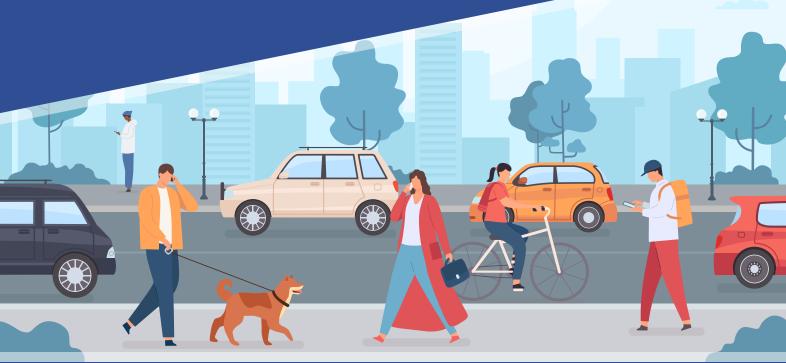


Below Ground Network Access & Drainage Solutions for Active Travel Applications







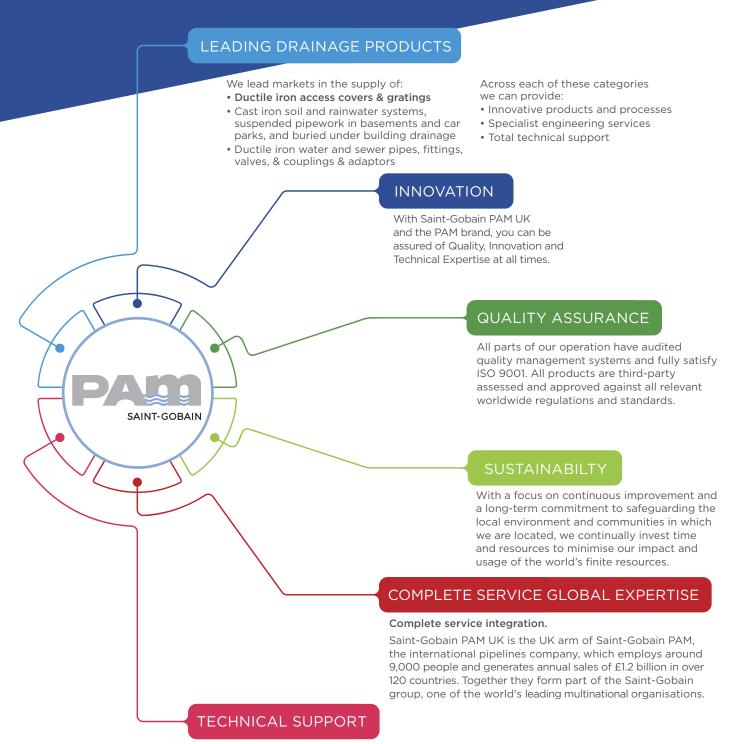


HIGH PERFORMANCE DUCTILE IRON ACCESS COVERS AND GULLY GRATINGS



Local solutions from a global organisation

With access to worldwide technical expertise and an extensive portfolio of products, Saint-Gobain PAM UK is able to combine the benefits of being part of a global organisation with the ability to develop solutions to satisfy local requirements.



With the international support of parent company Saint-Gobain, we are able to offer unrivalled technical support, a total solution approach and unparalleled quality and innovation. A UK-based business, with two foundries and a distribution centre in the Midlands, we combine international reach with local, specific solutions across all of our customers.





Our Active Travel solutions

Manufactured in the UK to the highest safety, quality and industry standards, the Saint-Gobain PAM range of ductile iron access covers and gully gratings offer enhanced performance in key areas such as durability, road user and pedestrian safety and security.

Our extensive range of products provide high performance long lasting solutions for a wide variety of applications in the most challenging of environments.

Durability

The specification and installation of assets that offer predictable performance are vital if the costs and disruption caused by streetworks are to be avoided. Through our involvement in a Nottingham University-led research programme, we have gained a valuable insight into how ironwork interacts with the surrounding road construction. By combining critical elements in the design, engineering and manufacture of our products, we can ensure and enhance long-term performance.



Safety

The development of a comprehensive range of hinged access covers helps minimise the risk of injury through static lifting of ironwork. Studies have demonstrated that by using hinged solutions, the required lifting effort is reduced by 50%.

Security

The provision of flexible anti-theft solutions acts as a deterrent against theft, unauthorised access or vandalism and can be tailored to individual requirements.

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Access Covers

Durable long-term solutions

At Saint-Gobain PAM UK we recognise our role in contributing to road safety and the importance of providing durable long-term solutions. Through an exhaustive new product development programme we have been able to achieve a major breakthrough that has





DURABILITY

Includes the Load Transfer System (LTS) for optimum installation and product durability.



ACCREDITATION

Third-party certified by BSI and kitemarked to the requirements of BS EN 124. Compliant to the requirements of Highways England advice note CD 534 and BS 7903.

*The PSRV has been independently determined and verified in accordance with the requirements and methodology stated within Appendix A. WRc skid test and Note 3 of section 2.6 within CD 534.



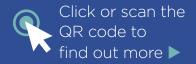
ROAD SAFETY

Exceeds the requirements as stated within paragraph 2.6 of Chapter 2: Design Considerations for Chamber Tops within CD 534.*

install

SAVE TIME & COST

Key sizes available with the Install Plus frame levelling and installation system.







Griptop is a truly innovative solution that features a patented factory-applied high-friction, anti-skid, maintenance-free top surface offering durable and proven long-term skid and slip resistance.

Available in E600 and D400 load classes, Inter-Ax, Briton, Opt-Emax, Silent Knight or Ult-Emax variants and a wide range of clear opening sizes, GripTop offers a permanent high-friction solution for where the road design or configuration requires long-lasting grip performance such as traffic lights, pedestrian crossings and roundabouts.



GripTop offers

- Proven in-service durability.
- Industry-leading PSRV (Polished Skid Resistance Value).
- A wide range of product options dependent on the chamber types.
- Reassurance with being certified and BSI Kitemarked BS EN 124.



For further information, please contact our Technical team on:

- ① 01664 814014
- □ technical.covers.uk.pam@saint-gobain.com
- www.pamline.co.uk

CASE STUDY



Award winning high friction anti-skid carriageway access cover range

SAFE, SECURE, VERSATILE

Helping ensure the safety of road users and

pedestrians 12 years on

In collaboration with Bristol City Council



THE ISSUES FACED

Creating a safer road infrastructure is seen by local authorities as a priority for reducing accidents caused by skidding. On roads today there are many factors which can contribute to increasing the risk of accidents in particular those facing motorcyclists and cyclists.



Access covers in the carriageway can become slippery over time, their raised patterns worn by decades of traffic sometimes leaving a polished slippery surface.





FINDINGS

As part of the Broadmead redevelopment programme in 2009 working in partnership with Bristol City Council, Saint-Gobain PAM UK carried out large-scale



testing in the city centre of a high friction access cover solution known as GripTop. Around 70 new GripTop access covers were installed around the inner ring road, a road system that is subjected to continuous heavy traffic. Each installation was monitored and tested during the two-year development programme.

THE SOLUTION:

Through an exhaustive new product development programme Saint-Gobain PAM UK have been able to achieve a major breakthrough that has resulted in the development of GripTop. Fully compliant and Kitemarked with the requirements of BS EN 124, GripTop features a patented factory applied maintenance free high-friction top surface which brings together high performance bonding agents and bauxite aggregate on a recessed ductile iron substrate.

12 years on, several of the original installations in Bristol City centre were independently tested in-situ in November by Lucideon, to determine if any degradation in the skid resistance performance had occurred. Using the pendulum method in accordance with BS 7976 locations were tested along Bond Street, York Street and Pritchard Street.



GripTop is proven to offer a permanent high friction solution for where the road design or configuration require long-lasting grip performance such as breaking areas approaching traffic lights, pedestrian crossings and roundabouts.

GripTop is available in E600 and D400 load classification, Briton, Inter-Ax, Opt-Emax, Silent Knight or Ult-Emax variants and a wide range of clear opening sizes to suit different applications.



The results proved to be very encouraging with an average PSRV (polished skid resistance value) recorded of over 75, meaning only a 6% loss in performance after 12 years of continuous service, proving the long term durability of GripTop.

Griptop is just one of several innovative solutions offered by Saint-Gobain PAM UK. For further information and advice on any other product or service, please contact our team on:

① 0115 989 8903

□ pamsales@saint-gobain.com

www.pamline.co.uk



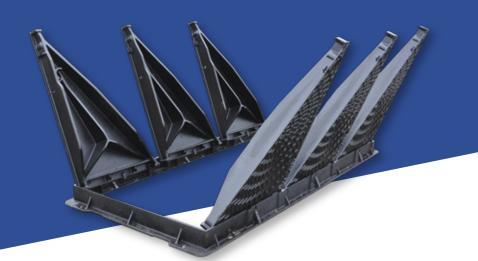
BRISTOL CITY COUNCIL

Mike Brewer Civil and Contract Project Manager

We are delighted that Saint-Gobain PAM's commitment to monitor the covers' performance has proved them to maintain their highly tenacious grip thereby making a very real contribution to road safety in this renowned 'Cycling City'.

I am now entering my 45th year in this industry and I am very proud to have been involved albeit in a small way with this award winning product. As a Motorcyclist and an Officer involved in crash investigations I am confident that their introduction has averted many accidents and thereby potentially many life changing injuries.







Available in D400 and E600 load classifications and a wide range of clear openings in 100mm or 150mm frame depths, Opt-Emax is the ergonomic solution for the frequent maintenance and inspection of below ground assets.

Recommended for use in:

City roads carrying continuous traffic where frequent access to below ground assets is required.



HEALTH & SAFETY

Safety is assured through individually hinged cover sections which ensure safe operation by reducing the effort required when opening and closing.



DURABILITY

Includes the Load Transfer System (LTS) for optimum installation and product durability.



ACCREDITATION

Third-party certified by BSI and kite marked to the requirements of BS EN 124. Compliant to the requirements of National Highways advice note CD 534 and BS 7903.



ANTI-SKID VARIANT AVAILABLE

Certain sizes are also available as a GripTop high-friction anti-skid variant; please turn to the GripTop section beginning on page 4 for further details.



SECURITY

High-security retro-fit anti-theft options to deter unauthorised access, offering increased asset security.



ROAD SAFETY

Radial raised chequer design with independently verified skid & slip resistance values



SAVE TIME & COST

Key sizes available with the Install Plus frame levelling and installation system.



Click or Scan the QR code to find out more



The Opt-Emax family of products has become the product of choice for the Highway Communications, Water and Telecom sectors. With a range of clear opening sizes from 600x450 through to 2,250x750, Opt-Emax includes many features that combine to:

- ▶ Enhance safety as each cover section is independently hinged and held within the frame and when in the open position held securely at 90° to prevent accidental closure. The opening and closing of the cover sections is a controlled movement, reducing the effort required and reducing the risk of injury.
- ▶ Increase durability through the frame Load Transfer System. LTS is a patented system that reduces the strain from the dynamic forces created by passing traffic by 50% that would normally be transmitted into the sub-structure, eventually leading to a breakdown of the reinstatement materials.

► Improve asset security due to its innovative primary and secondary cover section configuration as Opt-Emax offers the flexibility of having security locking systems

added to it retrospectively which can be tailored to the requirements of the asset owner.



Opt-Emax offers clients, specifiers

and operators a versatile solution for a wide variety of applications.

Silent Knight is available in D400 and E600 load classifications in both carriageway 2 and carriageway 3 clear opening sizes and in 100mm or 150mm frame depths.



It combines a double triangular cover design with a V profiled seating for additional stability, making the Silent Knight range of access covers a durable solution in the most demanding applications.

Recommended for use in:

Carriageways carrying fast-moving traffic and areas that are subjected to heavy wheel loads such as docks and container port areas.



HEALTH & SAFETY

For use on deeper chambers all sizes have the option of being supplied with an integral antifall safety grid.



SECURITY

Available as a bolt down variant to deter unauthorised access, offering increased asset security.



DURABILITY

Includes the Load Transfer System (LTS) for optimum installation and product durability.



ROAD SAFETY

Radial raised chequer design with independently verified skid & slip resistance values.



ACCREDITATION

Third-party certified by BSI and kitemarked to the requirements of BS EN 124. Compliant to the requirements of Highways England advice note CD 534 and BS 7903.



SAVE TIME & COST

A number of sizes are available with the Install Plus frame levelling and installation system.



ANTI-SKID VARIANT AVAILABLE

Certain sizes are also available as a GripTop high-friction anti-skid variant; please turn to the GripTop section beginning on page 4 for further details.



Click or Scan the QR code to find out more





The Inter-Ax D400 range combines a proven double triangular cover design with enhanced frame durability features that offers long-term performance. Available in a wide range of clear opening sizes, Inter-Ax is a versatile solution suitable for a wide variety of applications.

Recommended for use in:

Carriageways carrying continuous heavy traffic.



DURABILITY

Includes the Load Transfer System (LTS) for optimum installation and product durability.



SECURITY

Available as a bolt down variant to deter unauthorised access, offering increased asset security.



ACCREDITATION

Third-party certified by BSI and kite marked to the requirements of BS EN 124. Compliant to the requirements of National Highways advice note CD 534 and BS 7903.



ROAD SAFETY

Radial raised chequer design with independently verified skid & slip resistance values.



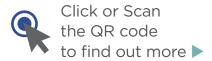
ANTI-SKID VARIANT AVAILABLE

Certain sizes are also available as a GripTop high-friction anti-skid variant; please turn to the GripTop section beginning on page 4 for further details.



SAVE TIME & COST

A number of sizes are available with the Install Plus frame levelling and installation system.





CASE STUDY



INSTALLATION SYSTEM

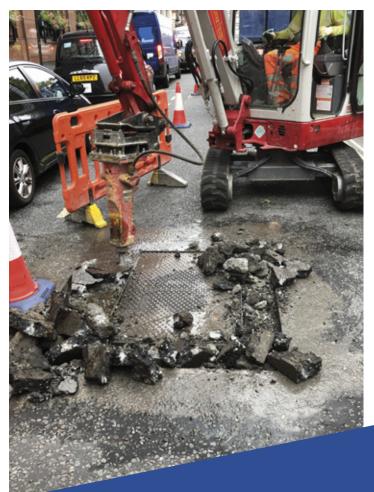
Helping reduce the impact and frequency of roadworks on city centre traffic through the adoption of innovation and best practice.

Creating Value through collaboration

Working in partnership with LUMEN and Instarmac

THE ISSUES FACED

The disruption caused by streetworks at peak times on busy city streets often results in lengthy delays to road users and escalating costs for the network owner through the application of permits, lane rental charges, fines and overrun penalties. The failed reinstatement of ironwork is a common problem that adds to the growing costs and delays.

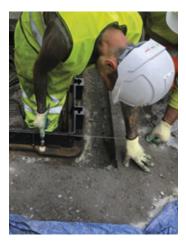




FINDINGS

Traditional methods of installation using industry-standard materials and processes would require a typical lane closure of 24 hours. In many cases the road is opened to traffic much sooner, meaning the materials have not fully cured. This introduces a weak element to the integrity of the installation which often leads to the premature failure of the reinstatement, requiring repeat visits to rectify the problem, causing further costs and disruption.

Designed to help support and level the frame during the early stages of installation, Install Plus saves time, makes efficient use of materials and reduces whole-life costs by ensuring products are installed right first time.





The performance of street ironwork is intrinsically linked to the performance and quality of the materials and methods used to install them.

Install Plus offers several benefits over traditional methods which lead to significant improvements in safety while also providing savings in time and cost of the installation through the efficient use of materials and the avoidance of repeat visits by ensuring products are installed right first time. Whole-life costs for the asset owner are reduced through the adoption of a system approach to specification and installation as Install Plus combines a number of key elements that guarantee the durability and long-term performance of the asset.

By adopting this approach, the Install Plus process combined with high-performance bedding and reinstatement materials significantly reduces the time needed and allows the road to be reopened to traffic significantly quicker

compared with traditional methods. This has resulted in notable impact reduction to traffic and no repeat future visits to any of the frame & cover replacement locations to reinstate units because the installation has prematurely failed. The extra cost in applying the best practice methodology of Install Plus amounts to a fraction of the costs of continually having to reinstate products considering all of the associated financial burdens and penalties.

THE VALUE

By adopting a collaborative approach to product selection and installation, Lumen has significantly increased the longevity of an installation. This has been acknowledged by the City of London who have awarded Lumen the Highly Commended Gold Award, in recognition of the contribution to reducing whole-life costs and helping ensure road users suffer no further inconvenience or disruption.





Reduction or lowering of
Impact to traffic and road users is
regarded as a major win by all UK Highway
and Transport Authorities, that coupled with
our joint trials at multiple locations across
the City of London area, was also regarded
as Innovative and Collaborative works to
find a suitable solution to reductions
in Section 81 Defects.

Field Operations — LUMEN



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www.pamline.co.uk

Gully Gratings

Cycle friendly gratings

An earlier reference was made to the Cycle Infrastructure Design Local Transport Note 1/20, and the Department for Transport guidance to the type of solutions that should be considered during the design process.

This also includes drainage with 2 references being made in sections 15.2.23 and 15.5.9 specifically to the type of gratings that should be considered and ultimately specified in that 'designs should be chosen that do not pose a risk to cycle wheels becoming trapped.'

We have included details of our Proteus,
Watershed Orbis and Aquakerb gully grating
and kerb drainage grating solutions, all offer
excellent water clearing performance with a
grating and profile design intended to minimise
risk to cyclists.



Proteus represents a new approach to grating design and since its launch in 2020 has quickly become recognised for its enhanced durability, security, ease of use and water clearing efficiency. Risks to cyclists and pedestrians are reduced thanks to its unique narrow grating profile making it ideal for active travel applications. It has and added benefit of being compatible with any standard 450mm diameter gully pot.

Recommended for use in:

Applications such as carriageways or cycle paths requiring efficient removal of surface water.



DURABILITY

To aid the reduction of whole life costs, the Proteus design incorporates the Load Transfer System (LTS) to radically improve installation and product lifespan lowering the frequency of reinstatement.



HEALTH & SAFETY

To help reduce work-related injuries, an ergonomic hinged design makes opening simpler, easier and safer.



ACCREDITATION

Third party certified by BSI and kite marked to the requirements of BS EN 124. Compliant to the requirements of National Highways advice note CD534 and BS7903.



SAVE TIME & COST



Available with the Install Plus frame levelling and installation system and also compatible with Install Plus Retro-Fit.







SECURITY

A Captive hinged grating and an integral automatic spring bar locking mechanism combine to offer enhanced anti-theft and security capabilities.



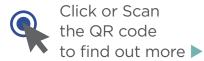
PERFORMANCE

The unit is non rock and silent in operation. Large multi-directional wedge seatings enhance stability and durability which reduces whole life costs.



WATER CLEARING EFFICIENCY

A special asymmetrical design in the area adjacent to the kerb disrupts the normal flow to increase the volume of water entering the gully.





CASE STUDY



D400 NARROW PROFILE CAPTIVE HINGED GRATING

SAFE, SECURE, VERSATILE

Improving cyclist safety and reducing whole life costs through the adoption of innovation and best practice.



In collaboration with Wirral Council and Rhino Asphalt Solutions Ltd

THE ISSUES FACED

The A41 New Chester Road is a busy route in Birkenhead where increasing traffic intensity is leading to more frequent failure of ironwork, higher than budgeted costs and disruption to road users. In congested areas it is also common for cyclists to swerve and avoid the surface water drainage system bringing them into close proximity with traffic leading to an increased risk of accidents.

FINDINGS

In areas where the road narrows this brings heavy vehicles into contact with the leading edge of a grating. This localises the stress transmitted into the ironwork which leads to a breakdown of the installation material and if left, the eventual failure of the ironwork and reinstatement.







Proteus represents an innovative approach to product design. Its narrow grating profile avoids excessive clipping by traffic, its patented angled bridge is designed to distribute stress and resist displacement enhancing its stability, increasing its durability. At less than 300 mm wide its grating profile is safer for cyclists who are sometimes put at risk when swerving to avoid ironwork in the road.



Proteus is just one of several innovative solutions offered by Saint-Gobain PAM UK. For further information and advice on Proteus or any other product or service offered by PAM Saint-Gobain please contact our team on:

① 0115 989 8903

pamsales@saint-gobain.com

www.pamline.co.uk



Initially developed in conjunction with Highways England and Rhino Asphalt Solutions Ltd for use in the strategic

> the advantages of Proteus when selecting it as their preferred solution.





THE VALUE

When combined with the Rhino Asphalt Solutions Ltd Ironmaster Installation System and its compatibility with the existing drainage network, Proteus provides a solution that improves cyclist safety and offers long term performance reducing whole life costs for Wirral Council.

Proteus can be used in a wide variety of applications such as roads that have continuous heavy traffic. It has an independently verified BS EN 124 2015 load classification of D400 to withstand vehicle loads of up to 40 tonnes.

Over the vears we have experienced a number of gully failures. We have noticed that this is largely due to HGV traffic running over the front edge of each piece of ironwork. With Rhino's and Saint-Gobain PAM's new Proteus Gully protruding significantly less into the carriageway than a standard gully (but also collecting the same amount of surface water), we are confident in less future failures, and have the reassurance of a

5 year guarantee

Phil Miner Wirral Council



Watershed Orbis features a specifically designed grating for use in areas used by pedestrians and cyclists. Its single piece captive hinge grating design makes maintenance and cleaning operations easier and safer. Available with left hand, right hand or a kerb-facing opening orientations, Watershed Orbis can also be used on any road, including one-way systems.

Recommended for use in:

Carriageways and pedestrian areas where a cycle and pedestrian friendly grating design is required.





HEALTH & SAFETY

To help reduce work-related injuries, an ergonomic hinged design makes opening simpler, easier and safer.



PEDESTRIAN & CYCLE SAFETY

Specifically designed grating for use in pedestrian areas.



ACCREDITATION

Third party certified by BSI and kite marked to the requirements of BS EN 124. Compliant to the requirements of BS 7903 and to National Highways advice note CD 534.



SECURITY

A captive hinged grating offers improved anti-theft and security capabilities.



PERFORMANCE

The unit is non rock and silent in operation. Large multi-directional wedge seatings enhance stability and durability which reduces whole life costs.



SAVE TIME & COST

Available with the Install Plus frame levelling and installation system as standard.



Click or Scan the QR code to find out more





The Aquakerb range of D400 kerb drainage units are available in 12.5° half batter or 45° splay kerb profiles. Its large water clearing area provides efficient surface water drainage along the kerb line. It has single piece inspection cover is captive hinged for ease of use, safe operation when accessing the below ground drainage network. Its raised radial chequer pattern offers improved skid and slip resistance reducing risk to pedestrians and cyclists.

Recommended for use in:

The kerb line of carriageways carrying all types of traffic in areas subjected to high surface water run off.





ACCREDITATION



ROAD SAFETY

Radial chequer design with independently verified skid & slip resistance values which exceed the requirements of chapters 2.6 & 2.7 within Section 2 Design for chamber tops and gully tops of National Highways advice note CD 534.



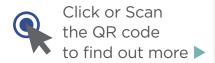
WATER CLEARING EFFICIENCY

A large water clearing area of 3,470 cm² aids the effective removal of surface water.



SECURITY

A captive hinged inspection cover that also features an integral automatic spring bar lock mechanism offers improved anti-theft and security capabilities.



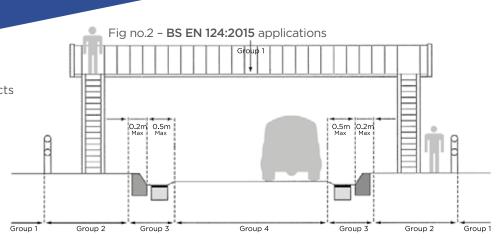




Selecting the correct products

The PAM range of access covers and gully gratings are manufactured in accordance and third party verified by the BSI in full compliance with the requirements of **BS EN 124:2015** ensuring their consistent quality and performance.

Our comprehensive range of products are available in load classifications from F900 to B125 and provides solutions for a wide variety of applications. Each are third party verified and kite marked by the BSI confirming their compliance to BS EN 124:2015.





Gully Gratings

Access Covers

Surface Boxes

For advice and support in selecting the correct product classification for your application please contact our Technical Team who will be happy to help.

Tel: 01664 814014

Email: technical.covers.uk.pam@saintgobain.com

Environmental Product Declaration (EPD)





An Environmental Product Declaration (EPD) provides third party verified information about the impact a material or product has upon the environment during its life cycle.

We offer cradle to grave EPDs for our access covers and gully gratings which comply with and are third party verified to the strict normative requirements of ISO 15804 2012 and ISO 14025:2006, meaning that our customers can have confidence that the data is accurate has been collected and presented in accordance with this renowned standard.



100% of ductile iron materials can be recycled over and over again without any loss of performance.











Sustainable Solutions

Our access covers and gully gratings are designed and manufactured here in the UK and offer long lasting, efficient, and sustainable performance.

At our UK manufacturing facility, near Melton-Mowbray, we are a major recycler of ferrous waste materials and waste streams from other processes. We transform this waste into ductile iron, meaning that all of our access covers and gratings are 100% recyclable at the end of their service life.



OUR PRODUCTS CONTAIN >95% RECYCLED CONTENT

Production Stream recycled content

> Any metalic waste created during our manufacturing process is recycled.

Post-consumer recycled content

> We use waste materials such as brake discs, construction steel and tyre wire.







Click or Scan the QR code to find out more about our sustainable development initiatives







THE IRONWORK RECOVERY & RECYCLING SCHEME

HELPING REDUCE CARBON BY TURNING A WASTE STREAM INTO NEW PRODUCTS

Our *ReCover* initiative provides a system within the UK for recycling ferrous scrap such as ductile iron access covers, gully gratings that have come to the end of their service life. It provides an opportunity to turn a waste product into a useful raw material to be used at our UK foundry into new products.



PLEASE SPEAK TO ONE OF OUR TEAM IF YOU WOULD LIKE TO KNOW MORE.



Science Based Targets (SBTs) approved!

SCIENCE

Saint-Gobain's commitments to reduce its CO₂ emissions by 2050 has been approved by the **Science Based Targets** initiative. Saint-Gobain is the first company in its sector worldwide to receive this approval since the introduction of the new standard at the end of last year.









Responsible Sourcing of Construction Products

Our products made at our Holwell plant have been accredited standard

BES 6001: Responsible Sourcing of Construction Products.

bsi. Certificate of Registration

This means that our customers can be reassured that Holwell products have been proved to have been made with materials that have been responsibly sourced.

This certification is an important part of our sustainability drive and is the result of a thorough audit by BSI and we are proud to display this Certificate on our premises.





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Please visit our website:

www.pamline.co.uk to download electronic versions or to request hard copies of any of our brochures.

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ISO 14001
Environmental
Management

EMC07077







The information given in this literature is, to the best of our knowledge, correct at the time of going to print. However, Saint-Gobain PAM UK is constantly looking at ways of improving their products and services and therefore reserves the right to change, without prior notice, any of the data contained in this publication. Any orders placed will be subject to our Standard Conditions of Sale, available on request.

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We are proud of our UK manufacturing heritage

Saint-Gobain PAM UK, at its foundry near Melton Mowbray in Leicestershire, remains at the forefront of the design and manufacturing of high-performance ductile iron access cover and grating solutions for the Infrastructure, Civil Engineering, Water & Utilities Sectors.

We ensure that our products are manufactured to the highest health & safety, quality and environmental standards. Below are details of our System, Product and Sustainability accreditation.

SYSTEM, PRODUCT AND SUSTAINABILITY ACCREDITATION

Product BS EN 124-2:2015 Access Covers and gratings Certification kitemark licence number KM30794 BS 5834-2 Specification for small surface boxes kitemark licence number KM07199 BS 5834-3 Specification for large surface boxes kitemark licence number KM14164 **BS EN ISO 9001** Quality management systems kitemark licence number FM12908 **BS EN ISO 14001** Environmental management systems kitemark licence number EMS83973 ISO 45001 Health & Safety Management Systems kitemark licence number OHS 570684 Carbon Reduce Carbon Reduce certification demonstrates the Company's commitment to measuring, managing and reducing greenhouse gas emissions in a robust and credible way. Certificate number 2016053J **BES 6001** Responsible sourcing of construction materials kitemark licence number BES613621

SAINT-GOBAIN