a thermal load including the steps of passing ambient air at a first temperature through a subterranean duct at a second, ground, temperature where heat is

exchanged between the passing air and the duct to pre-treat the passing air by modifying the temperature of the passing air, providing a phase change material in the duct which undergoes a phase change within a predetermined temperature range, thermally contacting the passing air with the phase change material whereby heat is exchanged between the passing air and the phase change material to change the latent heat of the phase change material, and subsequently passing the air to the thermal load to exchange heat with the thermal load, characterised in that the method includes passing ambient air at a third temperature through the subterranean duct, the difference between the first temperature and the third temperature resulting from diurnal variation in the ambient air temperature, such that heat is exchanged between the passing air and the phase change material to assist in regenerating the phase change material.

Claim No. 14. An apparatus for changing the temperature of a thermal load, in accordance with the method of any of one of claims 1 to 13. Claim No. 15. A method of selecting a suitable phase change temperature for a phase change material for use in a method according to any one of claims 1 to 13 including the steps of determining an average ambient air temperature at a location of the subterranean duct at selected intervals over a period of time, determining a corresponding average upper ground layer temperature at the location of the subterranean duct at the selected intervals over the period of time, selecting an interval in which the maximum or minimum average ambient air temperature occurs, and adding one half of the difference between the average ambient air temperature and the corresponding



average upper ground layer temperature to the average upper ground layer temperature in the selected interval.

## **Scope of Claims**

It should be noted that the claims have been significantly re-written (and reduced in number) in response to the examiner's preliminary search report, and presumably are considerably more defensible. Claim 1 is reasonably robust in terms of its alleged inventive step of using phase change materials in conjunction with daily temperature variations to augment the use of underground ducts to manage temperature of structures. It should be noted that the inventors acknowledge that only these two steps are inventive over the prior art. Claim 14 is the 'apparatus' version of the 'method' claim 1, and hence, although in theory an independent claim, it will stand and fall on the basis of claim 1. Claim 15, the method for calculating an effective phase change temperature, is far too precise. The formula used is a very simple heuristic for a not very sensitive value and in this application can almost certainly be approximated or altered enough to get around without removing all the benefits. It does not seem to have been anticipated. However, it should be noted that generally this sort of design-process claim is difficult to exploit or police.

## **Validity of Patent**

As the patent has not yet completed the examination process, limited comment can be made on its validity as of yet. However, in the preliminary examination, DE2729635 (A1) — 1979-01-11 was found by the examiner to invalidate many claims, in particular the old independent claims 1, 12 and

48. This strongly suggests that the overall inventive concept is either not new or obvious. The claims were therefore substantially reworded in the amendment, and most dependent claims were removed. DE2729635 (A1) is not available in English except as related document AU513830B2 in the Australian patent system, so further analysis may be difficult and has been carried out on the basis that the Australian document closely matches the original German. Comparing EP2118580 with AU513830B2 (as a proxy for DE2729635 (A1)), it is found that the amended independent claims 1, 14 and 15 are not fully anticipated by the earlier patent application.

## **Conclusion**

The independent claims 1, 14 and 15 are probably not invalidated by prior art. Claims 1 and 14 stand or fall together, and although it is outside the competence of the drafters of this report to comment on commercial viability of patents, being reasonably defensible and traditional method and apparatus patents, there is no reason to believe from the outset that claims 1 and 14 would not be commercially exploitable. However the scope of 15 is very narrow and is probably easy to avoid and still reap many of the benefits of the method. It should also be noted that it may be hard to commercially exploit claim 15, either directly or through hindering competitors, since generally the only avenue available for exploiting such "know-how" claims is providing consultancy services.

## Case 6 Patent EP1192028

### " IMPROVEMENTS IN MOULDING SEGMENTS OF LINING FOR TUNNEL OR PIPELINE"

Expiry: LapsedOpposed: YES2005/02/09Amended: YES2007/02/14

#### Summary of Patent

This invention relates to a moulding apparatus and moulding method for moulding articles in a settable material such as a segment of a lining for a tunnel, or a pipeline. The moulding apparatus is provided with four integral mould edges which together with a curved base and removable insert form the moulding recess into which the settable material can be introduced. Instead of forming ends or sides of a mould to produce an article with a desired edge formation, the inwardly facing surface(s) of the insert(s) may be configured to produce an article with a desired edge formation. By utilizing inserts substantial cost savings can be made and further cost savings can be made by utilizing the auxiliary insert part.

#### Independent Claims

Claim No. 1. A moulding apparatus (10) for moulding a tunnel or pipeline segment (50) in a moulding recess using a settable material, the segment (50) being rectangular in plan view, the moulding apparatus (10) including a monolithic primary part (11) provided with a curved base (14) and with a plurality of integral mould edges (15-18), the moulding apparatus (10) further including at least one insert (20, 21) which is arranged to extend along one of the mould edges (15-18), the insert (20, 21) having a surface (28) which faces inwardly of the moulding recess (12), the surface being

configured so that an adjacent edge of the segment (50) moulded in the moulding apparatus (10) is provided with a desired formation, the insert (20, 21) being removable from the primary part (11) with the moulded segment (50), the insert (20, 21) including at least one of: a gasket (36) which becomes permanently attached to the settable material; fixings (54, 55, 57) which are supported such that during moulding the fixings (54, 55, 57) become embedded in the settable material, the fixings (54, 55, 57) subsequently being usable to connect or facilitate connection of the segment to another segment; in the inwardly facing surface (28) of the insert (20, 21), a recess (25) so that the adjacent edge of the resultant segment (50) will have protuberance which is receivable, in use, in a recess of an edge of an adjacent segment. Characterized in that the primary art (II) of the moulding apparatus (10) is provided with four integral mould edges (15-18) which, with the base (14), and the insert (20, 21) define the moulding recess (12) into which settable material can be introduced. Claim No. 13. A method of moulding a tunnel lining segment (50) in a settable material, the segment (50) being generally rectangular in plan view, using a moulding apparatus (10) forming a mould recess (12) and including a monolithic primary part (11) provided with a curved base (14) and a plurality of integral mould edges (15-18), the method including placing into a moulding apparatus (10) at least one insert (20, 21) which is arranged to extend along a mould edge (15-18), and introducing into the moulding recess (12) settable material, the insert (20, 21) having a surface (28) which faces inwardly of the moulding recess (12), the surface being configured so that an adjacent edge of the article (50) moulded in the moulding apparatus (10) is provided with a desired

edge formation, and once the settable material has set, removing the moulded article (50) and the insert (20, 21) together from the primary part (11), the insert (20, 21) including at least one of: a gasket (36) which becomes permanently attached to the settable material; or fixings (54, 55, 57) which are supported such that during the fixings (54, 55, 57) become embedded in the settable material, the fixings (54, 55, 57) subsequently being usable to connect or facilitate connection of the segment (50) to another segment; or in the inwardly facing surface (28) of the insert (20, 21), a recess (25) so that the adjacent edge of the resultant segment (50) will have a protuberance which may be received in a recess of an edge of an adjacent segment, the method being characterized in that the moulding recess into which the settable material is introduced is defined by four mould edges (15-18) which are integral with the primary part (II) of the moulding apparatus (10), the base (14) and insert (20, 21).

## **Scope of Claims**

The following observations can be made: There are two independent claims in the patent which are product (apparatus) and method claims as for a moulding apparatus and moulding process respectively. The patent appears to have strong protection after having amended followed by receiving a series of observations made during the examination process and opposition proceedings; The moulding apparatus defined here is limited to "...a monolithic primary part (11) provided with a curved base (14) and with a plurality of integral mould edges (15-18), ..." thus the claim does not cover for example a can-shaped moulding apparatus which has no integral edges; The " segment" defined in the patent is generally rectangular and thus minor

deviations in the shape and component structure of the invention could nullify the protection should it be technically feasible; The structure of the "insert" includes at least a gasket or fixings or a recess which otherwise technically sufficient it could give away the protection; The "settable material" used in both Claim 1 and 13 and described to be typically concrete could narrow the scope of protection and thus a point of weakness; The moulding recess into which the settable material is introduced is characterized by four edges which is quite definite and could nullify the claim by changing the structure.

## **Validity of Patent**

### **Strength in Litigation**

This patent has undergone challenges and revisions both during examination process and in a hard contested opposition proceeding. The claims originally specified were much more general. The EPO under Article 35(2) warned that the subject matter lacks novelty, inventive step, industrial applicability and clarity. In response, the claims were amended and narrowed down to clearly define the subject matter meeting the requirements of Article 6 PCT.

Opposition proceedings were subsequently filed claiming that the subject matter was not new and did not involve an inventive step. The patent did not disclose the invention sufficiently clear and complete for it to be carried out by a skilled person in the art. In addition, it was claimed that the patent extended beyond the content of the application or earlier application as filed. Thus, it was requested that the patent should have been revoked entirely. In light of presenting almost a dozen of patents and non-patent documents further amendments were made and consequently the patent was granted

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and remained valid. The EPO decided that the amendments described a set of elements not simultaneously present in any piece of the prior art. The amended patent and invention were declared valid then. The current form of the patent is probably quite resilient to invalidity proceedings.

## **Novelty**

No prior art document discloses an apparatus or a method which has the feature of characterization portion (four integral mould edges) described in Claim 1 and 13. Thus, the patent meets the novelty requirement. The novelty comparison, by necessity, is based on the analysis of prior art documents cited on the registry during the examination and opposition proceedings. Therefore there is a possibility that there may be invalidating prior art that has not been seen by the registry, which may be used to challenge the patent in litigation for revocation proceedings.

## **Inventive Step**

The moulding apparatus comprising a primary part with four integral mould edges is neither known from nor rendered obvious by the available prior art. Although a monolithic primary part provided with a base and two integral mould edges were disclosed. Additional mould edges required defining the moulding recess being provided by removable side walls, thus it was necessary to disassemble the mould to remove the moulded article from the mould which may be time consuming. Using four integral mould edges disclosed in the invention is thus considered as an improvement to the prior art to solve the technical problem and accelerate the manufacturing process. Thus the solution posed by amended Claim 1 also meets the inventive step

requirement. This also applies to Claim 13 taking into account the changes. A principal distinguishing feature of the patent from prior art appears to be the four integral mould edges. However, there is a potential opening for a legal challenge based on combining prior arts such as DE2135049 (SCHALUNG FUER STAHLBETONPLATTEN) and US2121439 ("MOLD"). It requires the attention of a technical expert to decide whether this is likely to be considered "obvious" or not. If such a combination of elements is held to be "obvious", then the patent would lack inventive step and could be held to be invalid.

## **Conclusion**

EP1192028 is a lapsed patent due to the non-payment of renewal in 2009. Having challenged on novelty, inventive step and clarity, the patent appears to have a useful scope and be very strong for the purpose of litigation.

## **Conclusion and Recommendations**

Tarmac Ltd. patent portfolio consists of six patents, four of which are related (Cases 1 - 4) to each other. These four patents are UK patents concerning water management systems to manage storm water or spillages on a surfaced area. These patents have not been substantively challenged during the examination process or in any litigation proceedings. Whilst it is encouraging that the examiners did not find prior art that encroached on the scopes of the claims of these patents, in a sense the patents remain untested, and therefore could be open to revocation by a competitor, if for instance more prior art is unearthed. As with all things, "absence of evidence is not evidence of absence". More positively, these patents have



had good standing for a number of years, and this provides evidence that not only must they have been commercially significant for Tarmac, since they have been paying renewal fees, but also that Tarmac's competitors could not find grounds for revocation. GB2410282B (Case 1) uniquely includes a strengthening additive which allows the system to be used in heavy duty applications, such as roads for a high volume of heavy vehicles. However, the patent could be held to be invalid if the addition of a strengthening additive is deemed to be obvious. GB2396379B (Case 2) specifies the permeable surface course as a settable material of a particular range of thicknesses and includes porous concrete aggregate having particular particle sizes or densities. The structure and arrangement of the surface course provides its function. GB2390867B (Case 3) is distinguished in that its surface course consists of porous asphalt. GB2404213B (Case 4) has a first course comprising one or more areas of permeable material comprising of porous asphalt and porous concrete, where the thickness of the first course and the construction of the various layers may be adjusted to suit specific site traffic requirements. EP2118580A1 (Case 5) relates to influencing the temperature, normally of buildings, by exploiting daily temperature variations and the thermal properties of phase change materials in conjunction with underground pipes. It has not been granted yet, and as such there is a greater degree of uncertainty as to its value. The main process and apparatus claims have survived by amendment after a thorough challenge during the examination process, and are therefore likely to be granted and strong in terms of litigation. The fact that Tarmac bothered to pursue these claims when strongly opposed, and not thirty-odd others,

suggests that they may have believed there was serious commercial value in them. However the claim for a calculation method for the system is probably easy to work around by competitors, and may be hard to commercially exploit. EP1192028 (Case 6), related to making tunnel and pipe segments, has lapsed due to non-payment of renewal fees in 2009. It had been challenged on grounds of novelty, inventive step and clarity, but had been granted after amendment and therefore could have been considered likely to be strong for litigation purposes if it was still in force. Thus, it appears not to have had commercial value at the time for Tarmac since it was allowed to lapse. There is no mechanism to resurrect this patent now thus this patent cannot be exploited commercially so it has no potential value in actual circumstances.

## **BIBLIOGRAPHY**