

# Planning Statement

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Proposed creation of new teaching rooms, new 2 storey extension and alterations to Al Quba Education Trust, Rochdale.

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Project No: P2103  
Project Address: 1 Copenhagen Street  
Wardleworth  
Rochdale  
OL16 2HD  
Date: June 2022

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## 1.0 INTRODUCTION

1.1 This Planning Statement has been prepared by MJA on behalf of the applicant Mr Mohammed Shabir; Al Quba Education Trust located at 1 Copenhagen Street, Wardleworth, Rochdale, OL16 2HD. The mosque is a registered Trust holding not-for-profit charity status, charity number 1183972. The Trust is located in the Wardleworth area of Rochdale which is a mixture of predominately Pakistani and Bangladeshi heritage.

1.2 The building is a mixture of 2 storeys and single storey in nature with storage space contained within the roof void. Currently the ground floor is used by males as a mosque for congregational prayers offered throughout the day and for Islamic gatherings. The first floor is used by females for congregational prayers and for Islamic gatherings. The building is also used to deliver Islamic education during the early evening and weekends where male children are taught on the ground floor and female children are taught on the first floor. The ground floor is also used to hold Islamic funerals and there is a body wash / body prep room located to the front of the building.

1.3 Although the mosque located on the ground floor constitutes part of this planning application, it would remain to hold the same number of parishioners. There is no allowance within this planning application to expand the mosque with the exception of remodelling to include a separate area for the Imam to allow for rest and hold private meetings.

1.4 As the mosque has evolved, there is insufficient space to continue holding classes for Islamic teachings and gatherings. The proposal is to expand the building to focus on IT based learning classrooms and lecture rooms. The applicant would like to secure full planning permission to refurbish and redevelop the site to include new teaching rooms which will allow for children to be taught in dedicated classrooms on chairs and desks replacing current conditions where children are taught on the floor. The classrooms are also intended to be used as study rooms where local students studying at college and university can come and use for private studies with an aim to contribute to a positive change to the local communities within the borough of Rochdale.

1.5 It is expected that the Trust will employ a minimum of 4 people full time and 8 people part time. It is anticipated that employees will be sourced from the local community. Whilst operated by a Muslim organisation, the centre will be open to people of any faith.

1.6 This Planning Statement, accompanying full floor layout and elevation plans submitted as part of this proposal make reference to the current land use, constraints, policy, guidance and possible issues, and addresses these matters categorically.

1.7 The NPPF states that Planning policies and decisions should support the vital role of town centres being at the heart of local communities, by taking a positive approach to their growth, management and adaptation.

1.8 The applicant is seeking support and guidance from the Local Authority Planning department in order to secure full planning approval for the proposed use.

1.9 As well as this statement, the application is supported by:

- Transport Statement prepared by MJA
- Noise Assessment prepared by MJA

## **2.0 SITE AND SURROUNDINGS**

2.1 The application relates to a mixed height building at 1 Copenhagen Street, Rochdale, OL16 2HD. The property is currently used for religious worshipping, registered as Al Quba Education Trust and holds charity status, charity number 1183972. The mosque has a large ground floor male prayer room used for congregational prayers and gatherings with a ground floor ablution & wc room and a body washroom used for Islamic funerals. There is a first-floor female prayer room with a female ablution & wc room. The female prayer room is also used for Islamic teaching in the evening and occasional weekends. There is ancillary storage in the roof void above the female prayer room

2.2 The building occupies a rectangular plot approximately 978m<sup>2</sup> between Entwistle road and Ramsey Street with access from Copenhagen Street as well as access from Aboukir Street. The building is bound on all sides by traditional Victorian terrace residential homes and businesses, ranging from 2 storeys to 3 storeys in nature with outbuildings and loft conversions. The application site is located at the rear of a row of terraced properties along Ramsey Street which are predominantly commercial businesses (Butchers, travel agents and convenience store respectively).

2.3 The application building is finished in drag faced facing brickwork and does not have any striking characteristics. The building is mixed height, 2 storeys (north side) and single storey (south side) with hipped roofs finished in concrete roof tiles. The 2 storey section of the building is higher than the adjacent two story terrace along Copenhagen Street. The property has a vertical emphasis with large upvc square windows with aluminium powder coated entrance door sets. There are few openings to the both the sides with a predominately blank elevation. The building is currently accessed through a small car park from the front and an opening to the rear through a gated access which leads to a larger second car park.

2.4 The site is considered to be in a sustainable location being well served by public transport and well related to an adequate range of existing services and facilities within a short walking distance. The red edge location plan shows the building to have a small external curtilage area. There is off-site parking with a small car park at the front and a larger car park at the rear.



The site is located at 1 Copenhagen Street, as the main entrance and a second entrance off Aboukir Street, as shown above.



The image above is the front elevation of the application property located on Copenhagen Street with a small car park in front of the building.





The image above is the rear and side elevation of the application property located on Aboukir Street with a small car park in front of the building.



The image above is the rear and side elevation of the application property.

### 3.0 PROPOSED DEVELOPMENT

3.1 The applicant is applying for full planning permission to develop / refurbish the existing ground floor, first floor and refurbish the car parks. The applicant also seeks permission to refurbish the Local Authority owned car park at the end of Aboukir Street which includes new planters to partially screen the car park from Entwistle Road as well as 3Nr. Litter bins and a single seating bench.

3.2 The mosque has a large ground floor male prayer room used for congregational prayers and gatherings with a ground floor ablution room and a body washroom used for Islamic funerals. There is a first-floor female prayer room with a female ablution room. The female prayer room is also used for Islamic teaching in the evening and occasional weekends.

3.3 As the mosque has evolved, there is insufficient space to continue holding classes for Islamic teachings and gatherings. The proposal is to expand the building to focus on IT based learning in classrooms and lecture rooms instead of being taught on the floor. The proposed expansion does not include the large ground floor male prayer room which is to remain unaltered with the exception of remodelling to include a separate area for the Imam to allow for rest and hold private meetings.

3.4 The proposed development includes the following:

Two storey extension to the front -

4.1 Formation of new ground floor mortuary, front entrance and lift to access first floor area. The proposed expansion includes a ground floor mortuary adjacent to the body wash room which would allow the Trust to register as an Islamic funeral director to facilitate Islamic funerals. Adjacent to the entrance is to be a lift which would allow for unrestricted access to the proposed first floor area creating an all-inclusive learning environment.

4.2 Formation of new first floor women's ablution room and female wc facilities.

3.5 Removal of all existing hipped roofs and replace with a single flat roof over the first floor area.

3.6 Formation of new first floor area over the existing car park at the rear of the mosque -

6.1 Formation of new IT based teaching rooms for mosque use and community use (students to use for group studying). The proposed expansion is to create a classroom style learning centre with classrooms for the mosque as currently the children are taught seated on the floor. The proposed rooms are to be adopted for group studies for the wider community to use such as students who attend university or local colleges may wish to study in groups.

6.2 Formation of new library. The proposed expansion includes a first-floor library with an IT hub. The library and IT hub are a free facility that the mosque intends to offer the local community which students / community members can use for learning purposes or group studies.

6.3 Formation of new state-of-the-art sensory room for community use for families whose children require additional education needs as there are no current facilities available in any mosques within Rochdale. The proposed sensory room will be available to use for any parents / carers or schools in the borough who may wish to access the free facilities the mosque is to offer to the local community.

6.4 Formation of a new first floor male ablution room and male wc facilities.

6.5 Installation of new grp dome measuring 10m wide and 4.5m high. Installation of a new minaret measuring 3m wide and 12m high. The proposed dome is to be similar in design to that on the rooftops of Jalalia Jamia Mosque and Bilal Mosque, both mosques are located in the Wardleworth area and are within 30m of the application site.

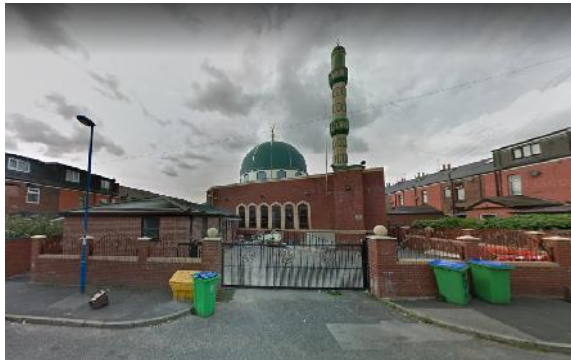


Image of Jalalia Jamia Mosque.



Image of Bilal Mosque.

3.7 The design proposes a reduction on the dependency on wet fuels by:

7.1 Installation of photovoltaic panels on the roof area. The proposed design includes for 48Nr. 450W Photovoltaic panels measuring 2100mm x 1050mm x 40mm. The panels are to be mounted on an aluminium framework at a 30° angle off the main roof. The panels are to be sufficiently spaced to maximise the capture of light and reduce over shadowing. A detailed light study is to be undertaken upon construction of the main flat roof to determine the optimum mounting angle. 10Nr. panels are intended to operate the low voltage air heat and circulation pumps located adjacent to the photovoltaic panels on the roof top whilst 38Nr. panels are intended for the generation and storage of electricity to operate the building.

7.2 Installation of air source heat and ventilation pumps to eliminate the dependency on gas. The proposed design includes 10Nr. 1340mm x 920mm x 320mm rooftop mounted units adjacent to the photovoltaic panels that are to provide heat and clean air to the building.

7.3 Capture and storage of rainwater for use such as ablution, toilet flushing etc. The proposed design allows for all rainwater to be collected and stored in a 3000ltr Graf Platin storage tank, measuring 2450mm x 2100mm x 1050mm located under the surface of car park 2. The water is to be filtered and used for undertaking ablution to toilet flushing.

The proposed design allows for the installation of a grey water harvesting system where ablution water, water from showers and sinks is to be collected, filtered and stored in a separate 1500ltr Graf Platin storage tank measuring 2100mm x 1250mm x 1015mm adjacent to the first tank and used for non-potable purposes such as toilet flushing and cleaning only.

3.8 Resurface the existing car park 1 at the front of the mosque and demark 3Nr. disabled parking bays and 1Nr. parent parking bay.

3.9 Resurface the existing car park 2 at the rear of the mosque and demark 4Nr. disabled parking bays, 2Nr. parent parking bays and 6Nr. bicycle bays. The proposed refurbishment allows for the installation of 3Nr. electric vehicle charge points.

3.10 Resurface the existing public use car park 3 at the bottom of Aboukir Street and demark 11Nr. parking bays with 5Nr. planter's to partially screen the car park from Entwistle Road and 3Nr. 120ltr



litter bins. The proposed design allows for a single seating bench to be installed adjacent to the gable wall of the end terrace at Entwistle Road / Aboukir Street.

3.11 The rear car park area would provide bin storage which would contain Euro bins for easy servicing. Access to the first floor would be via the proposed lift and existing staircase at the front of the building as well as a proposed staircase at the rear of the building. The development would provide the following floor space;

Existing – 736m<sup>2</sup>,

Proposed – 2036m<sup>2</sup>.

3.12 The applicant is willing to co-operate with the Local Authority Planning Department to secure full planning consent for a high quality development as demonstrated by this Statement and the submitted drawings.

3.13 Community uses within mixed use developments can introduce diversity, security and inject liveliness especially at evenings and weekends.

3.14 The redevelopment of the building would help in providing much needed study rooms close to the two local College's as well as providing a sensory room for the local community in this central location.

#### **4.0 INVOLVEMENT**

4.1 A formal pre-application advice in this instance has been sought from the Local Authority Planning Department as well as informal discussions with the LA planning officers regarding the type of development that would be acceptable. Early engagement with the planning department has influenced an acceptable design scheme which seeks to provide a quality development in this area.

4.2 Paragraph 39 of the NPPF states;

“Early engagement has significant potential to improve the efficiency and effectiveness of the planning application system for all parties. Good quality pre-application discussion enables better coordination between public and private resources and improved outcomes for the community.”

4.3 I would like to forward my gratitude to the respective Planning Officer in taking the time and effort to engage in early discussions which has been extremely helpful to both me and the applicant.

4.4 This planning Statement has been submitted as part of this planning proposal to provide a reasoned justification of the proposal using local and national planning policy and guidance.

4.5 The issues of Highways safety, amenity of the surrounding area, design and the principle of the development are taken into consideration in the assessment below.

## 5.0 HISTORY

5.1 A history check has been undertaken which has revealed below the planning history for the site, the relevant planning history includes;

|                       |                                                                   |                   |           |     |
|-----------------------|-------------------------------------------------------------------|-------------------|-----------|-----|
| Details               | Comments (0)                                                      | Related Cases (2) | Documents | Map |
| Summary               | Further Information                                               | Important Dates   |           |     |
| Reference             | 01/D39597                                                         |                   |           |     |
| Application Validated | Tue 18 Dec 2001                                                   |                   |           |     |
| Address               | Al-Qaba Mosque, Copenhagen Street, Rochdale, Lancashire, OL16 2HD |                   |           |     |
| Proposal              | Two Storey Extension To Existing Mosque                           |                   |           |     |
| Status                | Decided                                                           |                   |           |     |
| Decision              | Grant subject to conditions                                       |                   |           |     |
| Decision Issued Date  | Tue 19 Feb 2002                                                   |                   |           |     |
| Appeal Status         | Unknown                                                           |                   |           |     |
| Appeal Decision       | Not Available                                                     |                   |           |     |

|                       |                                            |                   |           |     |
|-----------------------|--------------------------------------------|-------------------|-----------|-----|
| Details               | Comments (0)                               | Related Cases (0) | Documents | Map |
| Summary               | Further Information                        | Important Dates   |           |     |
| Reference             | 98/D35590                                  |                   |           |     |
| Application Validated | Mon 13 Jul 1998                            |                   |           |     |
| Address               | Alqaba Mosque, Copenhagen Street, Rochdale |                   |           |     |
| Proposal              | Single Storey Extension To Existing Mosque |                   |           |     |
| Status                | Decided                                    |                   |           |     |
| Decision              | Grant subject to conditions                |                   |           |     |
| Decision Issued Date  | Fri 11 Sep 1998                            |                   |           |     |
| Appeal Status         | Unknown                                    |                   |           |     |
| Appeal Decision       | Not Available                              |                   |           |     |

|                       |                                                      |                   |           |     |
|-----------------------|------------------------------------------------------|-------------------|-----------|-----|
| Details               | Comments (0)                                         | Related Cases (0) | Documents | Map |
| Summary               | Further Information                                  | Important Dates   |           |     |
| Reference             | 97/D34095                                            |                   |           |     |
| Application Validated | Tue 25 Mar 1997                                      |                   |           |     |
| Address               | Al Qaba Mosque Land Fronting Aboukir Street Rochdale |                   |           |     |
| Proposal              | Single Storey Extension To Mosque                    |                   |           |     |
| Status                | Decided                                              |                   |           |     |
| Decision              | Grant subject to conditions                          |                   |           |     |
| Decision Issued Date  | Tue 17 Jun 1997                                      |                   |           |     |
| Appeal Status         | Unknown                                              |                   |           |     |
| Appeal Decision       | Not Available                                        |                   |           |     |

5.2 The relevant pre-app planning history includes;

Thank you for completing the Request for pre-application advice on 26/04/2021. Your reference number is PPA14994.



## 6.0 RELEVANT PLANNING POLICY

6.1 Section 38(6) of the Planning and Compulsory Purchase Act 2004 states that decisions should be made in accordance with the development plan unless material considerations indicate otherwise.

6.2 Rochdale's Core Strategy was adopted in July 2016 and is the key Development Plan Document. It replaces significant elements of the existing Unitary Development Plan as the document that sets out the long-term strategic policies for Rochdale's future development and will form the framework that planning applications will be assessed against.

6.3 The Core Strategy seeks to deliver sustainable development and growth in accordance with the objectives of the National Planning Policy Framework (NPPF). It aims to increase investment in the borough and to make it a more prosperous place by 2028. The Core Strategy will have a major role in guiding the regeneration of the borough, building on the extensive investment that has already taken place in some areas and identifying where to focus on next.

6.4 It looks to build on the borough's assets, heritage and identity and on its connections and relationships with neighbouring towns. In particular, the borough's needs.

6.5 The following Local Plan policies have relevance to the proposal:

- DM1 GENERAL DEVELOPMENT REQUIREMENTS
- P3 IMPROVING DESIGN OF NEW DEVELOPMENT
- E1 ESTABLISHING THRIVING TOWN, DISTRICT AND LOCAL CENTRES
- G9 REDUCING THE IMPACT OF POLLUTION
- T2 IMPROVING ACCESSIBILITY

### Saved Unitary Development Plan (UDP) Policies:

S/6 DISTRICT CENTRES LOCAL CENTRES AND LINEAR COMMERCIAL AREA

### SPD

### GUIDELINES & STANDARDS FOR RESIDENTIAL DEVELOPMENT

### NPPF (2021)

6.6 The NPPF clearly states 'that the purpose of the planning system is to contribute to the achievement of sustainable development' (paragraph 7). Paragraph 10 confirms that 'in assessing and determining development proposals, local planning authorities should apply the presumption in favour of sustainable development'. Paragraph 11 states that a presumption in favour of sustainable development is at the heart of the NPPF. It goes on to say that 'for decision-taking this means:

c) Approving development proposals that accord with an up-to-date development plan without delay; or

d) Where there are no relevant development plan policies or the policies which are most important for determining the application are out-of-date, granting permission unless:

- i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
- ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

#### 6.7 Paragraph 130 of the NPPF advises:

Developments establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit.

Planning policies and decisions should ensure that developments create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users.

#### 6.8 Paragraph 111 of the NPPF states:

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. The general perspective of the NPPF is that planning should proactively drive growth and support sustainable economic development. It also states that planning should make effective use of land by reusing land that has been previously developed and sets out a presumption in favour of sustainable development. The government is committed to ensuring that the planning system does everything it can to support sustainable economic growth.

#### 6.9 National Planning Practice Guidance (NPPG)

The government published its NPPG on 6<sup>th</sup> March 2014. This is intended to complement the NPPF and to provide a single resource for planning guidance, whilst rationalising and streamlining the material. Almost all previous planning Circulars and advice notes have been cancelled. Specific reference will be made to the NPPG or other national advice in the Analysis section of the report, where appropriate.

## 7.0 ASSESSMENT

7.1 The application site is in the Defined Urban Area as allocated under the Rochdale Unitary Development Plan. As such policy G/D/1 is relevant to any applications on the site and this establishes that development should be located in the urban area so as to support urban regeneration and protect the countryside.

7.2 The proposed development of part of the building would reuse a site which has been underutilised in this prominent location close to Rochdale town centre. The building is in need of investment to bring the property back to a suitable functional use and where it would have a positive impact on the surrounding area.

7.4 The proposal would provide adequate faith / cultural teaching facilities which are much needed in this inner urban area. It would enhance the character of the area by bringing built uniformity of the existing site; it would consider the needs of the local community, protect the surrounding built environment and provide the community with services within walking distance and reducing the need to travel.

7.5 The effect on residential amenity by reason of noise or other nuisance would be minor given its location amongst other similar uses and by virtue of its location in the local centre. The openings which serve the teaching / study rooms of the building would be at a distance from noise generating uses and plant where they may give rise to nuisance, as such any noise would be limited and not impact on the amenity of building users.

7.6 It is also considered that the proposal would not have a detrimental effect on the safe and efficient operation of the existing transport and road infrastructure. Highway's safety is further discussed in the relevant section below.

7.8 In respect of part of the above policies, the area is predominantly mixed-use retail, residential and places of worship, and therefore faith education is considered as a complimentary use to the existing character of the area and is located in a sustainable area with good access and facilities and which makes efficient use of the land whilst delivering an appropriate use for the site.

7.9 In light of the above it is considered that the principle of expanding on providing faith education at the application site is acceptable.

**7.10 Policy DM1 of the Core Strategy sets out a number of basic planning considerations that apply to all development. Further to this, paragraph 17 of the NPPF, containing the 'core planning principles', advises that planning should always seek to secure a good standard of amenity for all existing and future occupants of land and buildings.**

**7.11 Policy G9 of the Core Strategy sets out that the Council will seek to reduce all forms of pollution by requiring that development does not have impacts that lead to an unacceptable increase in air, water, noise, light or other pollution.**

7.12 It has already been established above that the principle of providing teaching accommodation at the site is considered acceptable. The area is established as mixed use, and the proposal would therefore be in keeping with existing land uses around the area. The proposal would not impact unduly on matters such as noise and other pollution effects, as well as the impact of the development upon existing surrounding properties.

7.13 In relation to noise, it should be acknowledged that there would be some noise from neighbouring commercial land uses as well as road noise at ground floor level from Ramsey Street Entwistle Road. There are residential uses in the vicinity and by virtue of its location, the noise from neighbouring uses is not considered to have a significant impact on the amenity of future occupiers or from external noises.

7.14 In terms of internal noise, the internal layout has been carefully designed so that teaching rooms are least affected by noise, the design has incorporated acoustic barriers to adequately protect from unacceptable noise levels. Also, the teaching of children will only take place between 16.00 and 19.00pm and would close early in the evenings where it would provide surrounding residents with peace and quiet in the evenings and at night.

7.15 In respect of other matters, the development provides adequate space around the building. It is considered that there would be no concerns regarding the distance to the front of the building which would face the front car park along Copenhagen Street and a distance of approximately 16m to the next property. The rear elevation would face Aboukir Street with a distance of approximately 18m to the next property. The windows in the north elevation would face the rear elevation of the properties of Ramsey Street with a distance of approximately 9m to the windows. The windows in the south elevation would face the rear elevation of the properties of Entwistle Road with a distance of approximately 11m to the windows. Further distances cannot be achieved in these close-knit arrangements in an urban area. As detailed, the proposed development would potentially cause some overlook to the neighbouring properties.

7.16 Following the pre-application submission, the respective Planning Officer raised the following: 'Furthermore, the proposed extension would also have windows in their side elevation which would directly face the habitable room windows in the rear elevations of the properties on Ramsay Street and Entwistle Road. At a distance of only approximately 8 metres away, as such the proposal would also result in a significant loss of privacy for the occupiers of these existing dwellings'.

7.17 The design has incorporated privacy glass (smart glass) to be installed in the North and South elevations to all windows affected to overcome any potential loss of privacy that may arise. The proposed glazing is to allow natural daylight to enter into the building without allowing the users to look out into the neighbouring properties. Smart glass has the ability to change from transparent to translucent and vice versa. The glass automatically responds to heat and light levels using photochromic and thermochromic chemicals added to the glass.

7.18 The proposed development would adequately provide the level of amenity that would be expected at a faith teaching centre within this area. The proposal would be compatible with the density and character of the surrounding development.

7.16 With regard to the teaching / occupation conditions of the property, it is noted that each teaching room within the building is to be provided with natural light and ventilation, with an outlook to the street on the rear of the property.

7.19 A bin storage area would be provided in the car park area away from the main public vantage points of Aboukir Street and Copenhagen Street.

7.20 The doors to the building are to be fitted with access control; this would offer simple solution to restrict access into the building. Authorised individuals would carry a key fob and when access through a restricted door is required, the fob is held in front of a reader placed next to the door. The solution is flexible and would be used on the rear doors to restrict access to the general public. The



mechanism would keep the building users safe. All internal doors would be fire doors which would be soft close to limit the noise.

7.21 In light of the above, it is considered that the development would provide adequate space around the building, so as to protect building users and surrounding residents from any excessive levels of overshadowing and / or loss of privacy. The application is therefore acceptable in this respect and would meet with the expectations of Policies along with the relevant requirements of the National Planning Policy Framework.

7.22 It should also be noted the response from the respective Planning Officer following the pre-application advise:

‘Taking the existing use and the land allocation of the site into account it is considered that the principle of providing extensions to the mosque are acceptable.

Although the design of the building would result in a building that would not be consistent with neighbouring residential terraces and their roof designs, it is noted that that the building is an existing community facility and its function and use is very much different and established in the area, and as a community facility its differing roof design is considered to be visually acceptable.’

**7.23 Policy P3 of the adopted Core Strategy requires all new developments, regardless of location in the borough, to adhere to high standards of design. Policy DM1 of the Core Strategy states that all development proposals will be expected to demonstrate that they are of high-quality design and take the opportunity to enhance the quality of the area, in addition to requiring a number of other basic planning considerations.**

**7.24 Paragraph 130 of the revised National Planning Policy Framework states that ‘decisions should ensure that developments will function well and add to the overall quality of the area and are visually attractive as a result of good architecture, layout and appropriate and effective landscaping’. Policies P2 and P3 of the Core Strategy set out a requirement for good design, improved image and protection and enhancement of character, landscape and heritage.**

7.25 The property externally would retain its main features; there would be changes to its external appearance which include the insertion of new windows and doors to the side and rear of the building and stone window heads and cills with stone surrounds. The changes are proposed so that the site can function in an effective manner, and which are thought to compromise safety and security at the site. The window frames proposed are to match those used on the existing building (aluminium doors), the design of the door can be confirmed, and a condition attached if necessary. As such, given the positioning of the windows, they would enhance the appearance of the building and improve its overall design in this prominent location. The proposed dome and minaret located on the roof would not appear out of character in this mixed development location as they would be similar to those on mosques adjacent to the site. Changes and use of materials would have no detrimental impact on the character of the building or surrounding area.

7.26 Externally the building would provide some outdoor amenity space that is located to the back of the building for bin storage, car park 2.

7.27 In light of the above, the proposal would result in no undue harm to visual amenity and would improve the overall character and appearance of the area and the street scene. The application would therefore accord in this regard with policies, the NPPF and SPD.

**7.28 Policy T2 of the adopted Core Strategy relates to accessibility and Policy DM1 requires all development to provide satisfactory vehicular access with adequate parking and manoeuvring arrangements provided.**

7.29 The application site is located in the local centre and is well located in terms of access to sustainable modes of transport and there are genuine alternatives to private car use for visitors to the proposed facility. A separate Transport assessment is provided with the planning application to show how sustainable transport options can be maximised.

7.30 The nearest bus stops are located approximately 30m and 100m from the proposed development, with frequent bus services which operate not only during weekdays, but also late into the evenings and at weekends, to a wide range of locations within the Rochdale area. Two local tram stations are located approximately 200m and 800m from the proposed development. The local rail station is located approximately 800m from the proposed development.

7.31 The site is located in the local centre and therefore in an accessible location. The plans submitted show off-site parking spaces would be provided by a small car park at the front and a larger car park at the rear with a public car park adjacent to the site. Given its location close to a main route into the main town centre, with excellent bus links and parking available off-site and side streets and in the vicinity it would be sufficient provision for a development of this size in a location as sustainable as this close to the main town centre and on a major bus route. The proposed car parking is justifiable.

Off-site car parking provisions are:

Car park 1 is to provide 4Nr. parking bays,

Car park 2 is to provide 6Nr. parking bays & 6Nr. Bicycle bays,

Car park 3 is to provide 11Nr. parking bays.

7.32 It is not expected that this proposal would impact negatively upon the surrounding highway network.

7.33 Bin storage would be provided in the rear car park area (car park 2) where refuse would also be collected from.

7.34 Given the details, it is considered the proposed development can safely be provided without resulting in harm to pedestrian and highway safety. The proposed development as demonstrated would be in accordance with Policies T1 and T2 of the Councils Local Plan and the NPPF where the proposal would not have a severe cumulative impact to warrant refusal of the application.

## **8.0 CONCLUSION**

8.1 This planning application seeks to further develop the existing site to meet the educational requirements of Al Quba Education Trust. The development would provide high quality teaching & study rooms as well as a sensory room.

8.2 The proposed development is to be undertaken in full compliance with the Local Authorities policies contained within the Local Plan and the National Planning Policy Framework. The proposal is widely supported by local people, and in accordance with requirements to support the provision of community facilities, including places of worship, as set out in the NPPF.

8.3 The design has been revised in accordance to the feedback provided by the respective Planning Officer which arose as a result of the pre-application to further develop this site.

8.4 The design is traditional, with access directly from Copenhagen Street and Aboukir Street. The proposal will provide a focal point that will meet the needs of the community.

8.5 The submitted transport assessment shows the proposal to be in a location well served by public transport and how it is intended that the use of these facilities be maximised.

8.9 There is no evidence of highway safety issues within close proximity of the application site and there is no highway or transport reason why the application cannot be supported.

## 9. MATERIAL SPECIFICATION

| Material                                                          | Colour                            | Size                                     |
|-------------------------------------------------------------------|-----------------------------------|------------------------------------------|
| <b>Brick</b>                                                      |                                   |                                          |
| Ravenhead Rustic - Mixed Red, Dragfaced.                          | Red.                              | 215 x 102 x 65mm.                        |
| Dense Concrete Blocks.                                            | Grey.                             | 440 X 215 X 100mm.                       |
|                                                                   |                                   |                                          |
| <b>Limestone</b>                                                  |                                   |                                          |
| Stone Window Heads, Surrounds and Cills.                          | Limestone.                        | To suit openings.                        |
|                                                                   |                                   |                                          |
| <b>Windows &amp; Doors</b>                                        |                                   |                                          |
| Aluminium, Powder Coated. Kawneer AA®720.                         | Anthracite Grey – RAL 7016.       | To suit openings.                        |
|                                                                   |                                   |                                          |
| <b>Flat Roof</b>                                                  |                                   |                                          |
| Sika Sarnafil - G410-20EL single ply membrane.                    | RAL 7040.                         | 1500mm x 2000mm.                         |
| Code 4 Lead Flashings (upstands).                                 | Grey.                             | To suit requirements.                    |
|                                                                   |                                   |                                          |
| <b>Dome</b>                                                       |                                   |                                          |
| G.R.P Walls with Double Glazed Fenestration, Dome -Pearl Gold.    | RAL 1015 & RAL 1036.              | 10m x 4.5m.                              |
| Minaret – Limestone and Ravenhead Rustic - Mixed Red, Dragfaced.  | Limestone & Red Brick.            | 12m x 3m.                                |
|                                                                   |                                   |                                          |
| <b>Roof Perimeter Fall Restraint</b>                              |                                   |                                          |
| Aluminium straight handrail with plastic counterweight clip pads. | Anodised powder coated, RAL 7001. | Entire roof top perimeter x 1100mm high. |
|                                                                   |                                   |                                          |



|                                                              |                                                         |                      |
|--------------------------------------------------------------|---------------------------------------------------------|----------------------|
| <b>Gutters &amp; Downpipes</b>                               |                                                         |                      |
| Aluminium powder coated.                                     | Anodised powder coated, RAL 7016.                       | 150 x 100mm.         |
| <b>Gates &amp; Railings</b>                                  |                                                         |                      |
| Mild Steel, powder coated.                                   | Anthracite Grey – RAL 7016.                             | To suit openings.    |
|                                                              |                                                         |                      |
| <b>Photovoltaic Panels &amp; Framework.</b>                  |                                                         |                      |
| Aluminium Framework with Laminated Black Thermoplastic Face. | Anodised Aluminium Framework, Smooth Black Face finish. | 2100 x 1050 x 40mm.  |
|                                                              |                                                         |                      |
| <b>Car Park – Hard &amp; soft Landscaping.</b>               |                                                         |                      |
| Tarmacadam                                                   | Dark Grey.                                              | To suit size.        |
| Line & Logo Marking.                                         | White.                                                  | To suit size.        |
| Nola Folke Rectangular Planter                               | Mid Grey.                                               | 1800 x 700 x 450mm.  |
| Rectangular planter Bench.                                   | Light Oak.                                              | 1800 x 450 x 400mm.  |
| Hahn Eclipse Bench.                                          | Light Oak.                                              | 1500 x 600 x 395mm.  |
| Atech Dualis Planter.                                        | Steel & Light Oak.                                      | 1095 x 1025 x 600mm. |
| Litter Bins.                                                 | Steel & Light Oak.                                      | 120ltr.              |

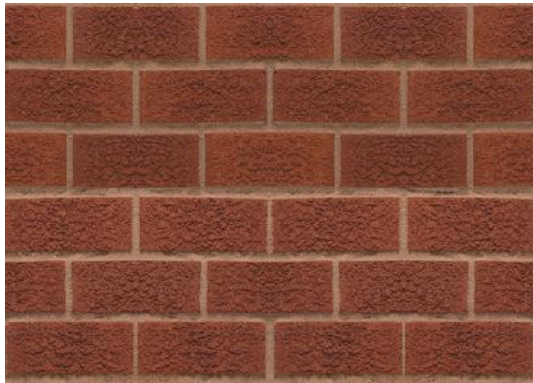


Image of existing & proposed masonry walls.

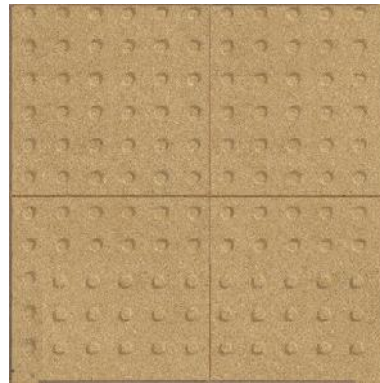


Image of proposed tactile paving.

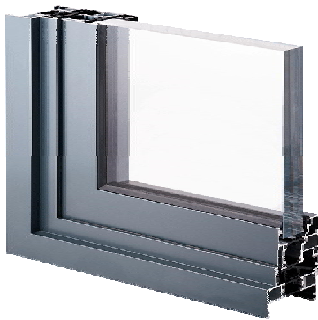


Image of proposed aluminium door & window system.



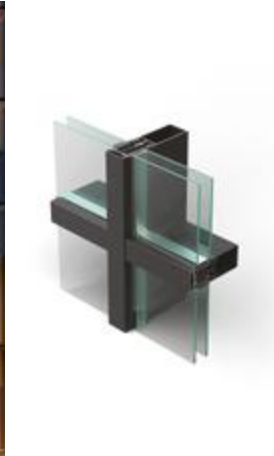
Image of proposed outdoor seating bench.



Image of proposed outdoor planter.



Image of proposed outdoor litter bin.







KAWNEER EDUCATION

# INTRODUCTION

## **SUSTAINABILITY**

All our aluminium contains a minimum of 80% recycled content, traceable back to the origin for BES 6001 – Responsible Sourcing of Materials accreditation. Along with a low-carbon billet option, we deliver the right sustainable product solution.

## **DETAILED DESIGN SUPPORT**

We can support you in the earliest stages of a project with design advice to ensure our systems meet your technical specification and budget.

## **BEST VALUE**

Our Architectural Adviser team will help deliver the best value solution without compromising the quality and performance of the products.

## **BESPOKE SOLUTIONS**

Our in-house façades team can provide you with bespoke project solutions that fully meet specific project design criteria, such as bespoke fins/brise soleil solutions.

## **PRICE AND SUPPLY CERTAINTY**

As all our materials are manufactured and supplied in the UK, we can guarantee supply and offer advantageous lead times – which also means we can offer fixed prices for the duration of a project.

## **FULLY TRAINED SUB-CONTRACTOR NETWORK**

Our nationwide network of authorised sub-contractors have been extensively trained through our unique Kawneer Installation Certification scheme (KIC) to maintain the highest installation standards.

## **DEFECT REDUCTION**

We carry out regular site inspections on large, complicated projects and provide a detailed report highlighting areas that need improvement.

## **WARRANTIES**

We offer a unique range of warranties for added peace of mind, from 10 to 30 years depending on the product or service.

## **ENHANCED SECURITY**

All our main aluminium façade systems have been fully tested to PAS 24 standards.

Over the last 50 years, Kawneer has become renowned as one of the leading manufacturers and suppliers of highly engineered glazing solutions in the UK, with a comprehensive range of architectural aluminium façade products. We offer a wide variety of curtain wall systems, windows, commercial entrance doors and framing systems.

The strong mechanical properties of aluminium, combined with our engineering expertise and design ingenuity, make our building systems the perfect solution for the education sector. From primary schools to universities, we've built up a well-established and successful track record in this sector. We are able to offer multiple areas of differentiation, including our range of high-performance and robust products that have been specifically developed to fulfil the technical and commercial requirements for a building envelope in the education sector.

Whether you are looking for a thermally efficient Passivhaus solution, an outward opening cost-effective casement window or a robust entrance door that is tested to a severe duty category, we have the right product choice and combination for your next education project.





KAWNEER | EDUCATION | OUR EXPERIENCE

# SIBSON BUILDING, UNIVERSITY OF KENT

**Products Used:**

AA®100 Curtain Wall  
AA®541 Casement Windows  
AA®720 Doors  
AA®190 Doors

**Architect:** Penoyre & Prasad  
**Main Contractor:** Willmott Dixon  
**Facade Installer:** JPI Installations







# THE SUSTAINABLE SOLUTION

Our core material aluminium is infinitely recyclable

Kawneer is one of only a few suppliers that have secured BES 6001; an accreditation that demonstrates we source responsibly.

We also have 'Life Cycle Assessments' and 'Environmental Product Declarations' for our three main systems and offer low carbon aluminium billet as a primary base material.

These are just some examples of how we strive to continue manufacturing more responsibly and sustainably. In our long history of projects for the education sector, we have thrived in creating better learning atmospheres that positively impact the occupants and environment.

Our UK manufactured products help to provide plenty of natural light and feature excellent thermal retention and ventilation capabilities, positively impacting students and teachers performances whilst improving a building's overall energy efficiency.

At Kawneer, we constantly continue to grow our revenue, while decreasing energy usage, through the processes we facilitate through our manufacturing plant in Runcorn, Cheshire.

## HOW KAWNEER UK IS REDUCING ITS ENVIRONMENTAL IMPACT:



Electricity usage down  
11.5% since 2015



Gas usage down  
34% since 2015



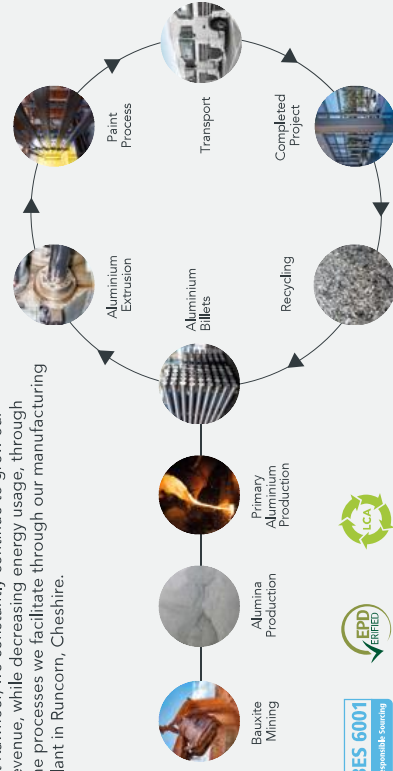
Water intensity down  
81% since 2010



Transport usage down  
19% since 2013



Landfill waste down  
72% since 2013



Passivhaus is a building standard that simultaneously combines energy efficiency, occupancy comfort and cost effectiveness. But Passivhaus is more than just a low-energy building:

The Passivhaus standard allows for space heating and cooling related energy savings of up to 90% compared with typical building stock and over 75% compared to average new builds.

Passivhaus builds make efficient use of the sun, internal heat sources and heat recovery, rendering conventional heating systems unnecessary throughout even the coldest of winters. During warmer months, Passivhaus make use of passive cooling techniques such as strategic shading and ventilation to keep comfortably cool. These features are incredibly important in an academic setting to ensure indoor spaces are comfortable and the learning environments are optimised for both teachers and students.

Kawneer are able to offer a number of product solutions for the Education sector that help meet the Passivhaus standards.





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# NEWCASTLE GIRLS HIGH SCHOOL, NEWCASTLE

**Products Used:**

AA®100 Curtain Wall  
AA®541 Casement Window  
AA®720 Series Doors  
AA®3110 Horizontal Sliding Windows

**Architect:** Ellis Williams

**Main Contractor:** Wates Construction







# FEATURED PRODUCTS

An overview of our product range that are particularly well suited to Education sector applications.

## AA®190 TB SEVERE DUTY WELDED DOOR

The AA®190 TB Severe Duty Welded Door is our market-leading severe duty entrance door.

The AA®190 TB is an all-purpose entrance door ideal for use in high traffic areas and automatic entrances, with robust welded construction suitable for heavy and severe use. Its welded corner construction makes it the strongest aluminium door available, with four separate weld points for exceptional strength that helps resist the door from dropping and tested to the severe-duty requirements of BS 6375-2: 2009.

It can be installed with a finger guard pivot stile feature to prevent injury to fingers being accidentally caught between the hinge stile and frame. The door has also been tested to PAS 24 for enhanced security performance of single and double leaf external doors.

### FEATURES

- Exceptional strength: meets severe-duty requirements of BS 6375-2: 2009.
- Extremely robust: the only door with welded construction that offers a Kawneer Lifetime Guarantee for peace of mind.
- Quality controlled and fully fabricated from our manufacturing site in Runcorn.
- Maximum size 3000mm (H) x 1320mm (W).
- Includes 5 thermal with a u-value performance of 1.8/m2K.
- Water Class 3A (100 Pa).
- Air Class 2 (300 Pa).
- Dual-colour options available.
- Can accommodate up to 42mm glazing infill.
- Fully rebated design and various threshold options.
- Additional options include automated access and panic hardware.
- Suitable for external or internal medium, heavy and severe-duty use.
- Independently tested to PAS 24 Standard.
- Child-friendly finger guard pivot stile protects against trapped fingers when opening and closing.
- Butt hinge option available.
- Single, double action, auto swing and bi-parting doors offer design flexibility.
- Threshold options include a low threshold to comply with Document M.
- Single or dual colour options.

SEVERE DUTY TESTED  
500,000  
CYCLES



SLIM  
SIGHTLINES

## AA®720 SL WINDOW SYSTEM

The AA®720 SL Outward Opening Casement Window has been designed specifically for the Education sector.

The AA®720 SL Window System offers excellent thermal performance, safety and security and a best-value approach to the education sector to help ensure projects remain on budget.

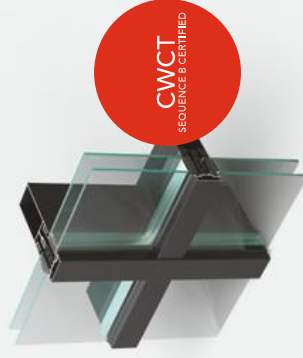
The AA®720 SL does not require reverse glazing adaptors, therefore reducing lead times and fabrication timescales. It also offers ultra-slim 62mm sightlines, enhancing the glazing vision area so you have better external views and can maximise natural daylight.

### FEATURES

- BRE Green Guide 'A' Rated.
- Slim 62mm sightlines.
- Air infiltration - Class 3-4 (600 Pa).
- Watertightness - Class 9A (600 Pa).
- Wind Resistance - Class E2400 (2400 Pa).
- Fully tested to achieve PAS 24.
- Maximum sizes: top hung up to 1500mm(W) and 1500mm(H), side hung up to 900mm(W) and 1500mm(H).
- Accommodates glazing up to 56mm, enabling triple glazing solutions.
- Compatible with our AA®100/AA®110 Curtain Walling, 451PT Framing and Door Systems.
- Choice of window restrictors available to 100mm.
- Hardware options include concealed hinges, barrel hinges and multiple handle and locking options.
- Suited hardware to complement our AA®720 and AA®540 products.
- Trickle Ventilation option available to help meet Document F requirements.
- Box beads for enhanced security.

### FEATURES

- Concealed zone drainage, with each pane acting as an individual self-draining unit.
- Mullion drainage with ventilation and drainage via the mullions.
- Glazing up to 50mm.
- Available in both capped and structural silicone glazed (SSG) forms.
- Large choice of face caps for total design flexibility.
- Bespoke face cap designs available (subject to approval).
- Fire-resistance in accordance with Pr EN 1364-3, with up to 30 minutes of integrity and insulation.
- Patented transom overlap detail for a uniform aesthetic finish.
- Tested and certified in accordance with CWCT Sequence B.
- Enhanced thermal performance exceeds current building regulations.
- Ability to incorporate AA®130 Brise Soleil System.
- Allows integration of opening windows, including a concealed vent option.
- HC/VC gasket system provided as an alternative to structural glazed solutions.



CWCT  
SEQUENCE B CERTIFIED

## AA®100 50MM CURTAIN WALL SYSTEM

The AA®100 has a stick-frame assembly with excellent weather performance.

This unique characteristic is obtained via drainage and ventilation of glazing rebates at every mullion and transom connection in a zone-drained system.

The glazing rebates are also used at the base and above mullion joints in a mullion-drained system.

The system offers design flexibility with various mullion depths, several thermal break options and multiple external face caps for a variety of aesthetic finishes.

Its outstanding performance and ease of installation make it ideal for tailoring to individual project requirements.





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# FUSION BUILDING, BOURNEMOUTH UNIVERSITY

**Products Used:**

AA®100 Curtain Wall  
AA®541 Casement Window  
AA®545 Swing Door  
AA®190 Heavy Duty Entrance Doors

**Architect:** BDP

**Main Contractor:** Willmott Dixon





# THE KAWNEER RANGE

A summary of our products specifically designed for use in education sector projects.



## AA\*3610LS VERTICAL SLIDING WINDOW

**When maximum ventilation, easy operation and optimum airflow are critical project requirements, this is an ideal choice.**

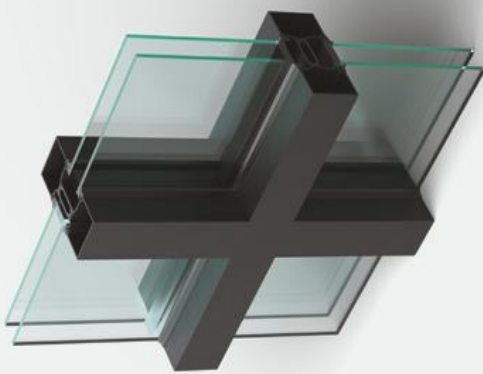
The system has a fully integrated flexible vertical slider, and includes a unique thermal break design to optimise its performance. This technique enables us to combine the ultimate weather and thermal performance with easy operation to create a truly exceptional product choice.

The AA\*3610LS allows you to open the top and bottom sashes simultaneously. This unique solution offers excellent ventilation by allowing air contaminants such as fumes, dust and vapours out of the top vent while fresh air is drawn in via the bottom vent.

The AA\*3610LS has been successfully subjected to several intensive climatic cycle tests, when it was exposed to conditions representing more than 75 years of use. The successful results and enhanced durability means significantly reduced maintenance costs.

### FEATURES

- Linked, double sliding and fixed lights for total flexibility.
- Accommodates punched openings, coupled or composite units.
- Bead glazing from 24mm-32mm, with thermal and safety glass options.
- Integral muntin bar option to replicate traditional wooden sash windows.
- Concealed drainage for better aesthetics.
- Integral handle pull option.
- Unique interlock design for exceptional weathering and thermal performance.
- Flush opening avoids damage or interference with internal furnishings and offers added safety at ground floor level.
- Can suite with Kawneer Curtain Wall and Framing products.
- Independently tested to PAS 24.
- Enhanced thermal performance exceeds current building regulations.
- Ability to incorporate AA\*130 Brise Soleil System.
- Allows integration of opening windows, including a concealed vent option.
- HC/VC gasket system provided as an alternative to structural glazed solutions.



## 451PT FRAMING SYSTEM

The 451PT Framing System can accommodate fixed lights, opening vents and insulated non-vision panels.

Designed in close collaboration with lead industry designers, the thermally-efficient 451PT provides a slimline framing system, which can be supplied in dual colour and multi-glazed framing modules of various widths and heights. It can accommodate fixed lights, opening vents and insulated non-vision panels.

The 451PT uses shear block construction. Contoured shear blocks are screw-fixed to the vertical aluminium profiles, forming a spigot for horizontal members, and can take glazing options between 24mm and 28mm.

### FEATURES

- Meets the current building regulations thermal requirements.
- Narrow 50mm sightlines for attractive aesthetics.
- A tried and tested solution ideal for large window designs.
- Flush glazed, therefore easy to apply.
- Concealed drainage with moisture directed to the outside of the building.
- Suites with our AA\*720 Windows, AA\*3610 Vertical Sliding Window and all Door Systems.



## AA®720 SERIES DOOR SYSTEMS

The AA®720 door series offers high thermal performance, resilience to climatic conditions and a strong heavy-duty robustness for high-traffic areas.

The AA®720 Door is available with two levels of thermal performance – the AA®720 and the AA®720 HI to offer complete design aesthetics and performance with cost efficiency.

The 72mm AA®720 Door systems perfectly complement our 72mm AA®720 SL series window.

### FEATURES

- AA®720 - U-value 1.6W/m<sup>2</sup>k (double glazing) and 1.3W/m<sup>2</sup>k (triple glazing).
- AA®720 HI - U-value 1.5W/m<sup>2</sup>k (double glazing) and 1.2W/m<sup>2</sup>k (triple glazing).
- Frame depth 72mm.
- Water Class 4A.
- Air Class 2.
- Wind Class C2.
- Acoustic performance 72Db.
- Maximum door leaf size 1400mm x 3000mm.
- Maximum weight 250kg.
- Accommodates up to 56mm glazing infill – allows triple glazed solutions.
- Heavy duty door.
- Extensive hardware options, including new concealed hinges and barrel hinges, as well as extensive handle and locking options to match other Kawneer products.
- Independently tested to PAS 24.



## LOUVRESHIELD

Designed to complement the AA®720 Open-In Windows, LouvreShield offers a simple, aesthetic solution for ventilation and safety, making it an ideal product for education buildings and student accommodation projects.

LouvreShield is securely surface-mounted onto the window's outer frame. The LouvreShield design acts as a safety barrier when the window is in its open position, and it also allows natural air ventilation into a room when the windows are opened in either tilt or turn modes.

A totally self-contained solution that removes the need for additional sub-contractors and does not negatively impact any other element of the external building structure.

### FEATURES

- Suites with the AA®720 Open-In Windows.
- Glazing systems and Louvres from only one manufacturer offer more design flexibility.
- Fully tested in accordance with BS 6180 (Barrier Loading) to 1.5 kN/m Line Load and with BS EN 13049 (Impact Resistance) achieving Class 5.
- Barrier/Fall protection.
- Two blade design options available for improved façade aesthetics: Rectangular Louvre Blade and the 90mm Louvre Blade.
- Wide range of paint finishes with up to 30-year guarantees and anodised finishes with up to 25-year guarantees.



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# ALSOP HIGH SCHOOL, LIVERPOOL

**Products Used:**

AA®100 Curtain Wall  
AA®601 Windows  
AA®602 Windows  
AA®603 Windows  
AA®190 and 350 Doors

**Architect:** 2020 Liverpool  
**Main Contractor:** Morgan Sindall

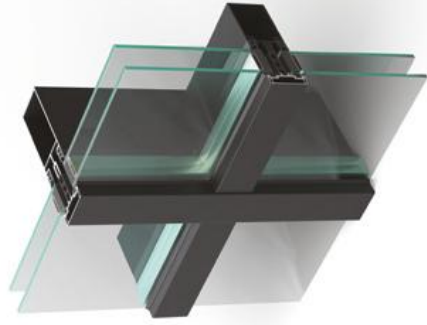


# DRIVING BEST VALUE

Product options available to optimise a project without compromising performance

In the education sector, it is imperative to offer product solutions that combine performance, aesthetics and best value. At Kawneer, we are able to find the best solution for your project performance and budget due to our significant product portfolio.

We can help with the building façade requirement and specification by maximising performance and meet every façade detail requirement whilst offering best-value.



## CURTAIN WALLING

- Use Zone wind loading to allow the most efficient box size to be used which will help keep costs low.
- Use a zone drained system as this will allow you to minimise wastage.
- Request optimised bar lengths to further minimise waste. Typical extrusion lengths are 6m or 6.4m which may result in excess waste.
- Utilise steelwork to split the span so as to minimise the box size required for the curtain wall. This will be far cheaper than using a larger box size to span full height.
- Wherever possible consider using 45IPT framing in lieu of curtain walling as this will be circa 25% more competitive.



## DOORS

- Main entrance doors in schools are subject to a significant amount of abuse so consider specifying a pre fabricated welded door e.g AA®190 TB.
- Ensure the correct hardware is specified as quite often doors are over specified.
- Always use a finger guarded/pivot door specification for school environments.
- Try to use 45IPT to glaze the doors into as opposed to curtain walling as this will be more competitive.
- Specify door sizes to remove the need for a mid rail as this will be more cost effective.
- Use door stops to avoid the doors being opened beyond 90 degrees as this will avoid potential door damage/maintenance issues.
- When using a low threshold door for DDA compliance ensure that you specify integral drainage to avoid water tracking back under the door in high wind load conditions.



## WINDOWS

- Minimise the number of opening vents and use open out vents wherever possible as this will minimise costs.
- Check the wind load and make sure that the smallest vent/outer frame is selected when pricing.
- Challenge the need for PAS 24 security on the project, particularly the 2nd floor which is not readily accessible.
- Consider the need for subills to the windows.
- Review alternative methods for achieving natural ventilation i.e. Parallel Opening Vents, sliding Sash windows etc.
- Use improved 'g-value' glass to deliver solar shading as this will be more cost effective when compared to brise soleil.
- If mechanical ventilation is required look to minimise the m2 of louvre area as this will help drive down cost / improve weatherability.

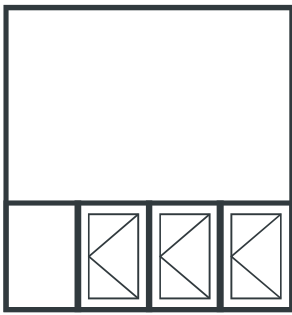
# CREATING BEST VALUE

Optimise without Compromise - how a best value approach can positively impact a project's budget.

At Kawneer, we have a great deal of experience and knowledge in making sure a project meets its performance and budget requirements. Whether it is creating a bespoke solution, or reviewing a project's key performance criterion, we can help find a solution that is best matched to your requirements.

The example below shows a typical configuration on education projects with three separate top hung vents below a fixed light. Although this will provide excellent levels of ventilation, it is not driving best value to achieve the same ventilation strategy.

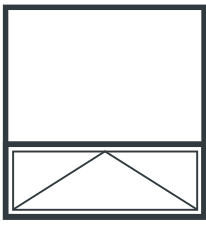
Below is a typical Education sector window configuration specification.

| AA®720 Series Window System                                                          |                   |            |             |
|--------------------------------------------------------------------------------------|-------------------|------------|-------------|
|  | Overall Cost      | U-Value*   | Air Flow*** |
|                                                                                      | Price Index = 1.0 | 1.51 w/m2k | 0.315m2     |

\* Based on centre pane value 1.0w/2k and Psi Value 0.048

\*\* Based on 86mm opening

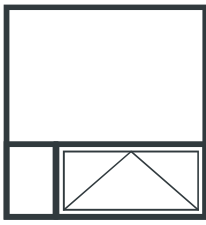
\*\*\* Based on 100mm opening

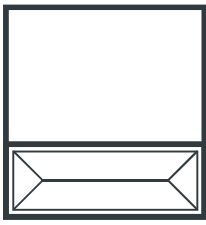
| AA®720E Series Window System - Side Hung                                           |                   |            |             |
|------------------------------------------------------------------------------------|-------------------|------------|-------------|
|  | Overall Cost      | U-Value*   | Air Flow*** |
|                                                                                    | Price Index = 0.7 | 1.35 w/m2k | 0.211m2     |

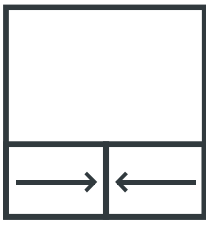
The following are some best value approaches that optimise your window choice without compromising the overall average window performance.

The relevant price index below demonstrates the cost saving against the original specification.

These examples show how using a larger side hung vent, system, or Parallel Opening vent can allow you to still achieve good thermal and ventilation performance at a significantly better value and cost strategy.

| AA®540 Series Window System - Side Hung Casement with Fixed Lights                 |                    |            |             |
|------------------------------------------------------------------------------------|--------------------|------------|-------------|
|  | Overall Cost       | U-Value*   | Air Flow*** |
|                                                                                    | Price Index = 0.68 | 1.29 w/m2k | 0.182m2     |

| AA®720 Series Window System - with Parallel Open Out Vent                           |                    |            |            |
|-------------------------------------------------------------------------------------|--------------------|------------|------------|
|  | Overall Cost       | U-Value*   | Air Flow** |
|                                                                                     | Price Index = 0.91 | 1.28 w/m2k | 0.526m2    |

| AA®3610 LS Series Window System - Vertical Sliding Window                            |                    |            |                                     |
|--------------------------------------------------------------------------------------|--------------------|------------|-------------------------------------|
|  | Overall Cost       | U-Value*   | Air Flow***                         |
|                                                                                      | Price Index = 1.12 | 1.55 w/m2k | Inlet: 0.0827m2<br>Outlet: 0.0827m2 |



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# DELIVERING BEST VALUE

We have a huge amount of knowledge and experience in the Education sector. The Gateway to the Valleys Secondary School in Bridgend is a great example of how we helped to deliver a best value approach throughout the design and build process.

The following are some examples of how we helped achieve the required performance of the building whilst balancing the cost effectiveness of the project:

- Zoned Windloads used to reduce curtain wall box size.
- AA® 541 window system selected in lieu of AA®720 to reduce cost whilst meeting U value requirement.
- Frames coupled into 2 or 3 module composites as opposed to coupling every window.
- All curtain walling and window sections reviewed against wind load requirements to minimum sizes.
- Coupling mullion profile optimised to include outer frame section modulus.
- Special profile lengths implemented to reduce wastage resulting from the standard 6.4m bars.
- Ventilation requirement reviews and number of opening vents reduced.
- PAS 24 changed to ground floor only instead of the complete building.
- Metallic Paint to external only. Standard colour used on the internal face to reduce cost.
- Unexposed mullion sections left in mill finish.

**The above façade design and build considerations that were implemented helped to reduce the projects material costs by £150k vs the initial design.**

**No compromises, just facade optimisation.**





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# TRUMPINGTON MEADOWS PRIMARY SCHOOL, CAMBRIDGE

**Products Used:**

AA®100 Curtain Wall  
AA®100 SSG Curtain Wall  
AA®541 Casement Window  
AA®190 Doors

**Architect:** Frank Shaw Associates Limited

**Main Contractor:** Willmott Dixon





KAWNEER | EDUCATION | OUR PRODUCTS

# TESTING

HELPING TO ESTABLISH PRODUCT PERFORMANCE AND CONSISTENCY.

Incorporating product reliability testing methods into our product offer and manufacturing facility is crucial.

Product testing is an essential part of developing high quality aluminium façade products. It helps us to establish clear performance targets and provides our product development teams with a fundamental basis to design and manufacture high quality aluminium façade products.

We are able to undertake a number of in-house testing regimes within our facility at Runcorn, Cheshire and we use authorised testing facilities and governing bodies for all other testing criteria.

Product testing ensures our products are safe, reliable and high-quality.

|   |                                                                                |
|---|--------------------------------------------------------------------------------|
| ✓ | PAS24 - Enhanced Security Performance                                          |
| ✓ | CWCT SEQUENCE B - Air Permeability, Water Penetration, Wind Resistance, Impact |
| ✓ | MECHANICAL DURABILITY CYCLE TESTING - BS EN 12400:2002                         |
| ✓ | BARRIER LOADING - BS 6180:2011                                                 |
| ✓ | IMPACT TESTING - BS EN 13049:2003                                              |
| ✓ | AIR INFILTRATION - BS EN 12207:2016                                            |
| ✓ | WATERTIGHTNESS - BS EN 12208:2000                                              |
| ✓ | SMOKE CONTROL - BS EN 12101-2                                                  |
| ✓ | FIRE RESISTANCE - DIN EN 1634-1 AND DIN EN 1634-3                              |







KAWNEER | EDUCATION | OUR EXPERIENCE

# HERON HALL ACADEMY, LONDON

**Products Used:**  
GT70 Windows  
AA\*100 Curtain Wall  
AA\*541 Fixed Lights  
AA\*190 Doors

**Architect:** ArchitecturePLB  
**Main Contractor:** Willmott Dixon





KAWNEER | EDUCATION | OUR PRODUCTS

# WARRANTIES

## GUARANTEED PERFORMANCE AND LONGEVITY

Building projects should be built to last and no two projects are the same.

When designing and specifying a building construction project it isn't just about the initial cost of the build – the project must take into account other contributing factors such as ongoing maintenance and the building costs it incurs over its entire lifecycle. That's why, at Kawneer, we stringently test all our products.

Kawneer's aluminium systems perform exceptionally well in terms of lifetime performance and associated warranties.

The following tests are an example of the warranties we offer as part of our product offer:

### PERMACOVER™

This covers our high-quality polyester powder paint finish with 30-year gloss and 30-year matt and metallic guarantees, subject to Kawneer acceptance in marine, industrial, swimming pools or other aggressive atmospheres.

### PERMANODIC® WARRANTY

Our Permanodic® warranty covers our anodised products with a 25-year finishes guarantee.

We offer a comprehensive range of warranties across our entire range of products, giving you peace of mind and added confidence in specifying Kawneer products.

### INSURANCE BACKED WARRANTY

In partnership with Alliance Warranty Management, we can offer a unique 3rd party insurance-backed warranty featuring:

- Periods of 10 or 12 years (2 years initial installer period, 8/10 years direct to the insurer).
- No-fault warranty.
- Cover for defective design, workmanship and materials.
- Protection for the whole installed system.
- Fully transferable to future owners.
- A-rated insurance company backing.
- Costs typically 2.25% of installed glazing value. Similar to our Permacover Plus, this includes vetting the design through to checking installation on-site, with documentation released to the client only when the works are proven to meet our requirements.

### DEFECT REDUCTION

Without the correct installation, even the very best products become an expensive problem to solve.

So, to ensure Kawneer's quality continues throughout the process from product design and manufacture to delivery and installation, we created an industry first – the Kawneer Installation Certification Scheme (KIC).

It demonstrates that any installer we approve has been comprehensively trained and inspected to the highest standards to install Kawneer products. Our training covers all the main topics around installing Kawneer systems, including curtain wall design, fabrication, best value solutions, installation site supervision and site toolbox talks.

All of our approved UK sub-contractor network are trained to our latest KIC standards, and we carry out regular site inspections to review the quality of workmanship.

The main aim of our KIC Course is to minimise the risk of defects on-site and the initiative has been incredibly successful since its implementation.

From manufacture to installation and lifetime performance, Kawneer offers you a full comprehensive service.



### Kawneer Installation Certification:

- Industry First.
- 2 Day Intensive Training Course.
- Written Examination.
- Photo I.D. & Unique Registration Number.
- Mapped to NVO Level 2 in Curtain Wall Installation.
- Over 800 people have completed the course to date with a 75% pass rate.



FRICION LINGES  
30,000  
CYCLES

ALUMINIUM PROFILES  
50 YEARS

OVER CENTRE  
CAM STAYS  
30,000  
CYCLES

POLYESTER  
POWDER COATING  
30 YEARS

FULLY REVERSIBLE  
HINGES  
30,000  
CYCLES

POLYAMIDE  
THERMAL BREAKS  
50 YEARS

HANDLES &  
OTHER ACCESSORIES  
30,000  
CYCLES

GASKET SEALS  
30 YEARS

TILT & TURN  
MECHANISMS  
30,000  
CYCLES



KAWNEER | EDUCATION | OUR EXPERIENCE

# DUNS PRIMARY SCHOOL, BERWICKSHIRE

**Products Used:**  
GT70 Windows  
AA®100 Curtain Wall  
AA®720 Series Doors  
AA®3572 Lift/Slide Door System

**Architect:** Aitken Turnbull  
**Main Contractor:** Graham Construction



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Runcorn, Cheshire, WA7 1QQ  
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London, W1F 0PN  
Tel: +44 (0) 207 287 5911

June 2022  
[www.kawneer.co.uk](http://www.kawneer.co.uk)



# **GUTTERCREST**

## **COLOUR CHART**



**Version 3.0**

**[www.guttercrest.co.uk](http://www.guttercrest.co.uk)**

## WHAT IS POLYESTER POWDER COATING (PPC)?

Powder coating is a type of coating that is factory applied as a free-flowing, dry powder. The coating is typically applied electrostatically and is then cured under heat to allow it to flow and form a hard finish that is tougher than conventional paint.

### POWDER COATING HAS BECOME SO POPULAR BECAUSE IT OFFERS:

- **AESTHETICS**
- **WEATHERABILITY**
- **HUGE RANGE OF COLOURS**
- **DURABILITY**
- **CHOICE OF FINISHES**
- **ENVIRONMENTALLY FRIENDLY**



**CLICK TO VIEW PPC PROCESS**

### COATING & APPLICATION SPECIFICATIONS

For the PPC finish to be durable and colour fast an external grade architectural powder should be used, conforming to BS 6496: 1984. This should be applied in accordance with BS EN 12206-1:2004.

### MARINE & INDUSTRIAL ENVIRONMENTS

The PPC finish in coastal areas (generally within 500m of the high water mark) needs to be marine standard PPC. Areas with harsh industrial pollution also need special consideration. Please contact us to confirm prior to placing orders, as extra costs may apply.



## GUTTERCREST'S ALUMINIUM RAINWATER GOODS:

### GUTTER PROFILES

- Half Round Gutters
- Beaded Deep Flow Gutters
- Moulded Ogee Gutters
- Victorian Ogee Gutters
  - Box Gutters
  - Raked Box Gutters
  - Shaped Box Gutters

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### DOWNPIPES

- Round Downpipes
- Cast Round Downpipes
- Square & Rectangle Downpipes
- Georgian Square & Rectangle Downpipes
- Anti-Vandal Downpipes (High Security)

---

### COLUMN CASING COPINGS AND CAPPINGS FASCIA AND SOFFIT HOPPER HEAD RANGE

Are available polyester powder coated in a vast range of RAL and BS colours, metallic, textured finish, and Heritage cast iron effect coatings, as well as mill finish.



## COLOUR AVAILABILITY & GLOSS LEVELS

### COLOUR RANGE

We have compiled this colour chart to assist our clients in selecting a colour for their property. The charts are indicative and may not reflect the true colour. RAL Colours are now the most commonly used for Architectural Polyester Powder Coatings (PPC).

### COSTS OF POLYESTER POWDER COATING

Some of the colours will be available at our standard charges, some will incur extra costs. Metallics, anodising effect coating and stone effect coating are often more expensive. The quantity of materials to be coated also influences the cost as small batches of special colours are expensive.

### PPC GLOSS LEVELS

Architectural Grade Polyester Powder Coating is available in 3 gloss levels

**\*MATT (30%)**

**SATIN (60%)**

**GLOSS (90%)**

Generally most architectural finishes are MATT (30). The reduced gloss level helps to hide any of the undulations to the flatness of the material.

**\*GUTTERCREST RECOMMEND & WHENEVER POSSIBLE WILL PPC MATERIALS IN MATT (30%)**

### COLOUR MATCHING

If you have a special colour that needs to be matched please contact us. We will need either a colour reference or a sample. The colour can be made to a close match. Cost will depend on the quantity of goods and the colour.

### SPECIAL FINISHES

We can obtain a huge range of special colours and finishes, such as metallics, textures, stone and anodised effect finishes. For more information on these please see pages 15 & 16.

# HERITAGE

*Range*

PROVIDING THE PRODUCT WITH A CAST-IRON TEXTURED FINISH



HERITAGE BLACK



HERITAGE CREAM



HERITAGE NAVY



HERITAGE SAGE



HERITAGE RUBY



HERITAGE CARAMEL



HERITAGE HOLLY



HERITAGE LEAD



**IMPORTANT:** COLOURS ARE FOR REFERENCE ONLY AND DUE TO MONITOR VARIATIONS MAY NOT CORRESPOND TO REAL COLOURS

## RAL COLOUR CHART

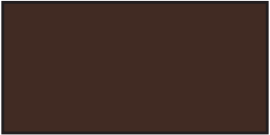
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|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| RAL 1000                                                                           | RAL 1001                                                                            | RAL 1002                                                                            | RAL 1003                                                                             | RAL 1004                                                                              |
|    |    |    |    |    |
| RAL 1005                                                                           | RAL 1006                                                                            | RAL 1007                                                                            | RAL 1011                                                                             | RAL 1012                                                                              |
|    |    |    |    |    |
| RAL 1013                                                                           | RAL 1014                                                                            | RAL 1015                                                                            | RAL 1016                                                                             | RAL 1017                                                                              |
|   |   |   |   |   |
| RAL 1018                                                                           | RAL 1019                                                                            | RAL 1020                                                                            | RAL 1021                                                                             | RAL 1023                                                                              |
|  |  |  |  |  |
| RAL 1024                                                                           | RAL 1027                                                                            | RAL 1028                                                                            | RAL 1032                                                                             | RAL 1033                                                                              |
|  |  |  |  |  |
| RAL 1034                                                                           | RAL 1035*                                                                           | RAL 1036*                                                                           | RAL 1037                                                                             | RAL 2000                                                                              |
|  |  |  |  |  |
| RAL 2001                                                                           | RAL 2002                                                                            | RAL 2003                                                                            | RAL 2004                                                                             | RAL 2008                                                                              |
|  |  |  |  |  |
| RAL 2009                                                                           | RAL 2010                                                                            | RAL 2011                                                                            | RAL 2012                                                                             | RAL 2013*                                                                             |

*For colour availability, please contact us.*

\* Indicates Metallic



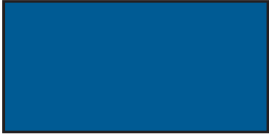
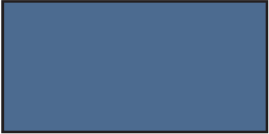
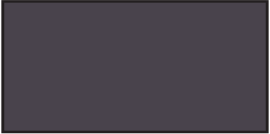
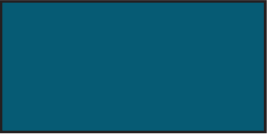
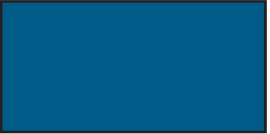
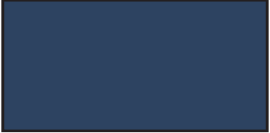
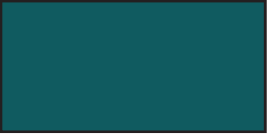
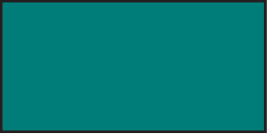
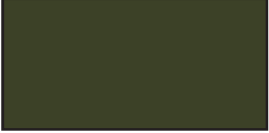
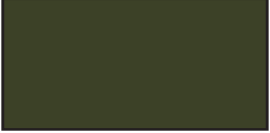
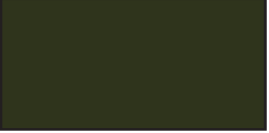
## RAL COLOUR CHART

|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| RAL 2236                                                                           | RAL 3000                                                                            | RAL 3001                                                                            | RAL 3002                                                                             | RAL 3003                                                                              |
|    |    |    |    |    |
| RAL 3004                                                                           | RAL 3005                                                                            | RAL 3007                                                                            | RAL 3009                                                                             | RAL 3011                                                                              |
|    |    |    |    |    |
| RAL 3012                                                                           | RAL 3013                                                                            | RAL 3014                                                                            | RAL 3015                                                                             | RAL 3016                                                                              |
|   |   |   |   |   |
| RAL 3017                                                                           | RAL 3018                                                                            | RAL 3020                                                                            | RAL 3022                                                                             | RAL 3027                                                                              |
|  |  |  |  |  |
| RAL 3031                                                                           | RAL 3032*                                                                           | RAL 3033*                                                                           | RAL 4001                                                                             | RAL 4002                                                                              |
|  |  |  |  |  |
| RAL 4003                                                                           | RAL 4004                                                                            | RAL 4005                                                                            | RAL 4006                                                                             | RAL 4007                                                                              |
|  |  |  |  |  |
| RAL 4008                                                                           | RAL 4009                                                                            | RAL 4010                                                                            | RAL 4011*                                                                            | RAL 4012*                                                                             |
|  |  |  |  |  |
| RAL 5000                                                                           | RAL 5001                                                                            | RAL 5002                                                                            | RAL 5003                                                                             | RAL 5004                                                                              |

*For colour availability, please contact us.*

\* Indicates Metallic

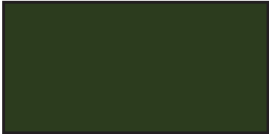
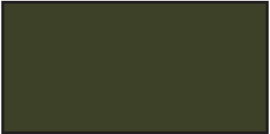
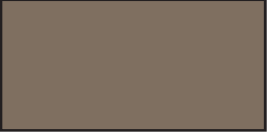
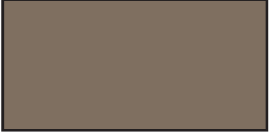
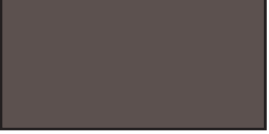
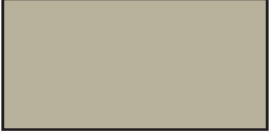
## RAL COLOUR CHART

|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| RAL 5005                                                                           | RAL 5007                                                                            | RAL 5008                                                                            | RAL 5009                                                                             | RAL 5010                                                                              |
|    |    |    |    |    |
| RAL 5011                                                                           | RAL 5012                                                                            | RAL 5013                                                                            | RAL 5014                                                                             | RAL 5015                                                                              |
|    |    |    |    |    |
| RAL 5017                                                                           | RAL 5018                                                                            | RAL 5019                                                                            | RAL 5020                                                                             | RAL 5021                                                                              |
|   |   |   |   |   |
| RAL 5022                                                                           | RAL 5023                                                                            | RAL 5024                                                                            | RAL 5025*                                                                            | RAL 5026*                                                                             |
|  |  |  |  |  |
| RAL 6000                                                                           | RAL 6001                                                                            | RAL 6002                                                                            | RAL 6003                                                                             | RAL 6004                                                                              |
|  |  |  |  |  |
| RAL 6005                                                                           | RAL 6006                                                                            | RAL 6007                                                                            | RAL 6008                                                                             | RAL 6009                                                                              |
|  |  |  |  |  |
| RAL 6010                                                                           | RAL 6011                                                                            | RAL 6012                                                                            | RAL 6013                                                                             | RAL 6014                                                                              |
|  |  |  |  |  |
| RAL 6015                                                                           | RAL 6016                                                                            | RAL 6017                                                                            | RAL 6018                                                                             | RAL 6019                                                                              |

*For colour availability, please contact us.*

\* Indicates Metallic

## RAL COLOUR CHART

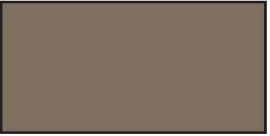
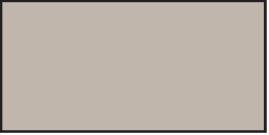
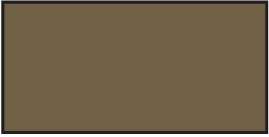
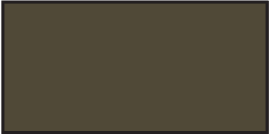
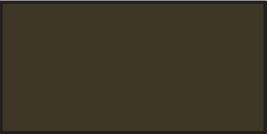
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|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| RAL 6020                                                                           | RAL 6021                                                                            | RAL 6022                                                                            | RAL 6024                                                                             | RAL 6025                                                                              |
|    |    |    |    |    |
| RAL 6026                                                                           | RAL 6027                                                                            | RAL 6028                                                                            | RAL 6029                                                                             | RAL 6031                                                                              |
|    |    |    |    |    |
| RAL 6032                                                                           | RAL 6033                                                                            | RAL 6034                                                                            | RAL 6035*                                                                            | RAL 6036*                                                                             |
|   |   |   |   |   |
| RAL 7000                                                                           | RAL 7001                                                                            | RAL 7002                                                                            | RAL 7003                                                                             | RAL 7004                                                                              |
|  |  |  |  |  |
| RAL 7005                                                                           | RAL 7006                                                                            | RAL 7008                                                                            | RAL 7009                                                                             | RAL 7010                                                                              |
|  |  |  |  |  |
| RAL 7011                                                                           | RAL 7012                                                                            | RAL 7013                                                                            | RAL 7015                                                                             | RAL 7016                                                                              |
|  |  |  |  |  |
| RAL 7021                                                                           | RAL 7022                                                                            | RAL 7023                                                                            | RAL 7024                                                                             | RAL 7026                                                                              |
|  |  |  |  |  |
| RAL 7030                                                                           | RAL 7031                                                                            | RAL 7032                                                                            | RAL 7033                                                                             | RAL 7034                                                                              |

*For colour availability, please contact us.*

\* Indicates Metallic



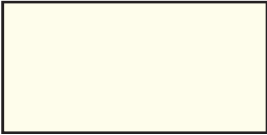
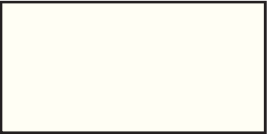
## RAL COLOUR CHART

|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| RAL 7035                                                                           | RAL 7036                                                                            | RAL 7037                                                                            | RAL 7038                                                                             | RAL 7039                                                                              |
|    |    |    |    |    |
| RAL 7040                                                                           | RAL 7042                                                                            | RAL 7043                                                                            | RAL 7044                                                                             | RAL 7045                                                                              |
|    |    |    |    |    |
| RAL 7046                                                                           | RAL 7047                                                                            | RAL 7048*                                                                           | RAL 7903                                                                             | RAL 8000                                                                              |
|   |   |   |   |   |
| RAL 8001                                                                           | RAL 8002                                                                            | RAL 8003                                                                            | RAL 8004                                                                             | RAL 8007                                                                              |
|  |  |  |  |  |
| RAL 8008                                                                           | RAL 8011                                                                            | RAL 8012                                                                            | RAL 8014                                                                             | RAL 8015                                                                              |
|  |  |  |  |  |
| RAL 8016                                                                           | RAL 8017                                                                            | RAL 8019                                                                            | RAL 8022                                                                             | RAL 8023                                                                              |
|  |  |  |  |  |
| RAL 8024                                                                           | RAL 8025                                                                            | RAL 8027                                                                            | RAL 8028                                                                             | RAL 8029*                                                                             |
|  |  |  |  |  |
| RAL 8040                                                                           | RAL 8070                                                                            | RAL 8080                                                                            | RAL 8912                                                                             | RAL 9001                                                                              |

*For colour availability, please contact us.*

\* Indicates Metallic

## RAL COLOUR CHART

|                                                                                  |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |                                                                                     |
| RAL 9002                                                                         | RAL 9003                                                                          | RAL 9004                                                                          | RAL 9005                                                                           | RAL 9006*                                                                           |
|                                                                                  |  |  |  |  |
| RAL 9007*                                                                        | RAL 9010                                                                          | RAL 9011                                                                          | RAL 9016                                                                           | RAL 9017                                                                            |
|  |  |  | Hipca White                                                                        | Crittal White                                                                       |
| RAL 9018                                                                         | RAL 9022*                                                                         | RAL 9023*                                                                         | RAL 9910                                                                           | RAL 9911                                                                            |



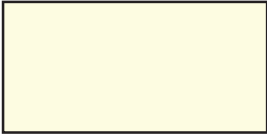
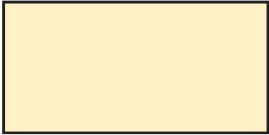
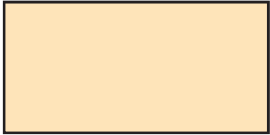
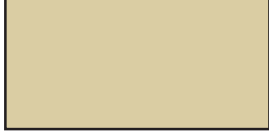
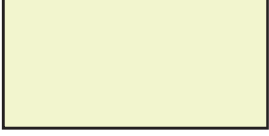
### PLEASE BE AWARE:

GUTTERCREST COLOUR CHARTS ARE PROVIDED AS A GUIDE ONLY. THE COLOUR SAMPLES PROVIDED SHOULD NOT BE CONSIDERED AS A FULL ACCURATE DEPICTION OF THE BS OR RAL COLOURS. COLOUR DIFFERENCE IS DUE TO VARIATIONS BETWEEN COMPUTER MONITOR SETTINGS, SOFTWARE AND BROWSER USED. GUTTERCREST WOULD ALWAYS RECOMMEND REQUESTING A LIVE SAMPLE OF OUR POWDER COATING AND TO VIEW THEM IN DIFFERENT LIGHTING, BEFORE YOU MAKE YOUR FINAL CHOICE ON COLOUR.

*For colour availability, please contact us.*

\* Indicates Metallic

## BS COLOUR CHART

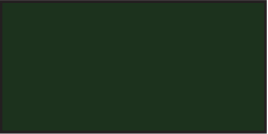
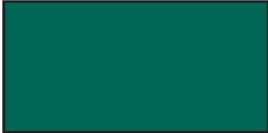
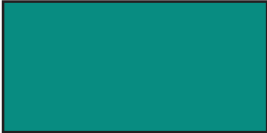
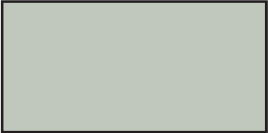
|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
| BS 105                                                                             | BS 166                                                                              | BS 226                                                                              | BS 537                                                                               | BS 538                                                                                |
|    |    |    |    |    |
| BS 631                                                                             | BS 632                                                                              | BS 693                                                                              | BS 694                                                                               | BS 00 A01                                                                             |
|    |    |    |    |    |
| BS 00 A05                                                                          | BS 00 A09                                                                           | BS 00 A13                                                                           | BS 00 E55                                                                            | BS 04 C39                                                                             |
|   |   |   |   |   |
| BS 04 D45                                                                          | BS 04 E53                                                                           | BS 06 C33                                                                           | BS 06 C39                                                                            | BS 06 E51                                                                             |
|  |  |  |  |  |
| BS 08 B15                                                                          | BS 08 B17                                                                           | BS 08 B25                                                                           | BS 08 B29                                                                            | BS 08 C31                                                                             |
|  |  |  |  |  |
| BS 08 E51                                                                          | BS 10 A01                                                                           | BS 10 A03                                                                           | BS 10 A05                                                                            | BS 10 B15                                                                             |
|  |  |  |  |  |
| BS 10 B17                                                                          | BS 10 B19                                                                           | BS 10 B21                                                                           | BS 10 C31                                                                            | BS 10 E53                                                                             |
|  |  |  |  |  |
| BS 12 B15                                                                          | BS 12 B17                                                                           | BS 12 B21                                                                           | BS 12 B29                                                                            | BS 12 C40                                                                             |

*For colour availability, please contact us.*

\* Indicates Metallic



## BS COLOUR CHART

|                                                                                    |                                                                                     |                                                                                    |                                                                                     |                                                                                      |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|    |    |   |   |   |
| BS 14 C35                                                                          | BS 14 C39                                                                           | BS 14 C40                                                                          | BS 14 E51                                                                           | BS 14 E53                                                                            |
|    |    |   |   |   |
| BS 16 C33                                                                          | BS 16 C37                                                                           | BS 16 D45                                                                          | BS 16 E53                                                                           | BS 18 B17                                                                            |
|    |    |   |   |   |
| BS 18 B21                                                                          | BS 18 B25                                                                           | BS 18 B29                                                                          | BS 18 C39                                                                           | BS 18 E49                                                                            |
|   |   |  |  |  |
| BS 18 E51                                                                          | BS 18 E53                                                                           | BS 20 C33                                                                          | BS 20 C40                                                                           | BS 20 D45                                                                            |
|  |  |                                                                                    |                                                                                     |                                                                                      |
| BS 20 E51                                                                          | PANTONE 300                                                                         |                                                                                    |                                                                                     |                                                                                      |



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*For colour availability, please contact us.*

\* Indicates Metallic

## STONE EFFECT FINISH

**GUTTERCREST ALWAYS ENDEAVOUR TO OBTAIN ANY SPECIAL FINISH REQUIRED FOR A PROJECT.**



*Here is an example of stone effect finish gutter, designed to blend in with the brickwork of this prestigious property. Guttercrest matched and sourced the shade & finish from a small sample of the stonework.*

## SPECIAL FINISHES

### ANODISED ALUMINIUM

ANODISING ALTHOUGH A VERY ABRASIVE RESISTANT FINISH HAS LIMITATIONS FOR USE ON FABRICATED ARCHITECTURAL PRODUCTS:

Surface imperfections from the manufacturing processes  
will be visible through the finish.

Limited colour range.

Susceptible to attack from acidic pollutant construction materials.

Once scratched cannot be repaired.

Environmental Issues - Acid solutions required during process.

**WE CAN OFFER ANODISED EFFECT PPC, WHICH HAS ALL THE BENEFITS OF PPC WITHOUT THE LIMITATIONS OF ANODISING**

### METALLIC & PEARLESCENT FINISHES

There are several metallic & pearlescent finishes available within our current RAL chart. However, if these do not meet requirements we can offer a much larger range of choice on application. Specialist colours such as anthracite, bronze, champagne, cirrus, cobalt, ebony, emerald, garnet, graphite, gypsum, marine, mineral, pearl, pewter, platinum, quartz, silver stone, winter blue, zircon, are all obtainable.

---

**IF YOU DON'T SEE THE COLOUR OR FINISH YOU WANT  
- PLEASE ASK OUR TECHNICAL DEPARTMENT FOR ANY  
SPECIAL REQUIREMENTS**





**[guttercrest.co.uk](http://guttercrest.co.uk)**

Victoria Road | Oswestry | Shropshire | SY11 2HX

01691 663300 01691 663311 [info@guttercrest.co.uk](mailto:info@guttercrest.co.uk)

Care has been taken to ensure that the contents of this publication are accurate, but Guttercrest do not accept responsibility for errors or for information that is found to be misleading. Suggestions for, or descriptions of, the end use or application of products or methods or working are for information only and Guttercrest Limited accept no liability in respect thereof.

## PRODUCT DATA SHEET

# Sarnafil® G 410-20 EL

### POLYMERIC MEMBRANE FOR ADHERED ROOF WATERPROOFING

#### PRODUCT DESCRIPTION

Sarnafil® G 410-20 EL (thickness 2.0 mm) is a multi-layer, synthetic roof waterproofing sheet based on premium-quality polyvinyl chloride (PVC) with inlay of glass non-woven containing ultraviolet light stabilizers and flame retardant according to EN 13956.

Sarnafil® G 410-20 EL is a hot air weldable roof membrane, formulated for direct exposure and designed to use in all global climatic conditions.

Sarnafil® G 410-20 EL has a unique lacquer coating applied to the top of the membrane.

#### USES

Roof waterproofing membrane for exposed flat roofs:

- Fully bonded roof surfaces with contact adhesive Sarnacol® 2170 / 2172 Spray or Sarnacol® 2121 depending on substrates.

- Enhancement of Solar Reflection of existing PVC roofs (relevant only for colour RAL 9016 SR)

Roof waterproofing membrane for exposed roof junction zones:

- Roof waterproofing for junctions and flashings, e.g. wall and parapet junctions, roof lights, etc., which are permanently exposed in installations of Sarnafil® G 410-20 EL roof waterproofing systems with ballast.
- Fully bonded junction areas with contact adhesive Sarnacol® 2170 / 2172 Spray.
- Roof waterproofing for junctions and flashings in installations of Sarnafil® G 410 EL Felt type exposed roof waterproofing systems.

#### CHARACTERISTICS / ADVANTAGES

- Proven performance over decades.
- Lacquer coated surface.
- Various colours available.
- High reflectance properties for excellent cool roofing characteristics (relevant only for colour RAL 9016 SR).
- Resistant to permanent UV irradiation.
- High dimensional stability due to glass fleece inlay.
- Resistant against impact load and hail.
- High water vapour permeability.
- Resistant to all common environmental influences.
- Hot air welding without use of open flames.
- Recyclable.

#### APPROVALS / STANDARDS

Sarnafil® G 410-20 EL is designed and manufactured to meet most international recognised standards.

- Polymeric sheets for roof waterproofing according to EN 13956, certified by notified body 1213-CPD-4919 and provided with the CE-mark.
- Reaction to fire according to EN 13501-1.
- External fire performance tested according to EN 1187 and classified according to EN 13501-5: BROOF(t1).
- Official Quality Approvals and Agreement Certificates and approvals.
- Monitoring and assessment by approved laboratories.
- Quality Management system in accordance with EN ISO 9001/1400.

## PRODUCT INFORMATION

|                            |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Packaging</b>           | Sarnafil® G 410-20 EL standard rolls are wrapped individually in a blue PE-foil.                                                                                                                                  |                                                                                                                                                                                                                                                                     |
|                            | Packing unit:                                                                                                                                                                                                     | see price list                                                                                                                                                                                                                                                      |
|                            | Roll length:                                                                                                                                                                                                      | 15.00 m                                                                                                                                                                                                                                                             |
|                            | Roll width:                                                                                                                                                                                                       | 2.00 m                                                                                                                                                                                                                                                              |
|                            | Roll weight:                                                                                                                                                                                                      | 75.00 kg                                                                                                                                                                                                                                                            |
| <b>Appearance / Colour</b> | Surface:                                                                                                                                                                                                          | matt                                                                                                                                                                                                                                                                |
|                            | Colours:                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                     |
|                            | Top surface:                                                                                                                                                                                                      | light grey (nearest RAL 7047)<br>window grey (nearest RAL 7040)<br>traffic white (nearest RAL 9016)<br>lead grey (Sika colour no. 9500)<br>copper patina (Sika colour no. 6525)<br>copper brown (nearest RAL 8004)<br>traffic white, solar reflective (RAL 9016 SR) |
|                            | Bottom surface:                                                                                                                                                                                                   | dark grey                                                                                                                                                                                                                                                           |
|                            |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                     |
| <b>Shelf Life</b>          | 5 years from date of production in unopened, undamaged and original packaging.                                                                                                                                    |                                                                                                                                                                                                                                                                     |
| <b>Storage Conditions</b>  | Rolls must be stored between +5 °C and +30 °C in a horizontal position on pallet, protected from direct sunlight, rain and snow. Do not stack pallets of rolls or any other material during transport or storage. |                                                                                                                                                                                                                                                                     |
| <b>Product Declaration</b> | EN 13956                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                     |
| <b>Visible Defects</b>     | Pass                                                                                                                                                                                                              | (EN 1850-2)                                                                                                                                                                                                                                                         |
| <b>Length</b>              | 15.00 m / 30.50 m (-0 / +5 %)                                                                                                                                                                                     | (EN 1848-2)                                                                                                                                                                                                                                                         |
| <b>Width</b>               | 2.00 m / 3.00 m (-0.5 / +1 %)                                                                                                                                                                                     | (EN 1848-2)                                                                                                                                                                                                                                                         |
| <b>Effective Thickness</b> | 2.0 mm (-5 / +10 %)                                                                                                                                                                                               | (EN 1849-2)                                                                                                                                                                                                                                                         |
| <b>Straightness</b>        | ≤ 30 mm                                                                                                                                                                                                           | (EN 1848-2)                                                                                                                                                                                                                                                         |
| <b>Flatness</b>            | ≤ 10 mm                                                                                                                                                                                                           | (EN 1848-2)                                                                                                                                                                                                                                                         |
| <b>Mass per unit area</b>  | 2.5 kg/m <sup>2</sup> (-5 / +10 %)                                                                                                                                                                                | (EN 1849-2)                                                                                                                                                                                                                                                         |

## TECHNICAL INFORMATION

|                                                                                     |                                 |                        |              |
|-------------------------------------------------------------------------------------|---------------------------------|------------------------|--------------|
| Resistance to Impact                                                                | hard substrate                  | ≥ 1000 mm              | (EN 12691)   |
|                                                                                     | soft substrate                  | ≥ 1500 mm              |              |
| Hail Resistance                                                                     | rigid substrate                 | ≥ 28 m/s               | (EN 13583)   |
|                                                                                     | flexible substrate              | ≥ 36 m/s               |              |
| Resistance to Static Load                                                           | soft substrate                  | ≥ 20 kg                | (EN 12730)   |
|                                                                                     | rigid substrate                 | ≥ 20 kg                |              |
| Tensile Strength                                                                    | longitudinal (md) <sup>1)</sup> | ≥ 10 N/mm <sup>2</sup> | (EN 12311-2) |
|                                                                                     | transversal (cmd) <sup>2)</sup> | ≥ 9 N/mm <sup>2</sup>  |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                 |                        |              |
| Elongation                                                                          | longitudinal (md) <sup>1)</sup> | ≥ 230 %                | (EN 12311-2) |
|                                                                                     | transversal (cmd) <sup>2)</sup> | ≥ 210 %                |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                 |                        |              |



|                                                                                                   |                                                                                            |                   |                  |                |                                                |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------|------------------|----------------|------------------------------------------------|
| Dimensional Stability                                                                             | longitudinal (md) <sup>1)</sup>                                                            |                   | ≤  0.2  %        |                | (EN 1107-2)                                    |
|                                                                                                   | transversal (cmd) <sup>2)</sup>                                                            |                   | ≤  0.1  %        |                |                                                |
|                                                                                                   | <div><div>1) md = machine direction</div><div>2) cmd = cross machine direction</div></div> |                   |                  |                |                                                |
| Joint Shear Resistance                                                                            | ≥ 600 N/50 mm                                                                              |                   |                  |                | (EN 12317-2)                                   |
| Foldability at Low Temperature                                                                    | ≤ -25°C                                                                                    |                   |                  |                | (EN 495-5)                                     |
| External Fire Performance                                                                         | BROOF(t1) < 20°, > 20°                                                                     |                   |                  |                | (EN1187)<br>(EN13501-5)                        |
| Reaction to Fire                                                                                  | Class E                                                                                    |                   |                  |                | (EN ISO 11925-2, classification to EN 13501-1) |
| Effect of Liquid Chemicals, Including Water                                                       | On request                                                                                 |                   |                  |                | (EN 1847)                                      |
| UV Exposure                                                                                       | Pass (> 5 000 h / grade 0)                                                                 |                   |                  |                | (EN 1297)                                      |
| Water Vapour Transimission                                                                        | μ = 15 000                                                                                 |                   |                  |                | (EN 1931)                                      |
| Water Tightness                                                                                   | Pass                                                                                       |                   |                  |                | (EN 1928)                                      |
| Solar Reflectance Index                                                                           | Colour                                                                                     | Initial           | 3-year aged      | Test Institute | (ASTM E 1980-01)                               |
|                                                                                                   | RAL 9016 SR                                                                                | 111 <sup>1)</sup> | 99 <sup>1)</sup> | CRRC           |                                                |
|                                                                                                   | RAL 9016                                                                                   | 106 <sup>1)</sup> | 77 <sup>1)</sup> | CRRC           |                                                |
|                                                                                                   | Nr. 9525                                                                                   | 55                | -                | Sika           |                                                |
|                                                                                                   | Nr. 9500                                                                                   | 4                 | -                | Sika           |                                                |
|                                                                                                   | Nr. 6525                                                                                   | 34                | -                | Sika           |                                                |
|                                                                                                   | RAL 8004                                                                                   |                   | -                | Sika           |                                                |
|                                                                                                   | CRRC tested products are listed in Cool Roof Raiting Council (CRRC) product date base.     |                   |                  |                |                                                |
|                                                                                                   | 1) Product tested at a thickness of 1.50 mm.                                               |                   |                  |                |                                                |
|                                                                                                   | USGBC LEED Rating                                                                          | Colour            | Initail          | 3-years aged   |                                                |
| RAL 9016 SR                                                                                       |                                                                                            | SRI > 82          | SRI > 64         |                |                                                |
| RAL 9016                                                                                          |                                                                                            | SRI > 82          | SRI > 64         |                |                                                |
| Conform on the minimum requirements of LEED v4 SS credit 5 option 1 Heat Island reduction - roof. |                                                                                            |                   |                  |                |                                                |

## SYSTEM INFORMATION

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System Structure</b> | <p>Wide range of accessories is available e.g. prefabricated parts, roof drains, scuppers, walkway pad, decor profiles, protection sheets and separation layers.</p> <p>The following accessories shall be used:</p> <ul style="list-style-type: none"> <li>▪ Sarnafil® G 410-18EL Sheet for detailing</li> <li>▪ Sarnafil® Metal Sheet</li> <li>▪ Peel-stop®</li> <li>▪ Sarna Seam Cleaner</li> <li>▪ Sarnacol® 2170 / 2172 Spray (contact adhesive)</li> <li>▪ Sarna Cleaner</li> </ul> |
| <b>Compatibility</b>    | Not compatible with direct contact to other plastics, e.g. EPS, XPS, or PF.<br>Not resistant to tar, bitumen, oil and solvent containing materials.                                                                                                                                                                                                                                                                                                                                       |

## APPLICATION INFORMATION

|                                |                                                  |
|--------------------------------|--------------------------------------------------|
| <b>Ambient Air Temperature</b> | Ambient temperature: -20 °C min. / +60 °C max.   |
| <b>Substrate Temperature</b>   | Substrate temperature: -30 °C min. / +60 °C max. |

**SUBSTRATE QUALITY** The substrate surface must be uniform, smooth and

free of any sharp protrusions or burrs, etc.

The supporting layer must be compatible to the membrane, solvent resistant, clean, dry and free of grease and dust. Metal sheets must be degreased with Sarna Cleaner before adhesive is applied.

## APPLICATION

Installation works must be carried out only by Sika instructed contractors for roofing.

Installation of some ancillary products, e.g. contact adhesives / cleaners is limited to temperatures above +5°C. Please observe information given by Product Data Sheets.

Special measures may be compulsory for installation below +5°C ambient temperature due to safety requirements in accordance with national regulations.

## APPLICATION METHOD / TOOLS

### Installation procedure:

According to the valid installation instructions for Sarnafil® G 410-EL types system fully bonded for exposed roofs.

### Fully adhered roof surfaces and junction areas:

The roof waterproofing membrane is bonded to substrate by contact adhesive Sarnacol® 2170 / 2172 Spray. Seam overlaps are welded by hot air.

Adhering flashings

Sarnafil® G 410-20 EL is adhered to substrate layers such as reinforced concrete, rendering, timber panels, metal sheets etc. using Sarnacol® 2170 / 2172 Spray adhesive.

### Welding Method:

Overlap seams are welded by electric heat welding equipment, such as manual hot air welding machines and pressure rollers or automatic hot air welding machines with controlled hot air temperature.

### Recommended type of equipment:

- Leister Triac for manual welding
  - Sarnamatic® 661<sup>plus</sup> / 681 for automatic welding
- Welding parameters including temperature, machine speed, air flow, pressure and machine settings must be evaluated, adapted and checked on site according to the type of equipment and the climatic situation prior to welding. The effective width of welded overlaps by hot air shall be minimum 20 mm.

The seams must be mechanically tested with screw drivers to ensure the integrity / completion of the weld. Any imperfections must be rectified by hot air welding.

## LIMITATIONS

### Geographical / Climate

The use of Sarnafil® G 410-20 EL membrane is limited to geographical locations with average monthly minimum temperatures of -50°C.

Permanent ambient temperature during use is limited to +50°C.

## VALUE BASE

All technical data stated in this Data Sheet are based

on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for the exact product data and uses.

## ECOLOGY, HEALTH AND SAFETY

Fresh air ventilation must be ensured, when working (welding) in closed rooms. Installation of RAL 9016 SR type requires the use of UV protection goggles.

## REGULATION (EC) NO 1907/2006 - REACH

This product is an article as defined in article 3 of regulation (EC) No 1907/2006 (REACH). It contains no substances which are intended to be released from the article under normal or reasonably foreseeable conditions of use. A safety data sheet following article 31 of the same regulation is not needed to bring the product to the market, to transport or to use it. For safe use follow the instructions given in the product data sheet. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) as listed in Annex XIV of the REACH regulation or on the candidate list published by the European Chemicals Agency in concentrations above 0,1 % (w/w)

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

#### TECHNICAL ENQUIRIES

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Web: [www.sarnafil.co.uk](http://www.sarnafil.co.uk)

Twitter: @SikaSarnafilUK

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Web: [www.sika.co.uk](http://www.sika.co.uk)

Twitter: @SikaLimited



Product Data Sheet  
Sarnafil® G 410-20 EL  
May 2017, Version 01.01  
020905052000201001

SarnafilG410-20EL-en-GBSARNA-(05-2017)-1-1.pdf

**Sarnafil®**







## Toshiba Air Conditioning Data Sheet

RAV-GM1601ATP-E  
Digital Inverter 6 HP 1 Phase

| Model Reference |                                     | RAV-GM1601ATP-E         |                     |
|-----------------|-------------------------------------|-------------------------|---------------------|
| Operating Range | Cooling/Heating                     | °C                      | -15 to 46/-15 to 15 |
| Air Flow        | High                                | m <sup>3</sup> /h - l/s | 6900 - 1917         |
| Sound           | Pressure High Cooling/Heating       | dB(A)                   | 53 - 55             |
|                 | Power High Cooling/Heating          | dB(A)                   | 70 - 72             |
| Unit            | Height x Width x Depth              | mm                      | 1340 x 900 x 320    |
|                 | Weight                              | kg                      | 95                  |
| Pipe Connection | Flare Connections (gas - liquid)    | inch                    | 5/8 - 3/8           |
|                 | Min.-Max. Length                    | m                       | 5 - 50              |
|                 | Maximum Height Difference           | m                       | ±30                 |
|                 | Drain Port Connection               | mm                      | 16                  |
| Refrigerant R32 | Gas - Base Charge/Chargeless Length | kg/m                    | R32 - 2.4/30        |
|                 | Additional Charge Liquid Side       | g/m                     | 35                  |
| Run Current     | Maximum                             | Amps                    | 21.71               |
| Power Cable     | Outdoor to Indoor                   |                         | 3 core + earth      |
| Power Supply    | Suggested Fuse Size                 | V/ph/Hz-A               | 220-240/1/50        |

\* Waiting for published data

# TOSHIBA

- Redesigned for use with refrigerant R32
- Wide operating range (cooling mode -15°C to +52°C)
- Auto-diagnostic function
- Flexible, can be utilised for single, twin, triple indoor applications
- Compact size





# HiKu

**HIGH POWER MONO PERC MODULE**

**435 W ~ 465W**

**CS3W-435 | 440 | 445 | 450 | 455 | 460 | 465MS**

## MORE POWER



26 % more power than conventional modules



Up to 4.5 % lower LCOE  
Up to 2.7 % lower system cost



Low NMOT:  $41 \pm 3$  °C  
Low temperature coefficient (Pmax):  
-0.34 % / °C



Better shading tolerance

## MORE RELIABLE



Lower internal current,  
lower hot spot temperature



Minimizes micro-crack impacts



Heavy snow load up to 5400 Pa,  
wind load up to 3600 Pa\*



**Enhanced Product Warranty on Materials and Workmanship\***



**Linear Power Performance Warranty\***

**1<sup>st</sup> year power degradation no more than 2%**

**Subsequent annual power degradation no more than 0.55%**

\*According to the applicable Canadian Solar Limited Warranty Statement.

## MANAGEMENT SYSTEM CERTIFICATES\*

ISO 9001:2015 / Quality management system  
ISO 14001:2015 / Standards for environmental management system  
ISO 45001: 2018 / International standards for occupational health & safety

## PRODUCT CERTIFICATES\*

IEC 61215 / IEC 61730 / CE / MCS / INMETRO / UKCA  
FSEC (US Florida) / UL 61730 / IEC 61701 / IEC 62716  
UNI 9177 Reaction to Fire: Class 1 / Take-e-way



\* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your product and applicable in the regions in which the products will be used.

**CSI Solar Co., Ltd.** is committed to providing high quality solar products, solar system solutions and services to customers around the world. Canadian Solar was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey, and is a leading PV project developer and manufacturer of solar modules, with over 55 GW deployed around the world since 2001.

\* For detailed information, please refer to Installation Manual.

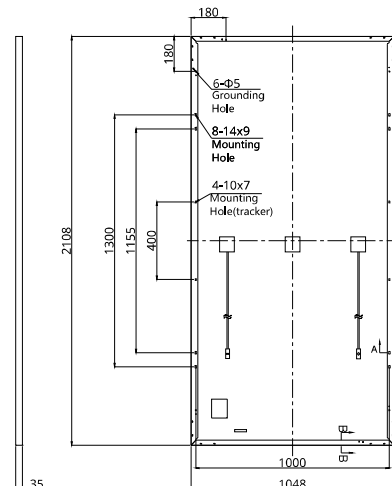
**CSI Solar Co., Ltd.**

199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, [www.csisolar.com](http://www.csisolar.com), [support@csisolar.com](mailto:support@csisolar.com)

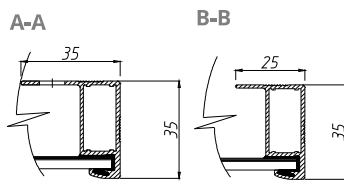


## ENGINEERING DRAWING (mm)

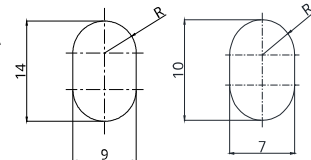
Rear View



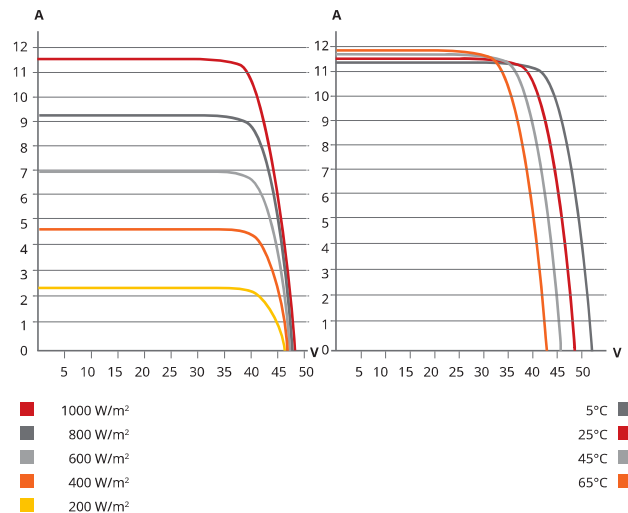
Frame Cross Section



Mounting Hole



## CS3W-435MS / I-V CURVES



## ELECTRICAL DATA | STC\*

| CS3W                         | 435MS                                                                     | 440MS   | 445MS   | 450MS   | 455MS   | 460MS   | 465MS   |
|------------------------------|---------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|
| Nominal Max. Power (Pmax)    | 435 W                                                                     | 440 W   | 445 W   | 450 W   | 455 W   | 460 W   | 465 W   |
| Opt. Operating Voltage (Vmp) | 40.5 V                                                                    | 40.7 V  | 40.9 V  | 41.1 V  | 41.3 V  | 41.5 V  | 41.7 V  |
| Opt. Operating Current (Imp) | 10.75 A                                                                   | 10.82 A | 10.89 A | 10.96 A | 11.02 A | 11.09 A | 11.16 A |
| Open Circuit Voltage (Voc)   | 48.5 V                                                                    | 48.7 V  | 48.9 V  | 49.1 V  | 49.3 V  | 49.5 V  | 49.7 V  |
| Short Circuit Current (Isc)  | 11.42 A                                                                   | 11.48 A | 11.54 A | 11.60 A | 11.66 A | 11.72 A | 11.78 A |
| Module Efficiency            | 19.7%                                                                     | 19.9%   | 20.1%   | 20.4%   | 20.6%   | 20.8%   | 21.1%   |
| Operating Temperature        | -40°C ~ +85°C                                                             |         |         |         |         |         |         |
| Max. System Voltage          | 1500V (IEC/UL) or 1000V (IEC/UL)                                          |         |         |         |         |         |         |
| Module Fire Performance      | TYPE 1 (UL 61730 1500V) or TYPE 2 (UL 61730 1000V) or CLASS C (IEC 61730) |         |         |         |         |         |         |
| Max. Series Fuse Rating      | 20 A                                                                      |         |         |         |         |         |         |
| Application Classification   | Class A                                                                   |         |         |         |         |         |         |
| Power Tolerance              | 0 ~ + 10 W                                                                |         |         |         |         |         |         |

\* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

## MECHANICAL DATA

| Specification                      | Data                                                                                                               |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Cell Type                          | Mono-crystalline                                                                                                   |
| Cell Arrangement                   | 144 [2 X (12 X 6)]                                                                                                 |
| Dimensions                         | 2108 X 1048 X 35 mm<br>(83.0 X 41.3 X 1.38 in)                                                                     |
| Weight                             | 24.3 kg (53.6 lbs)                                                                                                 |
| Front Cover                        | 3.2 mm tempered glass                                                                                              |
| Frame                              | Anodized aluminium alloy                                                                                           |
| J-Box                              | IP68, 3 bypass diodes                                                                                              |
| Cable                              | 4 mm² (IEC), 12 AWG (UL)                                                                                           |
| Cable Length (Including Connector) | 500 mm (19.7 in) (+) / 350 mm (13.8 in) (-) (supply additional cable jumper: 2 lines/pallet) or customized length* |
| Connector                          | T4 series or MC4-EVO2                                                                                              |
| Per Pallet                         | 30 pieces                                                                                                          |
| Per Container (40' HQ)             | 660 pieces                                                                                                         |

\* For detailed information, please contact your local Canadian Solar sales and technical representatives.

## ELECTRICAL DATA | NMOT\*

| CS3W                         | 435MS  | 440MS  | 445MS  | 450MS  | 455MS  | 460MS  | 465MS  |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Nominal Max. Power (Pmax)    | 326 W  | 330 W  | 334 W  | 338 W  | 341 W  | 345 W  | 349 W  |
| Opt. Operating Voltage (Vmp) | 38.0 V | 38.2 V | 38.3 V | 38.5 V | 38.7 V | 38.9 V | 39.1 V |
| Opt. Operating Current (Imp) | 8.59 A | 8.65 A | 8.71 A | 8.76 A | 8.82 A | 8.87 A | 8.92 A |
| Open Circuit Voltage (Voc)   | 45.8 V | 46.0 V | 46.2 V | 46.4 V | 46.6 V | 46.8 V | 47.0 V |
| Short Circuit Current (Isc)  | 9.21 A | 9.26 A | 9.31 A | 9.35 A | 9.40 A | 9.45 A | 9.50 A |

\* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

## TEMPERATURE CHARACTERISTICS

| Specification                        | Data         |
|--------------------------------------|--------------|
| Temperature Coefficient (Pmax)       | -0.34 % / °C |
| Temperature Coefficient (Voc)        | -0.26 % / °C |
| Temperature Coefficient (Isc)        | 0.05 % / °C  |
| Nominal Module Operating Temperature | 41 ± 3°C     |

## PARTNER SECTION



\* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement .CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.  
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

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## Installation and maintenance instructions for PLATIN Rainwater Underground Tank

### PLATIN

|        |                  |
|--------|------------------|
| 1500 L | Order No. 390000 |
| 3000 L | Order No. 390001 |
| 5000 L | Order No. 390002 |
| 7500 L | Order No. 390005 |



The points described in these instructions must be observed under all circumstances. All warranty rights are invalidated in the event of non-observance. Separate installation instructions are enclosed in the transportation packaging for all additional articles purchased from GRAF.

Missing instructions must be requested from us immediately.

The tank must be checked for any damage prior to insertion into the trench under all circumstances.

Missing instructions can be downloaded on [www.graf.info](http://www.graf.info) or can be requested from GRAF.

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## 1. General notes

### 1.1 Security

The relevant accident prevention regulations according to BGV C22 must be observed during all work. Particularly when walking on the tanks, a 2nd person is required to secure the tank.

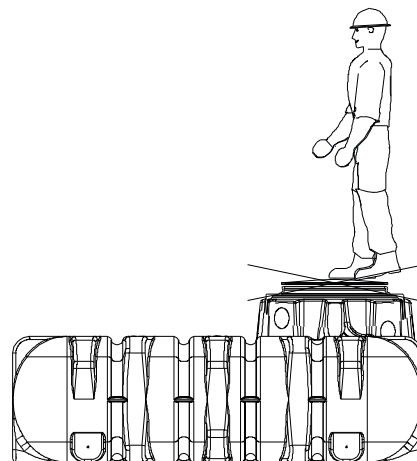
The relevant regulations and standards must additionally be taken into consideration during installation, assembly, servicing, repair, etc. Relevant notes can be found in the corresponding sections of these instructions.

During all work on the system or parts of the system, the entire system must always be rendered inoperable and secured to prevent unauthorised reactivation.

Except in the event of work carried out in the tank, the cover of the tank must always be kept sealed, as this otherwise constitutes a maximum risk of accident. The rain protection installed on delivery is merely transportation packaging. It cannot be walked on and is not child-proof; it must be replaced with a suitable cover immediately following delivery (telescopic dome shaft with corresponding cover)!

Only original GRAF covers or covers approved in writing by GRAF must be used.

GRAF offers an extensive range of accessories, all of which are designed to match each other and which can be extended to form complete systems. The use of accessories that have not been approved by GRAF results in the exclusion of the warranty/guarantee.



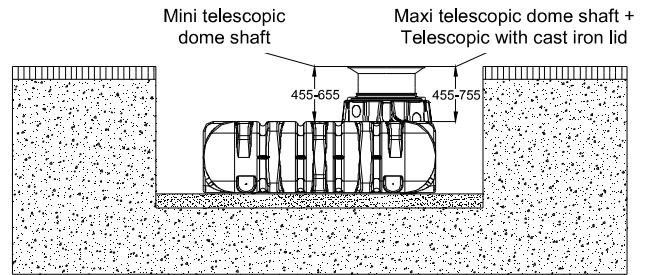
### 1.2 Identification obligation

All service water pipes and outlets must be identified in writing with the words **"Not drinking water"** or in the form of images (DIN 1988 Part 2, Para. 3.3.2.) in order to avoid inadvertent connection with the drinking water mains even after a number of years. Mix-ups, e.g. by children, may still occur even in the case of correct identification. All service water extraction points must therefore be installed with valves with **child-proof locks**.



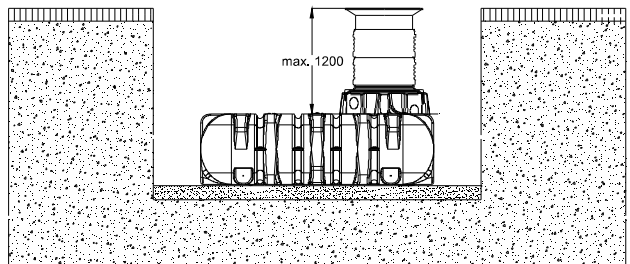
## 2. Installation conditions

Coverage heights with telescopic dome shaft in green areas.



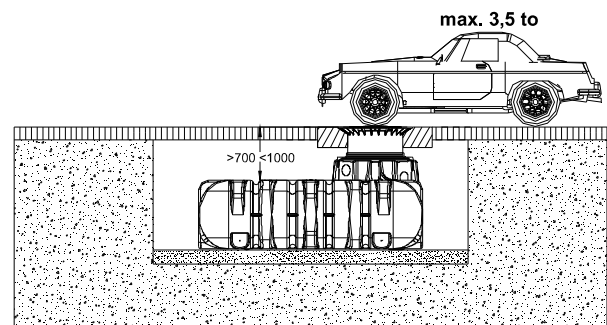
Maximum coverage heights with extension and telescopic dome shaft.

(in green areas only – not under passable areas)



Cover heights with cast iron telescopic dome shaft (class B) in area driven over by vehicles up to 3.5 tonnes.

(without groundwater and stratum water)

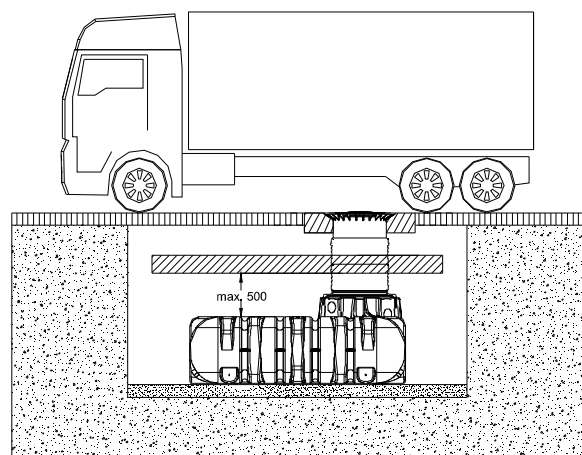


Cover heights with cast or HGV-bearing telescopic dome shaft

(with cover class B or D – provided by customer), in area driven over by HGVs.

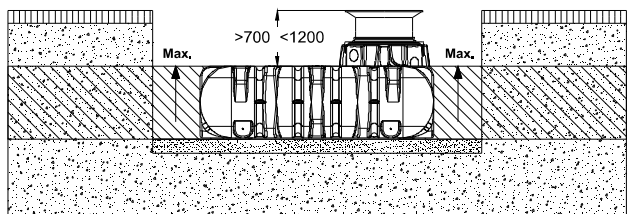
(without groundwater and stratum water)

**Please note:** HGV can only be driven over if a self-supporting, (Steel)-reinforced concrete plate is installed



Coverage heights on installation in groundwater – the hatched area specifies the permissible immersion depth for the tank.

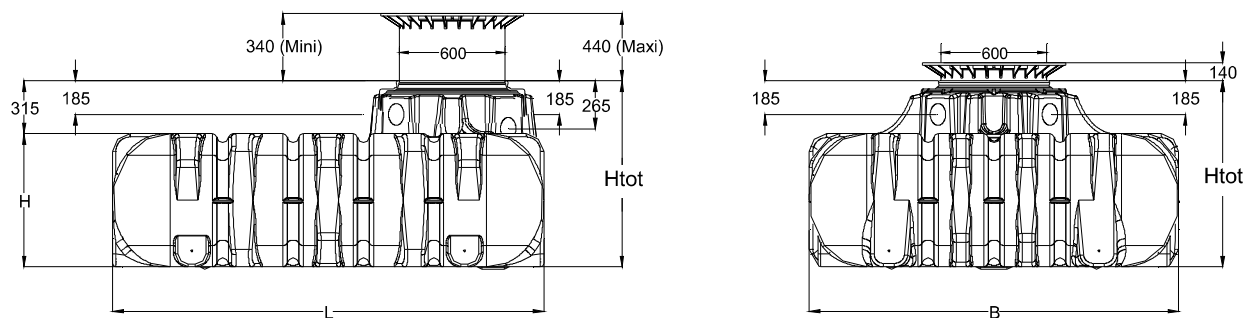
(not under passable areas)



### 3. Technical data

#### 3.1 Technical Data Platin

(1500 L, 3000 L, 5000 L, 7500 L)



#### 3.2 Overview tanks Platin

| Tank     | 1500 L  | 3000 L  | 5000 L  | 7500 L  |
|----------|---------|---------|---------|---------|
| Art. No. | 390000  | 390001  | 390002  | 390005  |
| Weight   | 82 kg   | 180 kg  | 250 kg  | 380 kg  |
| L        | 2100 mm | 2450 mm | 2890 mm | 3600 mm |
| W        | 1250 mm | 2100 mm | 2300 mm | 2250 mm |
| H        | 700 mm  | 735 mm  | 1000 mm | 1250 mm |
| Htot*    | 1015 mm | 1050 mm | 1315 mm | 1565 mm |

\* Htot = total height

## 4. Tank structure

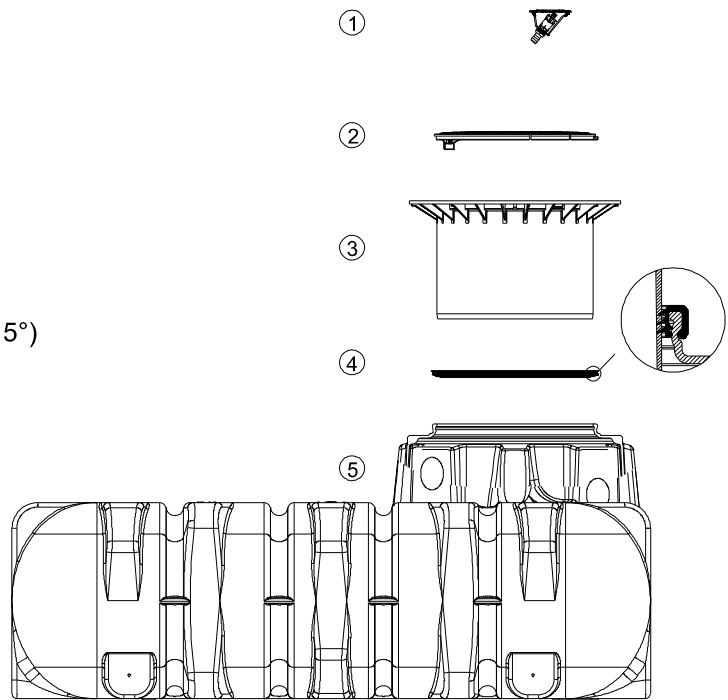
① Water connector box internal (optional)

② PE cover for telescopic dome shaft

③ Telescopic dome shaft (can be inclined by 5°)

④ Profile seal

⑤ Tank dome



## 5. Installation and assembly

① Subsoil

② Telescopic dome shaft

③ Compacted foundation

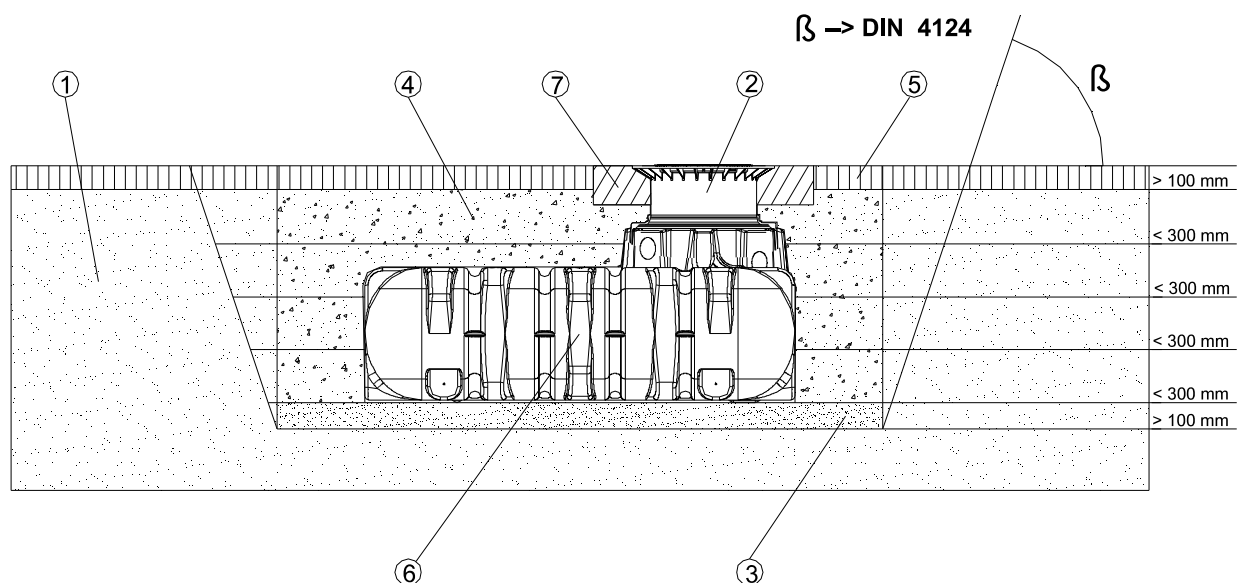
④ Surrounding (round-grained gravel, max. grain size 8/16)

⑤ Covering layer

⑥ PLATIN Rainwater Underground Tank

⑦ Concrete layer for passable surfaces

ß --> DIN 4124 from 1250 mm depth of the trench



## 5. Installation and assembly

### 5.1 Construction site

Under all circumstances, the following points must be clarified prior to installation:

- The structural suitability of the ground according to DIN 18196
- Maximum groundwater levels which occur and drainage capability of the subsoil
- Types of load which occur, e.g. traffic loads
- **Please note:** HGV can only be driven over if a self-supporting, steel-reinforced concrete plate is installed!

An expert ground report should be requested from the local planning authority to determine the physical characteristics of the subsoil.

### 5.2 Trench

To ensure that sufficient space is available for working, the base area of the trench must exceed the dimensions of the tank by > 100 mm on each side; the distance from solid constructions must be at least 1000 mm.

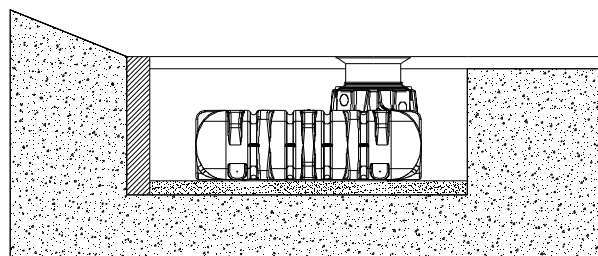
If the depth of the trench is > 1250 mm an embankment must be designed according to DIN 4124. The construction site must be horizontal and plane and must guarantee sufficient load-bearing capacity.

The depth of the trench must be dimensioned so that the max. earth coverage (see point 2 – installation conditions) above the tank is not exceeded. To use the system throughout the entire year, it is necessary to install the tank and those parts of the system which conduct water in the frost-free area. The frost-free depth is usually approx. 600 mm – 800 mm; precise information in this regard can be obtained from the responsible authority.

A layer of compacted, round-grain gravel (grain size 8/16, thickness approx. 100 - 150 mm) is applied as the foundation.

#### 5.2.1 Slope, embankment, etc.

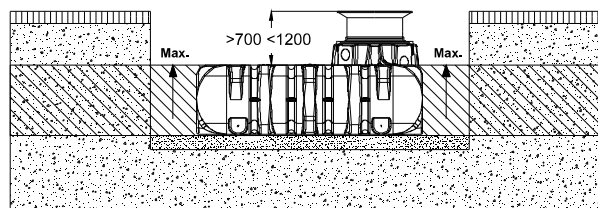
On installation of the tank in the immediate vicinity (< 5 m) of a slope, earthen mound or slope, a statically calculated supporting wall must be erected to absorb the soil pressure. The wall must exceed the dimensions of the tank by at least 500 mm in all directions, and must be located at least 1000 mm away from the tank.



#### 5.2.2 Groundwater and cohesive (water-impermeable) soils (e.g. clay soil)

If it is anticipated that the tanks will be immersed deeper into the groundwater than is shown in the adjacent figure, sufficient dissipation must be ensured. (See table for max. immersion depth).

Dissipation of the drainage water (e.g. via an annular drainage system) is recommended in the case of cohesive, water-impermeable soils.



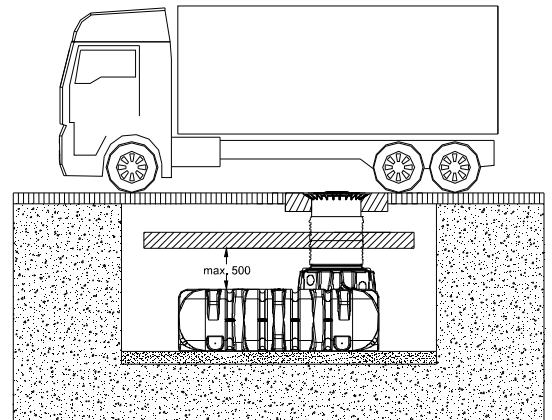
| Tank                 | 1500 L | 3000 L | 5000 L  | 7500 L  |
|----------------------|--------|--------|---------|---------|
| max. immersion depth | 700 mm | 735 mm | 1000 mm | 1250 mm |



### 5.2.3 Installation below HGV-bearing surfaces

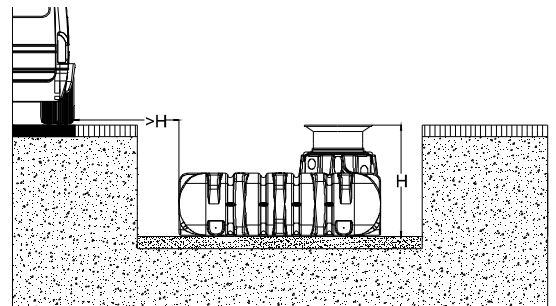
The shaft can only be driven over with HGV in conjunction with a self-supporting, iron-reinforced concrete plate. To ensure that no additional forces or effects of HGV-bearing are transferred to the tanks, the dimensions and strength of the concrete plate must be statically calculated.

If you have any questions in this regard, please contact your GRAF-Team.



### 5.2.4 Installation adjacent to surfaces used by vehicles

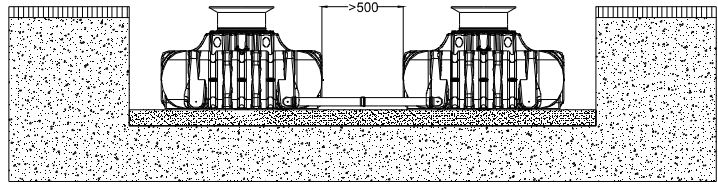
If the underground tanks are installed adjacent to surfaces which are used by heavy vehicles weighing over 3,5 t, the minimum distance away from these surfaces is at least the depth of the trench.



## 5. Installation and assembly

### 5.2.5 Connection of several tanks

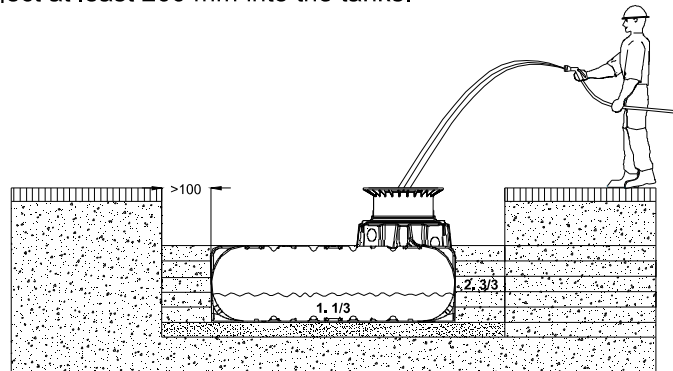
Two or more tanks are connected via the assembly surfaces by means of GRAF special seals and basic pipes (to be provided at construction site).



The apertures must be drilled to the corresponding size using only the GRAF special crown bit. It must be ensured that the distance between the tanks is at least 500 mm. The pipes must project at least 200 mm into the tanks.

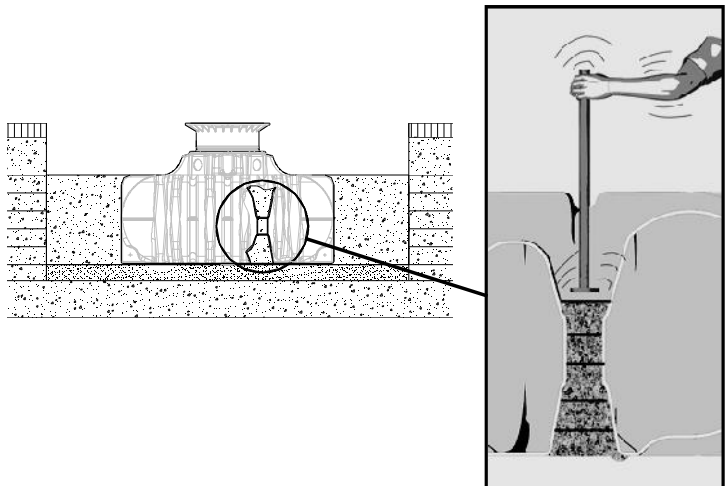
### 5.3 Insertion and filling

The tanks must be inserted, impact-free, into the prepared trench using suitable equipment. To avoid deformities, the tank is filled 1/3 with water before filling in the tank surrounding.



Afterwards the surrounding (roundgrain gravel, max. grain size 8/ 16) is then filled in layers of max. 30 cm steps and is compacted.

**The individual layers as well as the medial support column must be well-compacted (manuel tamper).** Damage to the tank must be avoided during compaction. Mechanical compaction machines must not be used under any circumstances. The surrounding towards the trench must be at least 100 mm wide.

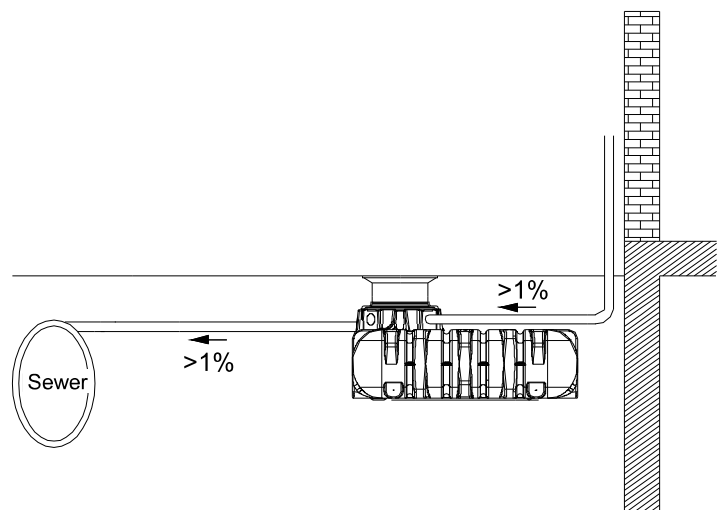


### 5.4 Routing connections

All feed and overflow pipes must be routed with a decline of at least 1 % in the direction of flow (possible, subsequent settling must be taken into consideration in this case). If the tank overflow is connected to a public sewer, this must be protected against reflux by means of a lifting station (mixed sewer) or reflux seal (pure rainwater sewer) according to DIN 1986.

All suction, pressure and control lines must be routed in an empty pipe, which must be routed as straight as possible, without bending, to the tank with a decline. Necessary bends must be formed using 30° moulded sections.

**Important:** The empty pipe must be connected to an aperture **above** the max. water level.

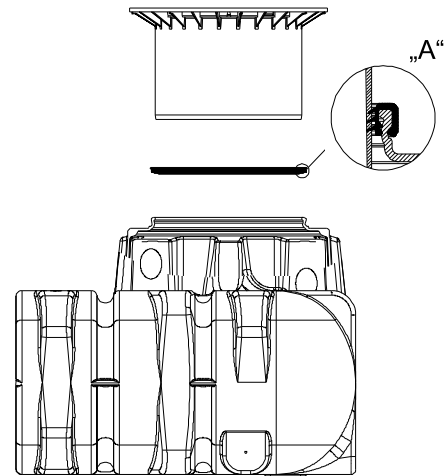
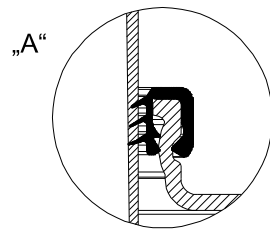


## 6. Assembling the telescopic dome shaft

### 6.1 Assembling the telescopic dome shaft

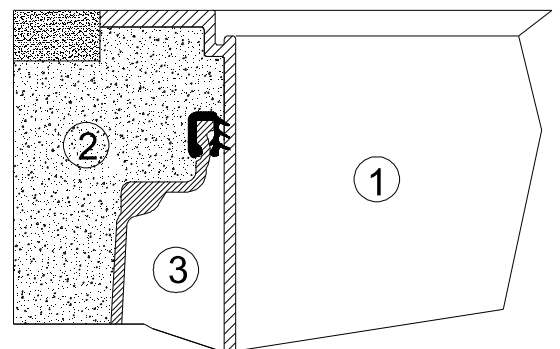
The telescopic dome shaft enables infinite adaptation of the tank to given site surfaces with earth coverage of between 455 mm and 655 mm (Mini telescopic dome shaft) or 455 mm and 755 mm (Maxi telescopic dome shaft).

For assembly purposes, the enclosed profile seal (material EPDM) is inserted into the tank dome's sealing groove and is coated generously with soft soap (do not use mineral oil-based lubricants, as these attack the seal). The telescope is then greased, inserted and aligned with the surface of the site.



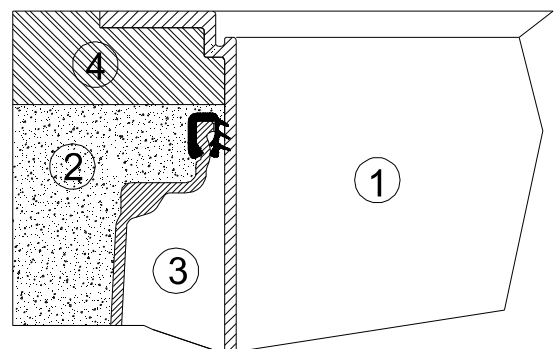
### 6.2 Telescopic dome shaft on which persons may walk

**Important:** To prevent loads from being transferred onto the tank, round-grain gravel ② (max. grain size 8/ 16) is filled in in layers around the telescope ① and is evenly compacted. Damage to the tank dome ③ and telescope must be avoided during this step. The cover is then positioned and is sealed to prevent entry by children. **Tighten the threaded connection on the cover so tightly that it cannot be opened by a child!**



### 6.3 Telescopic dome shaft over which passenger cars may drive

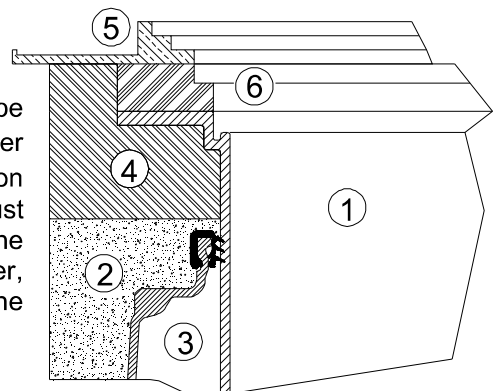
If the tank is installed under areas used by passenger cars, the collar area of the telescope ① (colour anthracite) must be supported with concrete ④ (load class B25 = 250 kg/ m²). The layer of concrete to be installed must be at least 300 mm wide and approx. 200 mm high all around. The permitted coverage above the shoulder of the tank is min. **700 mm** and max. **1000 mm**. There are different possibilities for lengthening the tank dome (315 mm): telescopic dome shaft with cast iron lid or Begu (max. effective length 440 mm) as well as the Adapter (max. effective length 300 mm).



**Attention:** Use the cast cover under all circumstances.

### 6.4 Telescopic dome shaft for HGV loading

When installing below surfaces driven on by HGVs, the telescope is lined ① as described in 7.3. The concrete rings ⑥ (diameter 600 mm) and a cast frame ⑤ with star-shaped load distribution are then installed to support the cast cover. The cast frame must have a contact area of approx. 1 m². To extend the shaft, the telescopic dome shaft for HGV loading with class D cover, provided by the customer (max. useful length 440 mm), and the spacer (max. useful length 300 mm) can be used.



**Please note:** Can only be driven over with HGV, if a self-supporting, steel-reinforced concrete plate is installed

## 7. Assembly of the adapter

### 7.1 Assembling the extension

For larger coverage heights an extension is needed. To insert the extension into the tank dome, soft soap is needed. Into the highest groove of the extension the profile seal is inserted and greased generously. Afterwards push the telescopic dome shaft into the extension and adapt it to the planned area surface.

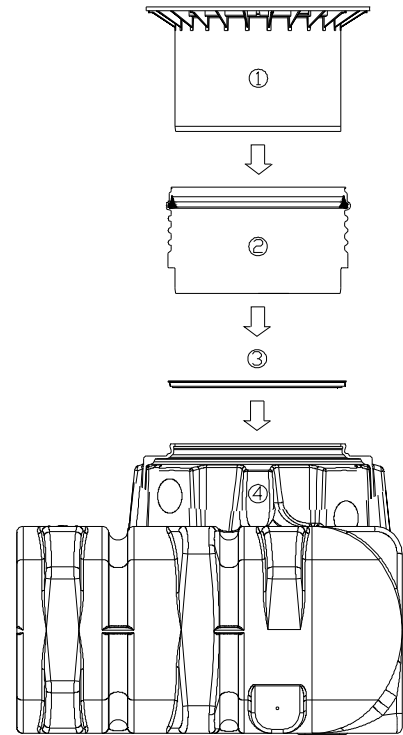
1 Extension = max. earth-cover 955 mm respectively 1055 mm  
(in connection with Mini respectively Maxi telescopic dome shaft)

① Telescopic dome shaft (can be inclined by 5°)

② Extension

③ Profile seal

④ Tank dome Platin



## 8. Inspection and servicing

The entire system must be checked for leaks, cleanliness and stability at least every three months.

The entire system should be serviced at intervals of approx. 5 years. In this case, all parts of the system must be cleaned and their function checked. Servicing should be carried out as follows:

- Drain the tank completely
- Clean surfaces and internal parts with water
- Remove all dirt from the tank
- Check that all internal parts are firmly seated.

