Specification Document

Project: 42923 - Revision 2

Project Name: Bramley House

Project Address: Bramley House
Bramley Road
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Client:

Client Details: Stace LLP

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Roofing Specification

Roof areas covered by this specification: Main Roof, Tank Rooms & Stairwell Roofs, Walkways & Private Balconies.

Outline Description

This specification has been produced for Stace LLP for the express use in the construction of the designated roof areas of the property stated above.

Core Samples: These are taken for guidance purposes and indicate the construction only at the sample location/s. Condition/levels of degradation affecting the coverings are only applicable at the time of inspection. Both construction and condition may vary throughout the roof area.

Preliminaries and General Conditions

1. Before tendering, the contractor should examine the drawings and specification documents, visit the site and ascertain all local conditions and restrictions, accessibility, the full extent and nature of the work, the supply and conditions affecting labour and the execution of the contract generally. No claims arising from failure to do so will be considered.

2. The contractor shall provide, erect and maintain all necessary hoists, scaffolding, mechanical equipment, plant etc of all descriptions required for the satisfactory completion of the works and remove all, as and when required, or when directed by the Contract Administrator.

3. The contractor shall not display any advertisements on the scaffolding other than the firm's name board and contact details; neither shall he permit any other advertisements to be displayed without the written authority of the Contracts Administrator.

4. The contractor shall provide all necessary containers and storage facilities for materials and for workshops that may be required, maintain them and clear them away on completion.

5. The contractor shall provide all necessary latrines and other facilities for the use of operatives as required by the Construction (Design & Management) Regulations 2015 (CDM 2015), maintain them in decent condition and clear them away on completion.

6. All roofing materials are to be supplied by Langley Waterproofing Systems Ltd and to be fit for purpose and of the type and quality described herein. Any sub-standard materials will be rejected. No alternatives are to be substituted.

7. The contractor shall employ none but fully qualified, competent tradesmen and the whole of the work shall be carried out and completed in accordance with "Best Practice".

8. The contractor shall carry out the works without undue inconvenience and nuisance and without danger to occupants and users.

Note

These preliminaries and general conditions will apply in all situations, except where the specifying client inserts a more comprehensive section of preliminaries and conditions, encompassing the complete project.

Detailed Specification: 1

Main Roof

No.	Item	Unit	Qty	Rate	Total
1	**SPECIFICATION REQUIREMENTS**				
1.1	**Guarantee**: The following **TA-30-W** specification is to be covered by the Langley Waterproofing Systems Ltd, single-premium, pre-paid independently-insured workmanship and materials guarantee for a period of ***30 years*** from the date of practical completion. In order to meet this requirement only roofing contractors that participate in this guarantee scheme may be used. The eligibility of proposed roofing contractors should be confirmed with Langley Waterproofing Systems Ltd, Tel: 01327 704778 prior to inviting tenders. **Note:** This system includes a 5 year annual maintenance programme where the roof area(s) will be inspected by the manufacturer. To deliver this annual maintenance programme for the first 5 years of guarantee, the client or building owner must supply suitable and safe access as per Langley T&Cs.				
1.2	**Projects Under CDM**: In relation to this project, under Construction (Design and Management) Regulations 2015 (CDM 2015), it is the responsibility of the client / contractor to appoint any, or all, relevant "CDM duty-holders".				
1.3	**Design Note - Warm Roof**: This specification is based on a warm roof construction. The principal thermal insulation is above the structural deck.				
1.4	**Design Note - Existing Falls**: Overlay of any existing roof system or deck. The new system will follow the existing falls and any deviations will be replicated. As a result, some areas of standing water may occur. However, **please note** the accumulation of ice, snow or ponding water will not have an adverse effect on the Langley products specified. This applies to both the life expectancy and / or long-term performance of the system specified and will not affect, in any way, the guarantee status.				
1.5	**Tapered Insulation**: When preparing a tapered scheme, a flat and level deck is assumed and, although the tapered scheme is intended to provide adequate drainage, some ponding may still occur due to obstructions, membrane lap build-ups or unforeseen deck deflection. **Please note** that neither ice, snow or ponding water will have an adverse affect on the Langley products specified. This applies to both the life expectancy and long-term performance of the system and will not affect in any way, the guarantee status.				

No.	Item	Unit	Qty	Rate	Total
1.6	**Design Note - Changes & Adjustments**: **Variations 'A' (general):** Any variations must be agreed in writing by both the contract administrator and Langley Waterproofing Systems Ltd. These must be costed and authorised by the client but not be implemented until instructed by the client. **Variations 'B' (minor):** During work in progress, Langley Waterproofing Systems Ltd must be informed immediately of any proposed change/s and operatives must not implement any change/s until agreed by Langley (minor changes are deemed to be any item not falling within the scope of section a). **Unauthorised Changes 'C' (general):** Langley Waterproofing Systems Ltd will not be responsible for any changes of which they are unaware or have not authorised, nor will they accept any liability or associated costs due to system failure, i.e. labour, materials, design or programme delays, etc., resulting from said changes.				
1.7	**Design Note - Approved Document Part B Building Regulations - Compartmented Walls**: **Removal of Existing Structural Deck and/or Waterproofing:** Where the Langley Waterproofing system bridges a compartmented wall, the system must be laid on a substrate or deck rated class A2-s3, D2 or better (non-combustible) to BS EN 13501-1. Buildings below 15m high, the substrate or deck can be rated class B-s3, D2 or worse (combustible), such as timber boarding and battens but they must be fully bedded on mortar (or other no less suitable material) across the full width of the compartmented wall. Double-skinned insulated roof sheeting, such as standing seam or profile metal sheet roofing, should incorporate a band of material rated class A2-s3, D2 or better, a minimum of 300mm in width, centred over the wall. **Note:** Proposed specification and design will be subject to LABC (Local Authority Building Control) approval before works can commence on-site. Where appropriate, Langley Waterproofing can offer support and guidance to assist application.				
1.8	**Roof Structure - Disclaimer**: It is deemed the responsibility of the Client Representative, Contractor and / or Property Owner to give due consideration towards the ability of the existing roof deck accepting any additional loadings imposed by the application of the new waterproofing system proposed within this specification. Langley Waterproofing Systems Ltd will not be held responsible or accept any liability or associated costs should structural defects or structural failure occur.				

No.	Item	Unit	Qty	Rate	Total
1.9	**Electronic Roof Integrity Test (Compulsory For Buried Systems) - Disclaimer**: Prior to the installation of any proposed roof finishes, an electronic leak detection test must be carried out by a WITA approved contractor to ensure the integrity of the newly installed waterproofing system and to meet Langley Waterproofing Systems Ltd guarantee requirements.				
1.10	**Fire Risk - Drying Out**: In the event of the roof becoming wet and drying out is necessary, the use of gas torches is not recommended and should be avoided. In all cases Safe2Torch guidelines should be followed. Standing water should be swept to the nearest outlets with a broom or squeegee (care must be taken to avoid debris blocking outlets). The remaining moisture should be soaked up using mops or dry rags and the surface left to dry out naturally. To speed up the process, specialist equipment is commercially available, see 'General Guidance & Requirements' in the appendices of this specification.				
1.11	**Safe2Torch - Flame-free Zones**: This specification has been compiled in accordance with the NFRC Safe2Torch guidance and includes areas that have been identified as presenting a risk of fire if gas torches are used. This requires the substitution of membranes in these areas.				
1.12	**Flame-free Zones - Definition**: A Flame-free Zone is defined as being within 900mm of a combustible substrate / material. **Note:** If combustible material forms part of an overhang then the Flame-free Zone starts from the extremity of the overhang.				
1.13	**Risk Assessment - Fire - Installing Contractor**: In line with their own Risk Assessment and Method Statement, the installing contractor is to identify any areas where the use of a naked flame is deemed too great a risk. This matter should be raised at the pre-start / pre-commencement meeting or stated in writing to Langley in order that an alternative flame free method can be adopted and specified.				
1.14	**Flame-free Zones - Identified Risk Areas**: In accordance with Safe2Torch guidance the following area/s have been designated as 'flame-free' zone/s: Detail Noted: Chimney Stack Upstand - Full SA Detail Noted: Skirting to Tank/Plant Rooms - Full SA Detail Noted: Door Cill - Full SA Detail Noted: Vertical Expansion Joints to Brick Upstands - Full SA Detail Noted: Exposed Timber - SA AVCL Only Whilst these area/s have been identified, they may not be definitive. Due allowance must be made so that at any stage of this project, should any additional areas be designated a fire risk by any of the parties involved, they must be logged, all parties informed, and the appropriate measures employed.				

No.	Item	Unit	Qty	Rate	Total
1.15	**Fire Accreditation**: Unless otherwise stated, the full waterproofing system and/or products contained within this specification have been tested for external fire exposure (both with and without insulation) in accordance with BS EN 13501-5: 2005 (European Test) and are accredited as Broof(t4).				
1.16	**Langley Detailed Drawings**: This specification is to be read in conjunction with detailed drawings issued and supplied by Langley Waterproofing. Should the contractor at any point find discrepancies between the issued specification and issued drawings, it is required that the specification takes precedence in all cases, unless otherwise notified and approved. No additional costs or liability arising from failure to follow specification or notifying Langley Waterproofing Systems Ltd of any discrepancies found in good time prior to commencement of works will be considered.				
1.17	**Guarantee Requirement - Torch-on Membranes**: Applicable to all layers. A 5-10mm bead of bitumen must be exuded from all laps.				
2	**SCOPE OF APPLICATION**				
2.1	**Existing Waterproofing System - Removal**: This specification is based on a full strip-up of the existing waterproofing system.				
2.2	**Deck and Substrates - Screeded Concrete**: This specification is suitable for application to a screeded concrete roof deck not exceeding 5° from the horizontal.				
2.3	**Removal of Existing Waterproofing System**: Existing coverings must not be stripped at a rate greater than can be safely re-waterproofed during that working day so as to reduce risk of water ingress to the property.				
2.4	**Day / Night Joints**: The contractor must ensure at the end of each working day or period, that any exposed membranes or substrates that are susceptible to damage through water ingress are sealed with a Langley system compatible membrane to ensure complete water tightness. No loose laid membranes or other such covers are permitted.				
2.5	**U-value - Tapered Insulation**: To comply with Part L of the current Building Regulations, the average thickness of the scheme included in this specification is calculated in accordance with Annex C of BS EN ISO 6946: 2007. This is to ensure that the effective thickness of the scheme is sufficient to meet the target U-value of 0.12 W/m²K.				

No.	Item	Unit	Qty	Rate	Total
2.6	**Contractors Note - Tapered Insulation**: The specified tapered insulation scheme is based on the assumption that the contours of the underlying substrate reflects that of the existing roof coverings. In the event of any abnormalities being uncovered, it is the responsibility of the Roofing Contractor to report these immediately to Langley so that any amendments to the insulation scheme that may be necessary can be made. This may result in a delay. No claims arising from any additional costs incurred from such delays will be entertained by Langley Waterproofing Systems Ltd.				
3	**PREPARATION**				
3.1	**Contractor Preparation Note**: The contractor must take his own roof core samples to satisfy himself with regard to the existing roof build-up and ascertain the extent of the work involved in stripping up the existing roof coverings. No claims arising from failure to do so will be considered by Langley Waterproofing Systems Ltd.				
3.2	**TV Aerials and / or Satellite Dish Arrays**: Any TV aerials and / or satellite dish arrays that will impede roofing works are to be temporarily removed, raised, etc. to facilitate the works. The contractor must liaise with the client contract administrator directly in relation to how best serve the property so that minimal disturbance of services is achieved throughout the contract period.				
3.3	**Lightning Conductor Tapes - Discard**: Remove and dispose of to suitable waste facilities. The contractor must allow for temporary alternative protection throughout the contract period until such time as a new system is installed.				
3.4	**Wall Mounted Plant, Cable Trays / Conduits etc - Reposition (above skirting height)**: All wall mounted services and/or plant that will prevent facilitation of the works or will penetrate the new skirting heights. Raised and/or relocate. Allowance must be made for the following items as necessary: 1. Disconnection, de-gassing and re-connection, adaptation of all pipework, supports, connections, electrical connections and cabling. 2. Reposition (above skirting height) or relocate to suitable locations as required. Allow for all adaptions/adjustments and fixings required and re-connection. All in accordance with client's detailed requirements. 3. Certify as fully serviceable on completion.				
3.5	**Cables - Temporarily Remove**: All cables must be carefully raised and / or temporarily supported clear of the roof surface to facilitate the works.				

No.	Item	Unit	Qty	Rate	Total
3.6	**Pipe Penetrations – New Boxing**: Box out existing pipe penetrations with A1 non-combustible (EN 13501-1) Paradeck Cement Board, 20mm thick, magnesium oxide cement board. The contractor must include for all necessary metal top hats / metal stud and metal levelling shims, etc. Secure with substrate specific non-corroding alkali resistant fixings (wood or gypsum screws are not recommended) along all relevant supports. Interlocking joints between the boards to be glued. Any butt joints should be taped with pre-cut 200mm wide strips of Paradiene SA underlay. Before application of Paradiene SA, prime area with Langley Spray-on Primer and allowed to dry. Pipe penetrations require a Code 5 Lead sleeve, finishing a minimum of 150mm from the finished surface of the new boxing and terminated with a weathering collar or secured with a stainless steel Jubilee clip and sealed with a bead of gap seal mastic. Plastic pipe collars must be solvent welded. Finish base of vertical sleeve as previously stated. **Note:** Ensure that boxing is suitably insulated to prevent cold bridging / cold voids. **Note:** If any existing pipe insulation is removed when undertaking these works it must be replaced / renewed when recommissioned.				
3.7	**External Rainwater Goods - Discard**: Remove all existing gutters and associated downpipes, brackets, fittings, etc. and dispose of to suitable waste facilities.				
3.8	**Tank Room Overflows / Scupper Outlets - Raise**: Raise existing positions so they discharge above the new waterproof skirting height which must be a minimum of 150mm high. Block off redundant hole/s, prior to installing the new waterproofing system details. Allow for all modifications/adaptations to pipe work. Allow for raising and making good any internal bunding as necessary. **Note:** The contractor must not block off overflows or scupper outlets by detailing over with any new waterproofing membranes without prior approval from the Client Contract Administrator or Langley Waterproofing Systems Ltd.				
3.9	**Existing Rainwater Chutes - Discard**: Carefully remove and dispose of to suitable waste container.				
3.10	**Existing Waterproofing System - Remove**: Strip and remove to suitable waste containers all component layers of the existing waterproofing system including any insulation and or vapour control layers that may be found, back to but not including the original deck / substrate.				
3.11	**Existing Edge Trims - Remove**: Carefully remove all existing perimeter edge trims and dispose of to suitable approved waste containers / facilities or return to contractors premises for safe disposal.				

No.	Item	Unit	Qty	Rate	Total
3.12	**Existing Flashings - Remove**: Carefully remove all existing secondary cover flashings and dispose of to suitable approved waste containers / facilities or return to contractors premises for safe disposal.				
3.13	**Water Checks - Existing - Raise**: Raise perimeter check kerbs to accommodate any presented increased height of the new waterproofing system. The contractor must ensure that a 50mm minimum height is achieved above the finished level of the new roofing system.				
3.14	**Perimeters - Raising - Cover of External Faces**: Where the height of external faces are to be increased, for whatever reason, any exposed timber or voids must be covered with new fascia boards or cladding. This must align with the top of the timber hard edge prior to fixing any drip batten or edge trims. The contractor must liaise with, and seek separate instruction from, the contract administrator as to the method, type and colour of materials, etc. to cover these external raised details. Claims arising from failure to seek client instruction prior to commencement of works or provide suitable cost provision for this item will not be entertained by Langley Waterproofing Systems Ltd.				
3.15	**Redundant Chases - Make Good**: Rake out and prepare any redundant chase lines. In-fill with sand and cement mortar, flush with wall face.				
3.16	**Upstands to Brickwork - New Chase**: In preparation of a new cover flashing the contractor is to cut a new chase to a minimum 25mm depth and at a minimum height of 150mm above the intended finished roof level surface. Brush clean and prime with appropriate primer to seal substrate.				
3.17	**Parapet Wall & Coping Stones - Non-Combustible Construction - Overclad with Paradeck Cement Board**: Overclad existing parapet wall top and inner face of parapet wall with A1 non-combustible (EN 13501-1) Paradeck Cement Board, 20mm thick, magnesium oxide cement board. The contractor must include for all necessary metal top hats / metal stud and metal levelling shims, etc. Secure with substrate specific non-corroding alkali resistant fixings (wood or gypsum screws are not recommended) along all relevant supports. Interlocking joints between the boards to be glued. Any butt joints should be taped with pre-cut 200mm wide strips of Paradiene SA underlay. Before application of Paradiene SA, prime area with Langley Spray-on Primer and allowed to dry.				
3.18	**Over-cladding Parapets - Mitigate Cold Bridge Voids**: The contractor must ensure, when over-cladding parapet details, that any voids formed between the back of the new vertical cladding and the inner face of the parapets, are infilled with insulation. The insulation infill must be a minimum thickness of 25mm and achieve a minimum height of 300mm vertically from any deck substrate. It is not a requirement to insulate the entire void unless specified to do so elsewhere within this document.				

No.	Item	Unit	Qty	Rate	Total
3.19	**Door/s, Frame/s & Threshold/s - Renew (Code 4 Lead Flashing)**: Remove all existing door/s, frame/s & threshold/s and discard to suitable waste facilities. The new threshold/s must be raised to allow a minimum skirting height of 150mm above the finished level of the main roof surface. New door/s and frame/s to be adapted as necessary and to include all decorative and security finishings. Install new Code 4, lead cover flashing/s, prior to fitting the new threshold/s. All lead work to be fixed in accordance with LDA/LSA recommendations. Flashings not to exceed 1.5m in length with laps minimum 100mm. The height of the threshold/s is to be such that the skirting/flashing height is the same as that on either side of the threshold/s. The contractor must confirm with the client/contract administrator the method and materials to be used to facilitate the raising of door threshold/s. Claims arising from failure to seek client instruction prior to commencement of works or provide suitable cost provision for this item will not be entertained by Langley Waterproofing Systems Ltd.				
3.20	**Soil Vent Pipe/s - Extend**: Extend where necessary. Collar or pipe sleeve/s must be a minimum of 150mm above the finished roof surface. **Note:** Extension pipe/s must be fixed inside the existing pipe/s.				
3.21	**Flues - Extend**: Extend where necessary. Collar or pipe sleeve must be minimum 150mm above the finished roof surface. **Important Notes:** a) Flues are controlled services as defined in Building Regulations Part J. b) Any work to flues may be notifiable building work. c) Flue extension must be of the correct material and same diameter or correct cross-sectional area to match the existing. d) Must be securely fixed and sealed to the existing so as to comply with either Gas Appliances Safety Regulations 1995 or relevant regulatory body.				
3.22	**Existing Screed - Inspect and Repair**: Upon exposure, contractor must thoroughly inspect for signs of damage or failure. Immediately inform Langley and / or the CA of findings for further instruction before proceeding to install the new waterproofing system. Any issues arising from failing to report defects will not be considered by Langley Waterproofing Systems Ltd. Where required, repair or renew any defective areas found and allow to dry to the application of the new waterproofing system. **Note:** Should screed removal be necessary, the contractor must consider the presence of underlying cables or conduits contained within the screed that may hamper remedial works.				
3.23	**Priming Deck & Detail Substrates**: All deck and detail substrate surfaces. Prime with Langley Spray-on (synthetic rubber) Primer and allow to dry.				

No.	Item	Unit	Qty	Rate	Total
3.24	**Flame-free Zones - Priming Requirement - All Surfaces (Inc Insulation if applicable)**: Prime all flame-free zone surfaces with Langley Spray-on (synthetic rubber) Primer and allow to dry (bituminous primer must not be used).				
3.25	**Flame-free Zones - Self-adhesive Membranes - Additional Priming**: Adhesion issues may arise when applying membranes with a hot-air gun. Langley Spray-on Primer can be applied to the surface Paradiene SA underlay to enhance adhesion of the Parafor Solo SA cap sheet. This 'additional priming' is also recommended when the Langley SA Membrane Detailing System is specified as the primary roof covering or over large areas. This will ensure a consistent bond across larger roof areas and improve application times				
3.26	**Paradeck Cement Board Panel Joints - Tape**: Cover panel joints with pre-cut 200mm wide strips of Paradiene SA underlay. Before application of Paradiene SA, prime area with Langley Spray-on Primer and allowed to dry. Butt joint at roll ends and perpendicular intersections.				
4	**AIR AND VAPOUR CONTROL**				
4.1	**Air and Vapour Control Layer - Torch-on - Field Area**: Install Parevapo SBS metal-lined, double reinforced, elastomeric air and vapour control layer. Top Face: Sanded. Underside: Macro perforated fusible film. Fully bond to prepared surface by torch-on method. Side and end laps to overlap by a minimum of 75mm and must be fully sealed by torch-on method.				
4.2	**Flame-free Zones - Air and Vapour Control Layer - Change of Membrane - Flat Exclusion Area**: Install Parevapo SA, double reinforced, metal-lined, self-adhesive SBS elastomeric bitumen air and vapour control layer. Fully bond to a prepared and primed substrate by means of the heat activated, self-adhesive face, applying pressure with a weighted roller. Side laps, minimum 75mm, end laps, 100mm, fully bond by heat welding and applying pressure with a seam roller. Priming of substrate must be with Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). All heat activation and welding within the flame-free zone must be carried out with a hot-air gun. **Note:** All laps with main area AVCL, (outside the flame-free zone) must be minimum 150mm and torch bonded.				
4.3	**Air and Vapour Control Layer - Detail Skirtings**: Extend the air and vapour control layer as a separate flashing piece cut from full width of roll to the skirting. Fully bond by torch-on method to a fully prepared surface to a minimum height of 100mm past the finished proposed line of the new insulation level. A minimum of 100mm lap must be achieved to main field return. Side laps to be a minimum of 75mm and must be fully sealed by torch-on method.				

No.	Item	Unit	Qty	Rate	Total
4.4	**Flame-free Zones - Air and Vapour Control Layer - All Upstands, Skirtings & Details Generally**: Extend Parevapo SA air and vapour control layer to the skirting / details as a separate flashing piece, cut from the width of a roll. Fully bond to a prepared and primed substrate by means of the heat activated self-adhesive face. Minimum height, 100mm above the finished height of the new insulation (or the full girth of details). Priming of substrate must be with Langley Spray-on (synthetic rubber) Primer, (bituminous primer must not be used). Lap to main field return, minimum 100mm, side laps minimum 75mm. Application method as per the main area. Detailing arrangements all as main specification.				
5	**INSULATION**				
5.1	**Pararock Tapered Board Insulation - Field Area**: Install Pararock stone wool tapered roof insulation boards. Lay with branded side uppermost. Boards to be laid close butted with staggered joints. Set out in accordance with tapered scheme drawings supplied by Langley Waterproofing Systems Limited.				
5.2	**Pararock Tapered Insulation - Sumps to Outlets**: Sumps to be a minimum of 500mm x 500mm square around outlet position. Form with Pararock flat board insulation. Board thickness in accordance with Tapered Scheme drawing. A Langley Metal Hard Edge to be fixed to all exposed insulation edges. Bond to insulation with either low foaming PU adhesive or strapping with suitable fully bonded underlay membrane.				
5.3	**Pararock Insulation - PU Attachment**: To prepared surface. Bond Pararock insulation with LangStik Solvent Free PU Adhesive. Surface of substrate must be swept clear of all dirt, debris and loose material, prior to application of the adhesive. Boards to be laid close butted with staggered joints. **Important Note:** Please be aware of the additional fixing requirements and coverage rates for Pararock insulation. Refer to 'Fixing Instructions' and 'Schedule of Products' sections of this specification.				
5.4	**Pararock Insulation - Dual Layer Applications**: Where thicknesses in excess of 150mm are specified the contractor must allow for the installation of a second layer of boards and the additional adhesive required. Underlay boards to be fixed first, branded side uppermost. Fleece faced boards to be laid with the fleece uppermost. All boards to be laid close butted with staggered joints with the top layer off-set from the preceding one.				
5.5	**Insulation - PU Attachment - Flame-free Zones**: When using Parevapo SA, in designated flame-free zones, the insulation to these areas must be bonded with LangStik Solvent Free PU Adhesive. Surface substrate must be swept clear of all dirt, debris and loose material, prior to application of the PU adhesive.				

No.	Item	Unit	Qty	Rate	Total
5.6	**Insulation - Changes of Levels - Metal Hard Edge**: Langley Metal Hard Edge to be fixed to all exposed insulation edges. Bond to insulation with either low foaming PU adhesive or strapping with suitable fully bonded underlay membrane.				
5.7	**Priming - Hard Edges to Insulation**: All hard edges, metal and / or timber, must be primed with Langley spray-on (synthetic rubber) primer and allow to dry.				
6	**WATERPROOFING - UNDERLAYS**				
6.1	**Detail Reinforcing Strip - Requirement in Lieu of Angle Fillets**: Paradiene (35) S R4 detail reinforcing strips must be installed at the base of all upstands prior to subsequent membranes being installed. At a minimum of 250mm width cut from roll, apply 125mm to the horizontal and 125mm to vertical prepared surfaces. Fully bond by torch-on method.				
6.2	**Flame-free Zone - Detail Reinforcing Strip - Change of Membrane**: Paradiene SA detail reinforcing strips must be installed at the base of all upstands, prior to subsequent membranes being installed. Strips to be minimum 250mm wide in pieces cut from roll, applied 125mm to the horizontal and 125mm to vertical surfaces. Fully bond to a prepared (and primed if applicable) substrate by means of the heat activated self-adhesive face, applying pressure with a seam roller. Where priming is required, it must be with Langley Spray-on (synthetic rubber) Primer, (bituminous primer must not be used).				
6.3	**Underlay - Self-Adhesive - Field Area**: Adepar JS composite reinforced, SBS elastomeric bitumen membrane. Top Face: fusible film. Underside: sanded between self-adhesive strips with siliconised peel-off film over self-adhesive selvedge. Fixing: by means of factory-applied self-adhesive strips. Perimeters and Openings: 500mm wide, fully bond by torching. Side Lap: 80mm determined by selvedge. End Lap: minimum 120mm. The siliconised film is not fusible. Fixing Method: See Fixing Instructions. **Note:** 5-10mm bead of bitumen must be exuded from all laps.				
6.4	**Flame-free Zone - Underlay - Change of Membrane - Flat Exclusion Area**: Install Paradiene SA, polyester reinforced, self-adhesive SBS elastomeric bitumen membrane. Fully bond to a prepared and primed substrate by means of the heat activated self-adhesive face, applying pressure with a weighted roller. Side laps, minimum 75mm; end laps, minimum 100mm; fully bonded by heat welding and applying pressure with a seam roller. Priming of substrate (including insulation if applicable) must be with Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). All heat activation and welding within the flame-free zone must be carried out with a hot-air gun. **Note:** All laps with main area underlay, (outside the flame-free zone) must be minimum 150mm and torch bonded.				

No.	Item	Unit	Qty	Rate	Total
6.5	**Underlay to Outlet Sumps & Internal / Integral Gutters**: Paradiene (35) SR4 underlay (fully bonded) must be used (detailed elsewhere). Extend onto main field area by minimum 150mm.				
6.6	**Underlay - Upstands & Skirtings**: To be formed separately using Paradiene (35) S R4 underlay, cut from the width of the roll and torch applied fully bonded to base membrane by a minimum of 100mm. Both surfaces being bonded are heated with a required bead (5-10mm) of bitumen to be extruded from all head and side laps.				
6.7	**Flame-free Zone - Underlay - Upstands & Skirtings - Change of Membrane**: To be formed separately with Paradiene SA underlay, in pieces cut from the width of a roll. Fully bond to a prepared and primed substrate (or AVCL if applicable) by means of the heat activated self-adhesive face, applying pressure with a roller. Minimum height, 150mm above the finished height of the new insulation (or the full girth of details). Where applicable, priming of substrate must be with Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). Lap to main field return, minimum 100mm; Side laps, minimum 75mm. Application method as per the main area. Detailing arrangements all as main specification.				
7	**WATERPROOFING CAP SHEETS**				
7.1	**Cap Sheet - Torch-on - Field Area**: Install Graviflex root resistant cap sheet. Graviflex is a torch-on polyester-reinforced, SBS-modified, elastomeric bitumen cap sheet with root-resistant additive for roof garden waterproofing. Lay: Fully bonded by torching 75mm minimum side lap widths as determined by the selvedge and minimum 150mm end laps. This layer is to be laid parallel to the under layer, breaking joints by at least 300mm. Both surfaces being bonded must be heated and a bead of bitumen exuded from all laps.				
7.2	**Flame-free Zone - Cap Sheet - Change of Membrane - Flat Exclusion Area**: Install Parafor Solo SA, polyester reinforced, self-adhesive, SBS elastomeric bitumen, dark grey granule faced cap sheet. Fully bond to the underlay by means of the heat activated self-adhesive face, applying pressure with a weighted roller. Side laps to suit selvedge (minimum 75mm); end laps, minimum 150mm; fully bond by heat welding and applying pressure with a seam roller. A 5-10mm bead of bitumen must be extruded from all laps. All heat activation and welding within the flame-free zone must be carried out with a hot-air gun. **Note:** All laps with main area cap sheet, (outside the flame-free zone) must be minimum 150mm and torch bonded.				

8	**DETAILS**				
8.1	**Detail Skirtings - Requirement**: All detail skirtings must be a minimum of 150mm above the finished roof surface level.				
8.2	**Cap Sheet - General Detailing**: Detail flashings. Form separately with Graviflex Cap Sheet cut from width of roll. Colour to match main field membrane. Fully bond by torching to the specified detail underlay membrane. Both surfaces being bonded must be heated and a 5-10mm bead of bitumen extruded from all head and side laps. Cap sheet detail must extend to a minimum of 150mm onto the main field area. Upstand heights must be a minimum of 150mm above the finished roof level.				
8.3	**Flame-free Zone - Cap Sheet - General Detailing - Change of Membrane**: Detail flashings to be formed separately using matching colour Parafor Solo SA Cap Sheet, in pieces cut from width of roll. Fully bond to the specified detail underlay by means of the heat activated self-adhesive face, applying pressure with a roller. Minimum height, 150mm above the finished height of the new system (or the full girth of details). Side laps to suit selvedge; end laps, minimum 150mm, bond by heat welding and applying pressure with a seam roller. A 5-10mm bead of bitumen is to be extruded from all laps. Lap to main field return, minimum 150mm.				
8.4	**Underlay Details - Outlet Sumps**: Install Paradiene (35) S R4. To extend onto main field area by minimum 150mm in all directions. Fully bond to substrate.				
8.5	**Lead Chutes (new)**: Code 5 lead. Form full-height lining to sides of opening/s with a 25mm turn-in under the bridging. Return onto outer wall face with step flashing wings dressed into chases in brickwork. Prime both surfaces of flange and fully bond between underlay or soaker and cap sheet. Both layers to be lapped onto the lead by at least 150mm.				
8.6	**Lightning Conductor Tapes**: Secure with straps of matching polyester reinforced cap sheet 50mm wide, bonded to roof surface. Straps to be at max. 1m centres (or as otherwise directed).				
8.7	**Expansion Joint - Flush**: Loose cover joint with a 100mm wide strip of inverted (granule face down) cap sheet laid equidistant over the joint. Overlay with a 350mm wide strip of underlay, fully bonded. Fully bond a cap sheet layer (500mm overall width). Cap sheet to be laid in two separate pieces with a minimum 50mm lap running along the joint line.				
8.8	**Counter Flashing - ParaFlash B3**: Install and protect detail abutment skirtings with ParaFlash B3 lead-free counter flashings 150mm wide. Dress into prepared chase and wedge at 450mm centres with stainless steel clips provided. Point with Langley Gap-Seal Mastic. Side laps to be a minimum of 100mm and sealed with Langley Lap Adhesive.				

8.9	**Exposed Edges - Adapted Counter Flashing - Langley TB62 GRP Termination Bar**: For protection of exposed vertical and horizontal waterproofing details (as required to suit site conditions). Install an adapted Langley TB62 GRP face-fixed Termination Bar. Modify by removing the bottom return section by cutting. Fixing modified bar over the membrane: Apply a continuous bead of Langley Gap-Seal Mastic along the edge of the membrane and another along the surface of the membrane (approximately 40mm from, and parallel to, the exposed edge). Position bar over the membrane with the angled return facing the substrate and protecting the exposed edge of the membrane. Once aligned, secure in place by mechanically screwing and plug fixing with dome or pan head non-corroding screws at maximum 300mm centres.				
8.10	**Skirting to Threshold / Cill - ParaFlash B3**: Install and protect detail abutment skirtings with ParaFlash B3 lead-free counter flashings 150mm wide. Dress into prepared chase below threshold / cill and wedge at 450mm centres with stainless steel clips provided. Point with Langley Gap-Seal Mastic. Side laps to be a minimum of 100mm and sealed with Langley Lap Adhesive.				
8.11	**Skirtings - Vertical Waterproofing Over 400mm in Height Additional Mechanical Fixing Required**: Additionally secure with concealed fixings either by nailing or with screws and pressure plates. Laps must be a minimum of 160mm. Nailing: Large headed galvanised steel clout nails set at 75mm centres in two rows 50mm apart. Screws: Maximum 200mm centres with 5 No. minimum per sheet width.				
8.12	**Paradeck Cement Board Clad Parapets - ParaTrim GRP Edge Trim**: Parapets are to be clad in Paradeck Cement Board (as specified above). Base layer and detail cap sheet layer of new waterproofing system must be carried up the vertical inner face and across the top of the parapet detail, which must be, in all cases, fully supported. Terminate to leading edge with a new ParaTrim GRP edge trim of an appropriate profile for the site conditions applied over the base layer membrane. Where required, at the ends of parapets, the waterproofing must be turned up and to the side, to allow weathering with new horizontal and vertical cover flashings. Screw fix at maximum 300mm centres into firm grounds. Butt straps are to be inserted at all joints. Surfaces of trim in contact with membranes must be wiped clean and primed with Langley Primer and allowed to dry.				

8.13	**Soil Vent Pipe - Cast Iron**: Soil vent pipes must be a minimum of 150mm high from the finished level of waterproofing. Install new Code 5 Lead pipe sleeves with integral lead flange. Sleeves must be a minimum of 30mm higher than pipe. Flange must be a minimum of 100mm wide. Prime both surfaces of the flange. Fully bond to the underlay or soaker, prior to fully bonding the cap sheet membrane. Sleeves to be turned into top of pipe by 25mm. Colour: Black. **Note:** Soil vent pipes greater than 300mm require a Code 5 Lead sleeve finishing a minimum of 150mm high above the finished level of the new waterproofing system and terminated with a weathering collar. Finish base of vertical sleeve as previously stated.				
8.14	**Vent Pipes - Refurbish with LangVent**: Install LangVent refurbishment vent pipe sleeves. Select correct size to suit the diameter of the existing pipe. Fix in accordance with Langley Fixing Instructions with flexible flange fully bonded between underlay or soaker and cap sheet membranes. Base of vertical sleeve, seal with a fillet of Langley Gap-Seal Mastic against the cap sheet membrane and the sleeve base. Colour: Black.				
8.15	**Penetrations - Vertical Pipes General**: Install new Code 5 Lead pipe sleeves with integral flange. Sleeve minimum 150mm high with flange base at a minimum of 100mm wide. Prime both surfaces of flange and fully bond between underlay or soaker and cap sheet. At top of sleeve protect as follows; Up to 200mm high, turn lead into top of pipe by approximately 25mm. Over 200mm high, install suitable weathering collars or secure with a stainless steel Jubilee clip and seal with a bead of gap seal mastic. Plastic pipe collars must be solvent welded.				
8.16	**Horizontal Pipe Penetrations (Turned In) - General**: Install new Code 5 Lead pipe sleeves with integral flange. Sleeve minimum 150mm high with flange base at a minimum of 100mm wide. Prime both surfaces of flange and fully bond between underlay or soaker and cap sheet. At top of sleeve protect as follows; Up to 200mm high, turn lead into top of pipe by approximately 25mm. Over 200mm high, install suitable weathering collars. Plastic pipe collars must be solvent welded.				
8.17	**Horizontal Pipe Penetrations (Clip and Mastic) - General**: New Code 5 lead pipe sleeve with integral flange. Flange to be minimum 100mm wide, prime both surfaces. Prepare surrounding wall face. To a primed surface, fully bond the specified underlay (or soaker), which must extend minimum 100mm (in all directions) beyond the lead flange. Fully bond lead flange to the underlay (or soaker), prior to fully bonding the specified cap sheet over the flange. Cap sheet to extend minimum 50mm beyond the underlay. Secure top and sides of waterproofing with a TB62 Termination Bar. Secure sleeve to pipe with a stainless-steel jubilee clip and a bead of Gap-Seal Mastic.				

9	**GREEN ROOF APPLICATIONS**				
9.1	**Electronic Roof Integrity Test**: Prior to the installation of any green roof components, an electronic leak detection test must be carried out by a WITA approved contractor to ensure the integrity of the newly completed waterproofing system and to meet guarantee requirements.				
9.2	**Installation Note**: Installation of the green roof waterproofing and components can only be carried out by a Langley approved contractor whose workmanship is regularly checked during the contract by authorised Langley technical personnel.				
9.3	**Green Roof & PV Installation**: Refer to Eco Green Roofs detailed green roof & PV specification.				
10	**SAFETY SYSTEMS**				
10.1	**Free-standing Permanent Guardrail System**: New LangGuard Free-standing Permanent Guardrail System to be installed to the entire perimeter of the completed roof.				
10.2	**LangGuard Free-standing Permanent Guardrail System**: All posts, rails, bases and fittings are galvanised to BS EN ISO 1461. Fully tested to Health and Safety Specialist Report 15 September 1988, 'Handrails - Maintenance Uses Only', BS6399 Buildings and Loads. See LangGuard Data Sheet DsA2 0119 for further information.				
10.3	**LangGuard Free-standing Permanent Guardrail System**: Supporting Base Plates (with integrated bonded ribbed rubber mat): To sit flat on the roof surface.				
10.4	**LangGuard Free-standing Permanent Guardrail System**: To be installed, checked and certified by Langley Waterproofing Systems Ltd.				
11	**COMPLETION**				
11.1	**Guarantee Requirement - Final Inspection**: In accordance with our guarantee requirements, Langley Waterproofing Systems Ltd are to be notified once all works are complete. A final inspection will then be undertaken by us and the contractor must ensure that safe working access is provided.				
11.2	**TV Aerials and / or Satellite Dish Arrays**: Reinstate to original locations or new positions as instructed by the client contract administrator all TV aerials and / or satellite dish arrays.				
11.3	**External Rainwater Goods - New**: Upon completion of roofing works, install new external rainwater goods. The contractor must allow for any modifications / adaptations necessary to accommodate any raised levels presented by the new roofing system. The contractor must further confirm with the client / contract administrator the type, style and colour of the new rainwater goods. No claims arising from failure to do so will be considered by Langley Waterproofing Systems Ltd.				

11.4	**Sacrificial Layers - Free-standing Plant / Handrails etc**: All freestanding items. Install a sacrificial layer of cap sheet (granule surface down) under all load spreading supports / pads.				
11.5	**Cables - Reinstate**: Collate and support on cable trays if necessary. Secure cables to tray or to original locations and secure with plastic cable ties. If cable trays are used then they are to be rested on load-spreading bases on sacrificial pieces of cap sheet. Securely fasten trays to bases as required.				
11.6	**Completed Roof Surface - General**: Ensure visual inspection of all laps is undertaken to confirm integrity of system prior to final guarantee inspection. Sweep clean and remove debris to suitable waste container.				
11.7	**Lightning Conductor System - New**: Install new system all in accordance with client contract administrators requirements. The new system must be tested and certified operational by an approved specialist contractor. The roofing contractor must provide and install all necessary Langley Lightning Conductor Retention Clips to roof surface to secure the lightning conductor tape. Clips are to be set at no more than 1 metre centres to secure the tape. At lightning conductor corner intersection plates, clips are to be spaced away from the plates at not less than 150mm but no greater than 200mm.				
11.8	**Arisings from Works**: Remove from site all arisings for return to contractor storage or safe disposal.				

Detailed Specification: 2

Tank Rooms & Stairwell Roofs

No.	Item	Unit	Qty	Rate	Total
1	**SPECIFICATION REQUIREMENTS**				
1.1	**Guarantee**: The following **SA-30-C** specification is to be covered by the Langley Waterproofing Systems Ltd, single-premium, pre-paid independently-insured workmanship and materials guarantee for a period of ***30 years*** from the date of practical completion. In order to meet this requirement only roofing contractors that participate in this guarantee scheme may be used. The eligibility of proposed roofing contractors should be confirmed with Langley Waterproofing Systems Ltd, Tel: 01327 704778 prior to inviting tenders.				
1.2	**Projects Under CDM**: In relation to this project, under Construction (Design and Management) Regulations 2015 (CDM 2015), it is the responsibility of the client / contractor to appoint any, or all, relevant "CDM duty-holders".				
1.3	**Design Note - Changes & Adjustments**: **Variations 'A' (general):** Any variations must be agreed in writing by both the contract administrator and Langley Waterproofing Systems Ltd. These must be costed and authorised by the client but not be implemented until instructed by the client. **Variations 'B' (minor):** During work in progress, Langley Waterproofing Systems Ltd must be informed immediately of any proposed change/s and operatives must not implement any change/s until agreed by Langley (minor changes are deemed to be any item not falling within the scope of section a). **Unauthorised Changes 'C' (general):** Langley Waterproofing Systems Ltd will not be responsible for any changes of which they are unaware or have not authorised, nor will they accept any liability or associated costs due to system failure, i.e. labour, materials, design or programme delays, etc., resulting from said changes.				
1.4	**Roof Structure - Disclaimer**: It is deemed the responsibility of the Client Representative, Contractor and / or Property Owner to give due consideration towards the ability of the existing roof deck accepting any additional loadings imposed by the application of the new waterproofing system proposed within this specification. Langley Waterproofing Systems Ltd will not be held responsible or accept any liability or associated costs should structural defects or structural failure occur.				

No.	Item	Unit	Qty	Rate	Total
1.5	**Fire Risk - Flame-free System**: This specification has been formulated on the basis that minimal hot works are required. Should the contractor / installer have reservations about any aspect of the specification proposal, or if during the course of the works any unforeseen items are discovered that present an actual or potential fire risk, they should contact the system manufacturer / supplier immediately so that safer methods can be agreed and implemented which do not compromise the integrity of the specification and / or its guarantees. Notwithstanding the foregoing, the contractor / installer is reminded that they have a duty of care and responsibility to carry out their own assessment of the proposed works with regard to the potential fire risk, and introduce working practices that takes any such risks into account.				
1.6	**Fire Risk - Drying Out**: In the event of the roof becoming wet and drying out is necessary, the use of gas torches is not recommended and should be avoided. In all cases Safe2Torch guidelines should be followed. Standing water should be swept to the nearest outlets with a broom or squeegee (care must be taken to avoid debris blocking outlets). The remaining moisture should be soaked up using mops or dry rags and the surface left to dry out naturally. To speed up the process, specialist equipment is commercially available, see 'General Guidance & Requirements' in the appendices of this specification.				
1.7	**Fire Accreditation**: Unless otherwise stated, the full waterproofing system and/or products contained within this specification have been tested for external fire exposure (both with and without insulation) in accordance with BS EN 13501-5: 2005 (European Test) and are accredited as Broof(t4).				
1.8	**Langley Detailed Drawings**: This specification is to be read in conjunction with detailed drawings issued and supplied by Langley Waterproofing. Should the contractor at any point find discrepancies between the issued specification and issued drawings, it is required that the specification takes precedence in all cases, unless otherwise notified and approved. No additional costs or liability arising from failure to follow specification or notifying Langley Waterproofing Systems Ltd of any discrepancies found in good time prior to commencement of works will be considered.				
1.9	**Guarantee Requirement - Flame-free Applied Membranes**: Applicable to all layers. A 5-10mm bead of bitumen must be exuded from all laps.				
2	**SCOPE OF APPLICATION**				
2.1	**Overlay of Existing Felt**: This specification is based on the overlay of an existing, prepared felt waterproofing system.				

No.	Item	Unit	Qty	Rate	Total
2.2	**Deck and Substrates - Existing BUR on Screeded Concrete**: This specification is suitable for application to a prepared existing BUR felt system on a screeded concrete roof deck not exceeding 5° from the horizontal.				
2.3	**Day / Night Joints**: The contractor must ensure at the end of each working day or period, that any exposed membranes or substrates that are susceptible to damage through water ingress are sealed with a Langley system compatible membrane to ensure complete water tightness. No loose laid membranes or other such covers are permitted.				
3	**PREPARATION**				
3.1	**Felt Drip Flashings - Discard**: Carefully remove all existing felt drip flashings and associated timber drip battens and dispose to a suitable waste container / facilities or return to contractors premises for safe disposal.				
3.2	**Existing Outlets - Refurbish with ParaFurb Outlets**: Make ready to accept new ParaFurb Refurbishment Outlets (detailed elsewhere). Cut back and remove sufficient existing waterproofing from around the outlets and as required from the surrounding area to allow for correct installation. **Important Note:** ParaFurb Outlets must not be installed to outlet positions that already have an existing refurbishment outlet in place. Prior to ParaFurb Outlets being installed, any existing refurbishment outlets or lead sleeve inserts must first be removed and surrounding substrates made good.				
3.3	**Loose Coverings and/or Patch Repairs - Remove**: All loose coverings, patch repairs, etc. must be removed and discarded to suitable waste containers.				
3.4	**Existing BUR Felt Surface - Flame-free System - Preparation**: All ridges and blisters in the existing waterproof membranes must be star cut, heated with a hot-air gun only and smoothed out. Seal cut areas with pieces of the specified underlayer, which must extend beyond the damaged area in any direction by a minimum of 100mm. Fully bond with a hot-air gun only to a prepared primed surface.				
3.5	**Existing BUR Felt Details - Remove**: Remove all existing BUR felt skirtings, drips, flashings to pipes, etc. to expose the substrate beneath. All waste to be disposed of to suitable approved waste facilities.				
3.6	**Existing Edge Trims - Remove**: Carefully remove all existing perimeter edge trims and dispose of to suitable approved waste containers / facilities or return to contractors premises for safe disposal.				
3.7	**Existing Lead Flashings - Remove**: Carefully remove all existing lead secondary cover flashings and dispose of to suitable approved waste containers / facilities or return to contractors premises for safe disposal.				

No.	Item	Unit	Qty	Rate	Total
3.8	**Water Checks - Existing - Raise - If Necessary**: Raise perimeter check kerbs to accommodate any presented increased height of the new waterproofing system. The contractor must ensure that a 50mm minimum height is achieved above the finished level of the new roofing system.				
3.9	**Perimeters - Raising - Cover of External Faces**: Where the height of external faces are to be increased, for whatever reason, any exposed timber or voids must be covered with new fascia boards or cladding. This must align with the top of the timber hard edge prior to fixing any drip batten or edge trims. The contractor must liaise with, and seek separate instruction from, the contract administrator as to the method, type and colour of materials, etc. to cover these external raised details. Claims arising from failure to seek client instruction prior to commencement of works or provide suitable cost provision for this item will not be entertained by Langley Waterproofing Systems Ltd.				
3.10	**Fascias and Soffits - New Rockpanel**: Install new Rockpanel® fascias (and soffits if required). The contractor must liaise with, and seek separate instruction from the client contract administrator as to the method of fixing, type and colour of materials to be used. Claims arising from failure to seek client instruction prior to commencement of works or provide suitable cost provision for this item will not be entertained by Langley Waterproofing Systems Ltd.				
3.11	**Redundant Chases - Make Good**: Rake out and prepare any redundant chase lines. In-fill with sand and cement mortar, flush with wall face.				
3.12	**Upstands to Brickwork - New Chase**: In preparation of a new cover flashing the contractor is to cut a new chase to a minimum 25mm depth and at a minimum height of 150mm above the intended finished roof level surface. Brush clean and prime with appropriate primer to seal substrate.				
3.13	**Soil Vent Pipe/s - Extend**: Extend where necessary. Collar or pipe sleeve/s must be a minimum of 150mm above the finished roof surface. **Note:** Extension pipe/s must be fixed inside the existing pipe/s.				
3.14	**Flues - Extend**: Extend where necessary. Collar or pipe sleeve must be minimum 150mm above the finished roof surface. **Important Notes:** a) Flues are controlled services as defined in Building Regulations Part J. b) Any work to flues may be notifiable building work. c) Flue extension must be of the correct material and same diameter or correct cross-sectional area to match the existing. d) Must be securely fixed and sealed to the existing so as to comply with either Gas Appliances Safety Regulations 1995 or relevant regulatory body.				

No.	Item	Unit	Qty	Rate	Total
3.15	**Flues and Hot Pipes Insulating Double Skin**: Independent non-ferrous metal sleeves with integral flange. Sleeve must be a minimum 150mm above finished roof surface, flange must be a minimum 100mm wide. Fix to roof deck. Sleeve must provide a minimum 25mm air gap. **Note:** The gap can be filled with a non-combustible insulation. See Details section for weathering detail. **Important Notes:** a) Flues are controlled services as defined in Building Regulations Part J. b) Any work to flues may be notifiable building work. c) Flue extension must be of the correct material and same diameter or correct cross-sectional area to match the existing. d) Must be securely fixed and sealed to the existing so as to comply with either Gas Appliances Safety Regulations 1995 or relevant regulatory body.				
3.16	**Drip Battens - New**: Install new 25mm x 50mm treated timber battens. Screw fix at max. 300mm centres.				
3.17	**Priming - Felt Surfaces & Detail Substrates**: Felt surfaces and substrates for details must be swept clean of all dirt, debris and loose material. In addition, all surfaces must be dry. Prime with Langley Spray-on (synthetic rubber) Primer and allow to dry.				
3.18	**Flame-free System - Priming Requirement - All Surfaces (Inc Insulation if applicable)**: All surfaces receiving self-adhesive membranes. Prime with Langley Spray-on (synthetic rubber) Primer and allow to dry (bituminous primer must not be used).				
3.19	**Flame-free System - Self-adhesive Membranes - Additional Priming Requirements**: Langley Spray-on Primer should be applied to the surface Paradiene SA underlay (detailed elsewhere) to enhance adhesion before the application of the Parafor Solo SA cap sheet (ensure the primer is allowed to dry for a minimum of 30mins). This will ensure a consistent bond across larger roof areas and improve application times.				
4	**WATERPROOFING - UNDERLAYS**				
4.1	**Flame-free System - Detail Reinforcing Strip**: Paradiene SA detail reinforcing strips must be installed at the base of all upstands, prior to subsequent membranes being installed. Strips to be minimum 250mm wide in pieces cut from roll, applied 125mm to the horizontal and 125mm to vertical surfaces. Fully bond to a prepared (and primed if applicable) substrate by means of the heat activated self-adhesive face, applying pressure with a seam roller. Where priming is required, it must be with Langley Spray-on (synthetic rubber) Primer, (bituminous primer must not be used).				

No.	Item	Unit	Qty	Rate	Total
4.2	**Flame-free System - Underlay - Field Area (2 Layers)**: Install Paradiene SA, polyester reinforced, self-adhesive SBS elastomeric bitumen membrane. Fully bond to a prepared and primed substrate by means of the heat activated self-adhesive face, applying pressure with a weighted roller. Side laps, minimum 75mm; end laps, minimum 100mm; fully bonded by heat welding to base membrane with a minimum 100mm lap and applying pressure with a seam roller. Priming of substrate (including insulation if applicable) must be with Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). All heat activation and welding must be carried out with a hot-air gun.				
4.3	**Flame-free System - Underlay - Upstands & Skirtings**: To be formed separately with Paradiene SA underlay, in pieces cut from the width of a roll. Fully bond to a prepared and primed substrate (or AVCL if applicable) by means of the heat activated self-adhesive face, applying pressure with a roller. Minimum height, 150mm above the finished height of the new insulation (or the full girth of details). Where applicable, priming of substrate must be with Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). Lap to main field return, minimum 100mm; Side laps, minimum 75mm.				
5	**WATERPROOFING CAP SHEETS**				
5.1	**Flame-free System - Cap Sheet - Field Area**: Install Parafor Solo SA, polyester reinforced, self-adhesive, SBS elastomeric bitumen, dark grey granule faced cap sheet. Fully bond to the underlay by means of the heat activated self-adhesive face, applying pressure with a weighted roller. Side laps to suit selvedge (minimum 75mm); end laps, minimum 150mm; fully bond by heat welding and applying pressure with a seam roller. A 5-10mm bead of bitumen must be extruded from all laps. All heat activation and welding must be carried out with a hot-air gun.				
6	**DETAILS**				
6.1	**Detail Skirtings - Requirement**: All detail skirtings must be a minimum of 150mm above the finished roof surface level.				
6.2	**Perimeter Kerb Detail - Requirement**: All perimeter kerb details must be a minimum of 50mm above the finished roof surface level.				
6.3	**Flame-free System - Cap Sheet - General Detailing**: Detail flashings to be formed separately using matching colour Parafor Solo SA Cap Sheet, in pieces cut from width of roll. Fully bond to the specified detail underlay by means of the heat activated self-adhesive face, applying pressure with a roller. Minimum height, 150mm above the finished height of the new system (or the full girth of details). Side laps to suit selvedge; end laps, minimum 150mm, bond by heat welding and applying pressure with a seam roller. A 5-10mm bead of bitumen is to be extruded from all laps. Lap to main field return, minimum 150mm.				

No.	Item	Unit	Qty	Rate	Total
6.4	**Underlay Details - Outlet Sumps**: Install Paradiene SA. To extend onto main field area by minimum 150mm in all directions. Fully bond to substrate.				
6.5	**Internal Outlets - ParaFurb Refurbishment Outlets**: ParaFurb Refurbishment Outlet: Stainless Steel spigot with expanding EPDM rubber seal and SBS membrane flange. Select outlet to suit diameter/s of fall pipes. Fully bond flange membrane to previously installed underlay or soaker. Fully bond cap sheet over and cut hole to suit diameter of pipe. Install leaf guard/grating supplied. Installation to be in accordance with Langley fixing instructions.				
6.6	**Flues and Hot Pipes with Integral Insulating Double Skin**: New, code 5 lead pipe sleeve/s with integral flange. Sleeve minimum 150mm high, flange minimum 100mm wide. Prime both surfaces of the flange and fully bond between underlay or soaker and cap sheet. Top of sleeve: Protect with a weathering collar, securely fixed to pipe Base of Sleeve. colour, black.				
6.7	**Counter Flashing - ParaFlash B3**: Install and protect detail abutment skirtings with ParaFlash B3 lead-free counter flashings 150mm wide. Dress into prepared chase and wedge at 450mm centres with stainless steel clips provided. Point with Langley Gap-Seal Mastic. Side laps to be a minimum of 100mm and sealed with Langley Lap Adhesive.				
6.8	**Counter Flashing - Langley TB62 GRP Termination Bar - If Required**: Where a chased counter flashing is impractical. Install and protect detail abutment skirtings with a Langley TB62 GRP face-fixed Termination Bar. Fixing: Position above the membrane skirting and apply two evenly spaced beads of Langley Gap-Seal Mastic to the rear surface of the termination bar before offering-up and positioning above the detail skirting. Once aligned, secure in place by mechanically screwing and plug fixing with dome or pan head non-corroding screws at maximum 300mm centres. Complete detail by applying a fillet of Langley Gap-Seal Mastic at 45° angle along the top edge of the bar to create a required water shed finish. Full contact of mastic must be maintained between the termination bar and substrate at all times.				
6.9	**Exposed Edges - Adapted Counter Flashing - Langley TB62 GRP Termination Bar - If Required**: For protection of exposed vertical and horizontal waterproofing details (as required to suit site conditions). Install an adapted Langley TB62 GRP face-fixed Termination Bar. Modify by removing the bottom return section by cutting. Fixing modified bar over the membrane: Apply a continuous bead of Langley Gap-Seal Mastic along the edge of the membrane and another along the surface of the membrane (approximately 40mm from, and parallel to, the exposed edge). Position bar over the membrane with the angled return facing the substrate and protecting the exposed edge of the membrane. Once aligned, secure in place by mechanically screwing and plug fixing with dome or pan head non-corroding screws at maximum 300mm centres.				

No.	Item	Unit	Qty	Rate	Total
6.10	**Kerbs - Welted Drip**: Base layer and detail cap sheet layer of new waterproofing system must be carried up the vertical inner face and across the top of the kerb detail which must be, in all cases, fully supported. Welted Drips to be formed from detailing cap sheet (detailed elsewhere).				
6.11	**Perimeter Edge - Welted Drip**: At the perimeter edge, install new 25mm x 50mm treated timber drip battens. Screw fix at a maximum of 300mm centres. Welted Drips to be formed from detailing cap sheet (detailed elsewhere).				
6.12	**Welted Drips**: Form from detailing cap sheet membrane cut from the width of the roll. Form over 6mm exterior grade plywood (or alternatively 3mm hardboard) formers, mechanically fixed at 150mm centres to new treated timber drip battens. Fixings to be large headed galvanised clout nails set at 50mm centres, staggered vertically between 20-30mm. These must penetrate the drip batten by minimum 15mm. Membrane surfaces must be heated and a 5-10mm bead of bitumen must be extruded from all laps. Where required, at abutment junctions, the system must be turned up and to the side abutment, to allow weathering with new horizontal and vertical cover flashings. **Note:** Hardboard formers must be primed and allowed to dry prior to forming the drip detail.				
6.13	**Soil Vent Pipe - Cast Iron**: Soil vent pipes must be a minimum of 150mm high from the finished level of waterproofing. Install new Code 5 Lead pipe sleeves with integral lead flange. Sleeves must be a minimum of 30mm higher than pipe. Flange must be a minimum of 100mm wide. Prime both surfaces of the flange. Fully bond to the underlay or soaker, prior to fully bonding the cap sheet membrane. Sleeves to be turned into top of pipe by 25mm. Colour: Black. **Note:** Soil vent pipes greater than 300mm require a Code 5 Lead sleeve finishing a minimum of 150mm high above the finished level of the new waterproofing system and terminated with a weathering collar. Finish base of vertical sleeve as previously stated.				
7	**COMPLETION**				
7.1	**Guarantee Requirement - Final Inspection**: In accordance with our guarantee requirements, Langley Waterproofing Systems Ltd are to be notified once all works are complete. A final inspection will then be undertaken by us and the contractor must ensure that safe working access is provided.				
7.2	**External Rainwater Goods - Reinstate - As Appropriate**: Upon completion of roofing works, reinstate all original external rainwater goods. The contractor must allow for any modifications / adaptations necessary to accommodate any raised levels presented by the new roofing system and replace any broken or damaged items to match existing.				

No.	Item	Unit	Qty	Rate	Total
7.3	**External Rainwater Goods - New - As Appropriate**: Upon completion of roofing works, install new external rainwater goods. The contractor must allow for any modifications / adaptations necessary to accommodate any raised levels presented by the new roofing system. The contractor must further confirm with the client / contract administrator the type, style and colour of the new rainwater goods. No claims arising from failure to do so will be considered by Langley Waterproofing Systems Ltd.				
7.4	**Internal Rainwater Outlets - ParaFurb Refurbishment Outlets**: Check for blockages. Clear if necessary and leave in a free-running condition. Ensure bung is tightly secured to form correct pressure seal to pipe/s for applicable units. Ensure all supplied leaf guard / gratings are in place and tightly secured.				
7.5	**Completed Roof Surface - General**: Ensure visual inspection of all laps is undertaken to confirm integrity of system prior to final guarantee inspection. Sweep clean and remove debris to suitable waste container.				
7.6	**Arisings from Works**: Remove from site all arisings for return to contractor storage or safe disposal.				

Detailed Specification: 3

Walkways & Private Balconies

No.	Item	Unit	Qty	Rate	Total
1	**SPECIFICATION REQUIREMENTS**				
1.1	**Guarantee**: The following **PR-25-C** specification is to be covered by the Langley Waterproofing Systems Ltd, single-premium, pre-paid independently-insured workmanship and materials guarantee for a period of ***25 years*** from the date of practical completion. In order to meet this requirement only roofing contractors that participate in this guarantee scheme may be used. The eligibility of proposed roofing contractors should be confirmed with Langley Waterproofing Systems Ltd, Tel: 01327 704778 prior to inviting tenders.				
1.2	**Projects Under CDM**: In relation to this project, under Construction (Design and Management) Regulations 2015 (CDM 2015), it is the responsibility of the client / contractor to appoint any, or all, relevant "CDM duty-holders".				
1.3	**Design Note - Existing Falls**: Overlay of any existing roof system or deck. The new system will follow the existing falls and any deviations will be replicated. As a result, some areas of standing water may occur. However, **please note** the accumulation of ice, snow or ponding water will not have an adverse effect on the Langley products specified. This applies to both the life expectancy and / or long-term performance of the system specified and will not affect, in any way, the guarantee status.				
1.4	**Design Note**: Unless otherwise stated, all Pararapide PMMA products are solvent free.				
1.5	**Design Note - Mixing**: Mixing of all Pararapide PMMA products must be carried out with a power driven spiral mixing paddle (see Fixing Instructions for details).				
1.6	**Design Note - Adhesion Testing**: Before work commences contractor must establish that a secure bond can be achieved. Peel strength tests to be carried out to both main area and details (see 'Fixing Instructions' for details).				

No.	Item	Unit	Qty	Rate	Total
1.7	**Design Note - Changes & Adjustments**: **Variations 'A' (general):** Any variations must be agreed in writing by both the contract administrator and Langley Waterproofing Systems Ltd. These must be costed and authorised by the client but not be implemented until instructed by the client. **Variations 'B' (minor):** During work in progress, Langley Waterproofing Systems Ltd must be informed immediately of any proposed change/s and operatives must not implement any change/s until agreed by Langley (minor changes are deemed to be any item not falling within the scope of section a). **Unauthorised Changes 'C' (general):** Langley Waterproofing Systems Ltd will not be responsible for any changes of which they are unaware or have not authorised, nor will they accept any liability or associated costs due to system failure, i.e. labour, materials, design or programme delays, etc., resulting from said changes.				
1.8	**Design Note - Approved Document Part B Building Regulations - Compartmented Walls**: **Overlaying Existing Waterproofing:** Where the Langley Waterproofing system bridges a compartmented wall, it is expected that the existing underlying system is laid on a substrate or deck rated class A2-s3, D2 or better (non-combustible) to BS EN 13501-1. Buildings below 15m high, the substrate or deck can be rated class B-s3, D2 or worse (combustible), such as timber boarding and battens but they must be fully bedded on mortar (or other no less suitable material) across the full width of the compartmented wall. Double-skinned insulated roof sheeting, such as standing seam or profile metal sheet roofing, should incorporate a band of material rated class A2-s3, D2 or better, a minimum of 300mm in width, centred over the wall. **Note:** Proposed specification and design will be subject to LABC (Local Authority Building Control) approval before works can commence on-site. Where appropriate, Langley Waterproofing can offer support and guidance to assist application.				
1.9	**Electronic Roof Integrity Test (Compulsory For Buried Systems) - Disclaimer**: Prior to the installation of any proposed roof finishes, an electronic leak detection test must be carried out by a WITA approved contractor to ensure the integrity of the newly installed waterproofing system and to meet Langley Waterproofing System Ltd guarantee requirements.				

No.	Item	Unit	Qty	Rate	Total
1.10	**No Survey Undertaken - Information Supplied By Others**: This specification is based on information supplied by others and no site/roof survey has been undertaken by Langley. Before ordering any materials, Langley are required to visit site to confirm the suitability of the specification. Should any changes then be deemed necessary, either to materials and/or scope of works, any liability for costs due to these changes cannot be accepted by Langley Waterproofing. At this point, if any required changes to the scope of works are not possible, it may have implications for the guarantee, including exclusions where necessary.				
1.11	**Fire Risk - Drying Out**: In the event of the roof becoming wet and drying out is necessary, the use of gas torches is not recommended and should be avoided. In all cases Safe2Torch guidelines should be followed. Standing water should be swept to the nearest outlets with a broom or squeegee (care must be taken to avoid debris blocking outlets). The remaining moisture should be soaked up using mops or dry rags and the surface left to dry out naturally. To speed up the process, specialist equipment is commercially available, see 'General Guidance & Requirements' in the appendices of this specification.				
1.12	**Langley Detailed Drawings**: This specification is to be read in conjunction with detailed drawings issued and supplied by Langley Waterproofing. Should the contractor at any point find discrepancies between the issued specification and issued drawings, it is required that the specification takes precedence in all cases, unless otherwise notified and approved. No additional costs or liability arising from failure to follow specification or notifying Langley Waterproofing Systems Ltd of any discrepancies found in good time prior to commencement of works will be considered.				
2	**SCOPE OF APPLICATION**				
2.1	**Overlay of Existing Asphalt**: This specification is based on an overlay of an existing asphalt covering.				
2.2	**Deck and Substrates - Existing Asphalt on Screeded Concrete**: This specification is suitable for application to a substrate of an existing prepared asphalt system on a screeded concrete roof deck, not exceeding 5° from the horizontal.				
2.3	**Day / Night Joints**: The contractor must ensure at the end of each working day or period, that any reinforcing fleece is not left exposed. It must be completely covered and sealed with the specified Pararapide waterproofing system. In addition, any substrates that are susceptible to damage through water ingress are sealed to ensure complete water tightness. No loose laid membranes or other such covers are permitted.				

3	**PREPARATION**				
3.1	**Contractor Preparation Note**: The contractor is to carry out his own inspection to satisfy himself with regard to the extent of works involved in the preparation of the existing roof coverings and substrates. No claims arising from failure to do so will be considered by Langley Waterproofing Systems Ltd.				
3.2	**Contractor Note - Expansion Joints**: All works to expansion joints (detailed elsewhere) to be completed prior to applying the Pararapide waterproofing system.				
3.3	**Rainwater Downpipes from Higher Levels - Temporary Removal**: To facilitate the re-roofing work. As required, temporarily remove all rainwater downpipes, shoes and supporting pipe brackets etc. Set aside and securely store for re-fixing on completion of waterproofing works.				
3.4	**Existing Outlets - Refurbish with ParaFurb Outlets**: Make ready to accept new ParaFurb Refurbishment Outlets (detailed elsewhere). Where necessary, cut back and remove sufficient existing waterproofing from around the outlets and as required from the surrounding area to allow for correct installation. **Important Note:** ParaFurb Outlets must not be installed to outlet positions that already have an existing refurbishment outlet in place. Prior to ParaFurb Outlets being installed, any existing refurbishment outlets or lead sleeve inserts must first be removed and surrounding substrates made good.				
3.5	**Contamination - Remove**: Remove any contamination that could impair system adhesion. All affected areas should be swept or power washed. **Note:** Power Washing (max. 2000 psi) Care must be taken to avoid penetrating the existing waterproofing system through any existing defects.				
3.6	**Painted Surfaces**: Coats of Paint: Completely remove.				
3.7	**Substrate - Metal**: All metal surfaces (including outlets & pipes where applicable). Abrade to a bright finish and wipe clean with Pararapide Cleaner 3mm beyond surface to be treated. Prime with Pararapide Metal Primer (detailed elsewhere).				
3.8	**Loose Coverings and/or Patch Repairs - Remove**: All loose coverings, patch repairs, etc. must be removed and discarded to suitable waste containers.				
3.9	**Existing Asphalt Surface - Preparation**: Warm and smooth out all ridges and blisters. Where necessary, make good any damage to the asphalt surface.				

3.10	**Existing Asphalt Surface - Walkways and Balconies - Additional Requirements**: Contractor Requirement: Prior to application of any primer. Contractor to ensure that any undulations, deflections or poor falls that cannot be overcome by warming and smoothing are reported to both Langley and the CA for further inspection.				
3.11	**Existing Asphalt Details - Remove / Repair**: Check integrity of asphalt upstands, skirtings and details generally. Cut back or repair as appropriate to ensure a sound secure base for the new Pararapide waterproofing system.				
3.12	**Redundant Chases - Make Good**: Rake out and prepare any redundant chase lines. In-fill with sand and cement mortar, flush with wall face.				
3.13	**Upstands to Brickwork - New Chase**: In preparation of a new cover flashing the contractor is to cut a new chase to a minimum 25mm depth and at a minimum height of 150mm above the intended finished roof level surface. Brush clean and prime with appropriate primer to seal substrate.				
3.14	**Door Thresholds - Existing Cill/s**: Upstand to underside. Remove all loose and friable material back to a sound base. Prime substrate with the appropriate primer. Apply Pararapide Filler to make good all surfaces.				
3.15	**Pipe Penetrations Generally - Extend**: Extend where necessary. Collar or pipe sleeve/s must be a minimum of 150 mm above the finished roof surface. **Note:** Extension pipe/s must be fixed inside the existing.				
3.16	**Substrate Preparation - General**: All substrates must be: clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of the primer or and/or resin to the substrate. Some surfaces may require scarifying, sandblasting or grinding to achieve a suitable substrate.				
3.17	**Minor Surface Repairs**: Holes, splits, cracks etc. Fill with Pararapide Filler using a trowel to provide an even finish.				
3.18	**Priming - Brickwork, Timber and Mortar**: Absorbent surfaces generally. Surface must be dry. Prime with Pararapide Masonry Primer and allow to dry.				
3.19	**Priming - Metal Substrates**: All metal surfaces (including outlets & pipes). To prepared surface. Prime with Pararapide Metal Primer and allow to dry.				
3.20	**Priming - Asphalt**: All asphalt surfaces (including asphalt details). Sweep clean of all dirt, debris and loose material. Surface must be dry. Prime with Pararapide Asphalt Primer and allow to dry.				

4	**WATERPROOFING - COVERINGS**				
4.1	**Details - Generally**: All skirtings, details, penetrations, etc. to be waterproofed prior to the main area (see Detail Section).				
4.2	**Main Field Area - Pararapide WP**: To a prepared surface. Apply a liberal coating of the mixed resin with brush or roller at a minimum rate of 2 kg/m². Roll out the (dry) Pararapide Fleece onto the resin, smooth side uppermost, avoiding any folds or wrinkles and allowing the resin to saturate the fleece. Using the large roller or brush, work the resin into the fleece, eliminating any air bubbles or wrinkles etc. Once the fleece is saturated, immediately apply a second coat the mixed resin at a minimum rate of 1 kg/m². See 'Fixing Instructions' for correct mixing procedures.Pararapide Fleece. Side and end laps minimum 50mm.				
4.3	**Main Field Area - Pararapide SL Mortar**: To a prepared surface. Apply the mixed resin at a rate of approximately 4 kg/m². Application to be with a serrated trowel to achieve an even coat. Cover only one working area at a time (1.4 – 1.9 m²). **Note:** The mixed resin consists of 3 components. See 'Fixing Instructions' for correct mixing procedures.				
4.4	**Main Field Area - Slip-Inhibiting Finish - Pararapide Quartz**: Broadcast Pararapide Quartz Granules onto wet Pararapide SL Mortar. Coverage approximately 3 – 4 kg/m² (0.71 – 1.25mm granules). Allow mortar to cure then remove excess granules by sweeping or hoovering.				
4.5	**Main Area & Details - Pararapide Sealer Coat**: Colour Dark Grey (RAL 7043). To a prepared surface. Apply the mixed resin with a roller or brush at a rate of 0.4 – 0.8 kg/m². Cover See 'Fixing Instructions' for correct mixing procedures.				
5	**DETAILS**				
5.1	**Detailing General Requirement - Pararapide WP Detailing**: To prepared surface. Apply a liberal coating of Pararapide WP Detailing coating system with a brush or roller at a rate of 2.5 – 3.5 kg/m². Roll out and embed 260mm wide Pararapide Fleece. Immediately apply a second coat of Pararapide WP Detailing. See 'Fixing Instructions' for correct mixing procedures.				
5.2	**Detail Skirtings - Requirement**: All detail skirtings must be a minimum of 150mm above the finished roof surface level.				
5.3	**Detailing Sealer Coat - Pararapide Sealer Coat**: Colour Dark Grey (RAL 7043). To a prepared surface. Apply the mixed resin with a roller or brush at a rate of 0.4 – 0.8 kg/m². Cover See 'Fixing Instructions' for correct mixing procedures.				

5.4	**Expansion Joint - Existing**: **NB:** Work to be completed prior to the installation of the main coating. Rake out joint and remove all dirt, debris and loose material. Prime with the requisite Pararapide primer (where applicable). Infill joint gap with Pararapide Filler, forming a bucket handle profile along the length of the joint and allow to cure. Apply a liberal coating of the mixed Pararapide WP detailing resin with brush or roller at a rate of 2.5 - 3.5 kg/m2. Roll a pre-cut (dry) piece of Pararapide Fleece, 100mm wide, onto the resin (smooth side uppermost), allowing the resin to saturate the fleece. Using the roller or brush, work the resin into the fleece, ensuring it is fully bedded into the formed groove. Once the fleece is saturated, immediately apply a second coat the mixed resin. Repeat the process incorporating 150mm wide fleece. Apply a 20mm wide strip of masking tape equidistant along the centre of the joint, prior to applying the Pararapide SL Mortar layer (detailed elsewhere). **Note:** This must be removed before the mortar cures.				
5.5	**Internal Drainage - ParaFurb Outlets**: Install to suit diameter of fall pipes, ParaFurb Outlet. Fully bond bitumen flange membrane to previously installed Paratene carrier membrane or appropriate substrate. To a primed surface apply the full Pararapide system over the flange and dressed into the outlet opening.				
5.6	**Where Design of Existing Outlets Preclude the Use of ParaFurb Outlets**: Remove grating, clamping ring and existing waterproofing. Clean and prime flange and bowl. Fully bond waterproofing layers to the flanges and openings to form watertight seals. Secure with clamping rings and re-fit grating. Prior to work continuing a method of waterproofing must be demonstrated, on site, with a working example, one for each type of outlet, for approval by Langley Waterproofing Systems Ltd. Once approved, the same method must be used for all subsequent outlets.				
5.7	**Proprietary Outlets - New**: To primed surface. Apply a liberal coating of specified waterproofing system to the flanges and openings with a brush or roller at a rate of 2.5 – 3.5 kg/m². Embed 260 mm wide reinforcing fleece and immediately apply a second coat of waterproofing. See 'Fixing Instructions' for correct mixing procedures. On completion, fit clamping ring and leaf guards (if appropriate).				
5.8	**Step Edge Protection - Pararapide Stair Nosing - TBC by CA**: Cut Pararapide aluminium stair nosing to size and adhere to the substrate with Pararapide Filler.				
5.9	**Hand Rail Stanchions**: To a prepared and primed (if required) surface. Apply Pararapide WP Detailing, reinforced waterproofing. Coating should extend up the stanchion by a minimum of 150mm above the finished level of the roof surface. Protect with a weathering collar or secure with a stainless steel Jubilee clip and Langley Gap-Seal Mastic. All Jubilee clip tensioners should face away from any proposed access routes.				

5.10	**Junction with Existing Waterproofing System**: Over a minimum width of 300mm; surface finish to be removed. Clean and dry surface. Thoroughly prime existing substrate with appropriate primer (subject to adhesion test) and allow to dry. Lap onto the existing by minimum 150mm; sealer coat to extend a further 150mm beyond. **Note: It will not be possible to guarantee this junction.**				
5.11	**Skirting to Chase**: Existing Prepared Chases. The full Pararapide WP Detail system (including reinforcing fleece) to be dressed to the full depth (25mm) of the chase. Allow to cure and point with Langley Gap-Seal Mastic.				
5.12	**Full Staircase Detailing - TBC by CA**: Continue the full Pararapide system to the edge of the top step. Apply fully reinforced Pararapide WP Detailing down each riser and tread encapsulating the full staircase. To a prepared surface. Apply Pararapide SL Mortar, fully mixed resin, at a rate of approximately 4 kg/m². Application to be with a serrated trowel to achieve an even coat. Cover only one working area at a time (1.4 – 1.9 m²). On all treads areas of the staircase only, whilst Pararapide SL Mortar is still wet, evenly broadcast a layer of Pararapide Quartz Granules at a rate of 3-4 kg/m². Once Pararapide SL Mortar has cured remove any residual Pararapide Quartz Granules by sweeping or vacuuming. Finally, apply Pararapide Sealer Coat at a rate of 0.4-0.8 kg/m² to the surface of the fully cured wearing course. Colour: RAL 7043 (Dark Grey). To terminate the Pararapide system at the base of any step, turn the system down the full face of the last riser, terminate to a taped edge and seal with Langley Gap-Seal Mastic sealant. Where required, cut Pararapide aluminium stair nosing to size and adhere to the edge of each tread with Pararapide Filler. Pararapide Quartz Granules and Pararapide Sealer Coat must be suitably set back to accommodate the application of the stair nosing **Note:** For mixing and installation requirements, please refer to the Fixing Instruction and Guidance sections of this specification.				
5.13	**Skirting to Low Door Thresholds**: To prepared substrate. Apply Pararapide WP Detail system (including reinforcing fleece). Dress to the underside of the overhanging threshold. Abutment with underside of threshold to be sealed with a bead of Langley Gap-Seal Mastic. **Important Note:** Details below 150mm will not be covered by the Langley Waterproofing guarantee.				

6	**COMPLETION**				
6.1	**Guarantee Requirement - Final Inspection**: In accordance with our guarantee requirements, Langley Waterproofing Systems Ltd are to be notified once all works are complete. A final inspection will then be undertaken by us and the contractor must ensure that safe working access is provided.				
6.2	**Rainwater Downpipes - Existing**: Re-fix all downpipes, supporting brackets and shoes upon completion of the new waterproofing system. Allow for any modifications / adaptations necessary to accommodate any raised levels presented by the new roofing system. Replace any broken or damaged items to match existing.				
6.3	**Internal Rainwater Outlets - ParaFurb Refurbishment Outlets**: Check for blockages. Clear if necessary and leave in a free-running condition. Ensure Ribseal is tightly secured to form correct pressure seal to pipe/s for applicable units. Ensure all supplied leaf guard / gratings are in place and tightly secured.				
6.4	**Completed Roof Surface - General**: Ensure visual inspection of all laps is undertaken to confirm integrity of system prior to final guarantee inspection. Sweep, clean and remove debris to suitable waste container.				
6.5	**Arisings from Works**: Remove from site all arisings for return to contractor storage or safe disposal.				

Schedule of Products

Langley Spray-on Primer - Canister
Synthetic rubber primer. Supplied as a canister (450mm x 330mm). Packaged in a cardboard carry box. Canister content: 18.5 kg. Gross canister weight: 24.5 kg
Coverage Rates: Self-adhered systems – up to 150m² (0.12m²/kg) Torch-on system – up to 250m² (13.5m²/kg). Other components required and supplied separately include: Applicator gun and 3m hose (re-usable). Spray-tip and Spray Cleaner

Parevapo SBS Metal Lined Vapour Barrier - Roll Size: 10m x 1m
Metal-lined, double-reinforced, SBS-modified, elastomeric bitumen vapour barrier. Top Face: Sanded. Underside: Macro-perforated fusible film. Nominal Weight: 38kg/roll.

Paradeck Cement Board (20mm) - Standard Size: 1.2m x 2.4m
Multi-purpose, A1 non-combustible, fully reinforced, magnesium oxide/sulphate cement board.

Nominal Weight (20mm): 22.20kg/m2.

Parevapo SA Self-Adhesive Metal Lined Air and Vapour Control Layer - Roll Size: 15m x 1M
Double-reinforced, metal-lined, SBS elastomeric bitumen vapour barrier. Top Face: resin coating, colour Blue. Selvedge: Self-adhesive with a peel-off polyethylene film; Nominal Width 100mm. Underside: Heat activated self-adhesive bitumen with a siliconised peel-off release film. Nominal Weight: 25kg/roll (1.6kg/m²).

Pararock Tapered Insulation - 1200mm x 1000mm
Pararock roof insulation boards. Top Face: Mineral Glass Fibre Fleece. Board Thickness: Variable to scheme. Cut-to-falls scheme drawings are supplied directly by Langley Waterproofing Systems Limited.

Langley Metal Hard Edge
Galvanised Steel Angle. 3m lengths x 50mm x 50mm. Thickness 0.7mm.

Paradiene [35] SR4 Underlayer - Roll Size: 8m x 1m
Polyester-reinforced, torch-applied SBS-modified elastomeric bitumen underlay. Top Face: Sanded. Underside: Macro-perforated fusible film. Nominal Weight: 37kg/roll.

Adepar JS Underlayer - Roll Size: 10m x 1m
Self-adhesive, partially bonded, glass / polyester composite-reinforced, SBS-modified, elastomeric bitumen underlay. Top Surface: Macro-perforated fusible film with siliconised peel-off film over self-adhesive selvedge. Underside: Sanded between self-adhesive strips, protected with siliconised peel-off film. Nominal Weight: 33kg/roll.

Paradiene SA Self-Adhesive Underlayer - Roll Size: 10m x 1m
Polyester reinforced, SBS elastomeric bitumen membrane. Top Face: resin coating, colour Red. Selvedge: Self-adhesive with a polyethylene peel-off film. Nominal Width 100mm. Underside: heat activated self-adhesive bitumen with a siliconised peel-off release film. Nominal Weight: 30kg/roll (3kg/m²).

Parafor Solo SA (Dark Grey) Self-Adhesive Cap Sheet - Roll Size: 7.5m x 1m
Polyester reinforced, SBS elastomeric bitumen cap sheet with granule surface finish. Colour: Dark Grey. Selvedge: Self-adhesive with a polyethylene peel-off film. Nominal width 100mm. Underside: heat activated, self-adhesive bitumen with a siliconised peel-off release film. Nominal Weight: 38kg/roll (5kg/m²).

Graviflex Root Barrier Cap Sheet - Roll Size: 5m x 1m
Polyester-reinforced, SBS-modified, elastomeric bitumen cap sheet with root-resistant additive for roof garden waterproofing. Granule-surfaced with fusible film on the underside. Nominal Weight 26.13kg/roll (5x1m).

Electronic Roof Integrity Test
Requirement for Green Roof Applications prior to application of Soft and Hard Landscaping. Quotations will be provided at Tender Stage.

ParaFlash B3
Non-lead Flashing System. SBS elastomeric bitumen reinforced with a core of flattened, expanded aluminium mesh. Top Face: charcoal coloured granules. Underside: polypropylene film. Roll Size: 12m (length) x 150mm (width). Nominal Thickness: 3.5mm. Nominal Weight per Roll: 7.2Kg. Nominal Weight per m^2: 4Kg. Each roll is supplied with 25 No. stainless steel chase retaining clips. Chase mastic sealant and lap adhesive are supplied separately.

LangStik SF Can - Solvent-free PU Insulation Adhesive
Single component moisture curing solvent free polyurethane adhesive. Packaging: 6.5kg can. Nominal Coverage: 35m^2/can.

LangStik SF Canister - Solvent-free PU Insulation Adhesive
Single component moisture curing solvent free polyurethane adhesive. Container: 18.5 kg / metal canister. Labelling: LangStik SF Canister. Nominal coverage, up to 350 m^2 / canister.

LangStik SF Canister (for Pararock) - Solvent-free PU Insulation Adhesive
Single component moisture curing solvent free polyurethane adhesive. Container: 18.5 kg / metal canister. Labelling: LangStik SF Canister. Nominal coverage, up to 150 m^2 / layer / canister.

Langley Lightning Conductor Retention Clip
Plastic lightning conductor retention clip with integral 100mm x 100mm Parafor Solo felt pad for torch-on application. Packaging: 50 No. per carton.

LangVent - Refurbishment Vent Pipe
Stainless steel spigot with vent cowl. SBS elastomeric bitumen membrane flange. Spigots to suit diameters of existing vent pipe. Nominal diameters, 75mm, 100mm and 150mm. See Langley 'Technical Data Sheet' for details.

ParaFurb Outlets
Internal rainwater outlet with 500mm x 500mm flexible SBS felt membrane attachment flange.
Spigot Depth as Standard: 400mm.
Available Sizes:

- Drain Diameter 50mm - To suit existing pipe sizes of 59mm-75mm complete with EPDM rubber Ribseal and aluminium turbine leaf guard
- Drain Diameter 62mm - To suit existing pipe sizes of 71mm-88mm complete with EPDM rubber Ribseal and aluminium turbine leaf guard
- Drain Diameter 75mm - To suit existing pipe sizes of 85mm-106mm complete with EPDM rubber Ribseal and aluminium turbine leaf guard
- Drain Diameter 95mm - To suit existing pipe sizes of 103mm-109mm complete with EPDM rubber Ribseal and aluminium turbine leaf guard
- Drain Diameter 145mm - To suit existing pipe sizes of 150mm-198mm complete with EPDM rubber Ribseal and aluminium turbine leaf guard

Additional diameter, spigot sizes and accessories are available upon request.

ParaTrim GRP Edge Trim
Available Profiles: PF55 (55mm) / PF82 (82mm) / PF107 (107mm) / PF132 (132mm). Supplied in 3m lengths.
Available Accessories: 240mm x 240mm internal and external 90° pre-formed corners.
Available Colours: Charcoal only.

Langley TB62 GRP Termination Bar
Dimensions: 62mm Deep x 3m Length
Available Colours: White - Dove Grey - Charcoal

Langley TB62 GRP Termination Bar
Dimensions: 62mm Deep x 3m Length
Available Colours: White - Dove Grey - Charcoal

LangGuard
Free-standing permanent guardrail edge protection system.

Pre-treated Timber
As recommended in BS 5268: Part 5. The treatment should be compatible with the use of bitumen-based products. To be sourced direct from supplier.

Langley Gap-Seal Mastic
For use with ParaFlash B3, termination bars and lead counter flashings to close joints. Low modulus neutral cure silicone mastic sealant. Approximately 6Lm for 10mm x 10mm bead. Supplied in 310ml tube cartridges. Colour: Black.

ParaFlash B3 Lap Adhesive
For use with ParaFlash B3 to bond end laps and to substrate surfaces where required. High-performance single component hybrid MS polymer adhesive. Approximately 5Lm for 10mm x 10mm bead. Supplied in 290ml tube cartridges. Colour: Black.

Code 4 Rolled Lead Sheet
For use as counter flashings. To be sourced directly from a supplier of the contractors choice but must conform to BS EN 12588: 1999.

Code 5 Rolled Lead Sheet
For use to create chutes, pipe sleeves, outlets and saddles. To be sourced direct from supplier and conform to BS EN 12588: 1999.

Rockpanel Fascias and Soffits. To be obtained from
ROCKWOOL B.V.
ROCKPANEL Group
Wern Tarw
Pencoed Bridgend
CF 35 6NY
Tel.: +44 (1656) 863 210
Fax: +44 (1656) 863 611
E-mail: info@rockpanel.co.uk

Clout Nails - Extra Large Headed
Minimum 20mm long galvanised steel to BS 1202: Part 1. To be sourced direct from supplier.

Clout Nails - Extra Large Headed
Minimum 25mm long galvanised steel to BS 1202: Part 1. To be sourced direct from supplier.

Proprietary Roof Outlets
Suitable for flat roof membrane waterproofing systems, with built-in clamping rings and leaf guards to be sourced direct from supplier.

Pararapide Asphalt Primer
A 2 component, solvent-free resin primer. Colour: White. Approximate coverage rate: 0.50 kg/m² (20 m² per drum). Packaging. 5 & 10 kg drum.

Pararapide Masonry Primer
A two component, solvent-free PMMA resin primer. Colour: White. Approximate coverage rate: 0.50 kg/m² (20 m² per drum).
Packaging. 10 kg drum (catalyst sold separately).

Pararapide Metal Primer
A single component, solvent-free, acrylate based primer. Colour: Grey. Approximate coverage rate: 0.20 kg/m² (5m² per can).
Packaging. 1 kg can.

Pararapide WP
A two component, solvent-free, PMMA based waterproofing resin. Colour: Grey (RAL 7043). Minimum coverage rate: 3 kg/m². 2 x coats (3.3 m² per 10 kg drum - 8.3 m² per 25 kg drum).
Packaging. 10 kg or 25 kg drums (catalyst sold separately).

Pararapide WP Detailing
A two component, solvent-free, high viscosity, thixotropic PMMA based waterproofing resin. Colour: Grey (RAL 7043). Minimum coverage rate: 3.00 kg/m² (1.6 m² per 5 kg tin) (3.3 m² per 10 kg drum) (8.3 m² per 25 kg drum).
Packaging. 5 kg tin. 10 kg or 25 kg drums (catalyst sold separately).

Pararapide SL Mortar Sand
Low dust, kiln dried quartz/sand mix. Filler for Pararapide Mortar Resin.
Packaging. 23 kg bag. (to be mixed with 10 kg of Pararapide Mortar Resin)

Pararapide SL Mortar Resin
A solvent-free PMMA based resin binder. Requires Pararapide SL Mortar Sand and Catalyst (sold separately). Colour: Grey (RAL 7032).
Packaging. 10 kg drum. Coverage rate (when fully mixed) 0.7 kg/m². 7 m² /drum.

Pararapide Sealer - Dark Grey
A two component, solvent-free, PMMA-based, pigmented (RAL 7043), sealing resin.
Approximate coverage rate: On smooth surface – 0.5 kg/m² (20 m²/drum).
On quartz granule finished surface - 0.60 kg/m² (16.6 m² per 10 kg drum).
Packaging. 10 kg drum (catalyst sold separately).

Pararapide Reinforced Filler
A two component, solvent-free, fibre-filled thixotropic filler. Colour: Grey (RAL 7032).
Approximate coverage rate: 3 kg/m² per layer.
Packaging. 5 kg and 10 kg drums (catalyst sold separately).

Pararapide Filler
A two component, solvent-free, fibre-filled thixotropic filler. Colour: Grey (RAL 7032).
Packaging. 5 kg and 10 kg drums (catalyst sold separately).

Pararapide Catalyst
Oxygen-rich, powdered, peroxide based compound. Colour: White.
Packaging. 0.10 kg plastic bag. Usage (normal conditions) 1 x bag = 2%. (ie. 1 bag per 5 kg of resin).
Packaging. 0.10 kg plastic bag.

Pararapide Fleece 1.05 m
A synthetic fibre reinforcement fleece. 110 g/m². Colour: White.
Packaging. Roll 1.05 x 50 m (52.5 m²/roll). Coverage approximately 47.5 m²/roll.

Pararapide Fleece 0.26 m
A synthetic fibre reinforcement fleece. 110 g/m². Colour: White.
Packaging. Roll 0.26 x 50 m (13 m²/roll).

Pararapide Cleaner
An ethyl-acetate cleaning solvent.
Packaging. Canister 10 or 30 litres.

Pararapide Quartz
Quartz granules: 0.20 -0.60 mm, 0.71 – 1.25 mm, 1.00 – 2.00 mm.
Packaging. 25 kg Bag. Approximate coverage rate 3.00 kg/m² (8.3 m² /bag)

Pararapide Nosing
Aluminium stair-edge protection. Profile Dimensions: 41 mm top face x 23.2 mm front face.
Supplied in 2 m lengths.

Pararapide De-Bonding Tape
A self-adhesive, multi-purpose, fabric reinforced cloth tape.
Supplied in 50 m rolls: 50 mm or 100 mm wide.

Bucket 12 L
A 12 litre plastic tub for mixing, cleaning etc.

Bucket 32 L
A 32 litre plastic tub for mixing, cleaning etc.

Sheepskin Roller 100 mm
A mini roller for detail work. 100 mm wide.

Sheepskin Roller 250 mm
A roller for coating application. 200 mm wide.

Sheepskin Roller Frame 100 mm
Frame for mini roller.

Sheepskin Roller Frame 250 mm
Frame for 250 mm roller.

Telescopic Extension Pole
For 250 mm roller frame. 750 mm – 1500 mm.

Paddle Mixer
600 mm. For use with electric drill.

Scissors
10” scissors (for fleece etc).

Float with Clamping Device
For self-levelling mortar etc. 280 mm x 100 mm.

Notched Blade
For float with clamping device. Notch shape 92.

ZEC Disc - 127 mm
For substrate preparation. Use with an angle grinder.

Masking Tape 50 mm
Rolls. 50 mm x 50 m.

Gloves - One Size
Dermatril Gloves.

Fixing Instructions

Bitumen Membranes Generally
Waterproofing membranes must be installed in accordance with BS 8217: 2005, BS 8000: Part 4: 1989 and the Langley Fixing Instructions.

Membranes Generally
Lay in direction of fall. Lay parallel to the preceding layer, breaking joints by at least 300mm. Stagger end laps by minimum 300mm. In gutters, membranes to be laid lengthways to minimise laps.

Note: When lifting membrane roll weights in excess of 25kg, a two person or mechanical lift is required.

Bitumen Membranes - Internal Gutters
To minimise laps, membranes must be laid lengthways, in direction of fall. Both surfaces being bonded must be heated and a 5mm-10mm bead of bitumen exuded from all laps.

Parapet Details - GRP Trims
Over 500mm girth. Detail cap sheet, butt joint to rear edge of trim. Cap sheet cover strip: Fully bond to trim and cap sheet.

Requirement when Torching Bitumen Membranes
Surfaces being bonded must be heated and a required 5mm-10mm bead of bitumen must be extruded from all laps and is applicable to all layers. End laps, or as details require when bonding onto granule surfaced membranes, must first be heated and the granules removed to ensure a bitumen-to-bitumen bond.

Hot Air Welding Bitumen Membranes
Both surfaces being bonded must be heated and a narrow bead of bitumen 5mm-10mm must be exuded from all laps. Laps onto granule surfaces, end laps etc must first be heated and the granules removed to ensure a bitumen-to-bitumen bond.

Spot Bonding Bitumen Membranes by Torching
Torch top of roll in a staggered spot formation as the roll is pushed forward. Side and end laps to be fully bonded by torching. Both surfaces being bonded must be heated and a 5mm-10mm bead of bitumen exuded from all laps.

Bonding Bitumen
Bitumen must not be heated to a temperature in excess of 260ºC, or above its flash point minus 15ºC (whichever is the lower), and should not exceed 240ºC at the time of laying. **Please note** that Langley Waterproofing Systems Ltd do not advocate the use of bonding bitumen unless other means of attachment are not possible.

Adepar Self Adhesive Bitumen Membranes
Fix in dry conditions at an ambient temperature greater than 15°C. At lower temperatures, but never less than 5°C, warm the self-adhesive compound with a torch. Unroll sheet and position. Re-roll and remove siliconised release film as the sheet is fixed in position with applied pressure. Side lap is self-adhesive. Apply pressure to lap with roller if required. End lap, seal by torching: Perimeters and Opening, 500mm wide, fully bond by torching. When torching, re-roll sheet and torch as it is unrolled, whilst simultaneously removing the siliconised film. Surfaces being bonded must be heated and a narrow bead of bitumen, 5mm-10mm, must be exuded from all laps.

Langley Spray-on Primer
Ensure substrates are dry and clean from grease, dirt and other contaminants before applying the primer. Set-up the canister as described in the Set-up & Maintenance Guides. Ensure the canister spray-system is spraying correctly and the spray-pattern is 300mm wide.
Apply 1-2 coats of the primer to the substrate, ensuring an even distribution of primer is achieved.
Allow the solvents to evaporate from the primer layer for a minimum of 20 minutes at 10°C. NB: this time will vary depending on temperature.

Flame-free Self-Adhesive Bitumen Membranes
Fix in dry, frost-free conditions and (where required) to a primed substrate. Note, primer must be Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). Unroll membrane and set out. Re-roll and remove siliconised release film as the sheet is rolled into position, gently heating the underside with a hot air gun and applying pressure with a weighted roller. Side lap is self-adhesive (AVCL & underlay only), however in certain conditions heat may be required. End lap, bond by heat welding with a hot-air gun. Lap must be sealed and checked for security as work proceeds. Cap sheet: All laps must be heat welded and a 5 - 10mm bead of bitumen exuded. For detailed information, refer to Langley Installation Guide IG5-0917 - SA-20 Flame Free Detailing System.

Flame-free Self-Adhesive Bitumen Membranes
Fix in dry, frost-free conditions and (where required) to a primed substrate. Note, primer must be Langley Spray-on (synthetic rubber) Primer (bituminous primer must not be used). Unroll membrane and set out. Re-roll and remove siliconised release film as the sheet is rolled into position, gently heating the underside with a hot air gun and applying pressure with a weighted roller. Side lap is self-adhesive (AVCL & underlay only), however in certain conditions heat may be required. End lap, bond by heat welding with a hot-air gun. Lap must be sealed and checked for security as work proceeds. Cap sheet: All laps must be heat welded and a 5 - 10mm bead of bitumen exuded.

Langhome Strip Slates
Install in accordance with BS 5534: 2003 and Langley Fixing Instructions. When installing with Colle Par Adhesive it is only effective if it is used in dry conditions and in a sufficiently plastic state to be spread by simple pressure applied to the element being bonded. The contents of packs of Langhome Strip Slates should be intermixed in case of slight shade variations. All cutting of Langhome Shingles must be done before they are fixed in place. When dust, dampness or temperature prevent adhesion to the adhesive strips, it is necessary to warm with a torch the adhesive strips and the undersides of the tails of the Langhome Strip Slates before applying pressure to each of the shingles as fixing proceeds.

Fixings Generally - Pull-Out Tests and Fixing Types
Fixing Pull-out Tests to be carried out by; and all fasteners to be obtained from:
Fixfast Ltd, Merlin House, Seven Mile Lane, Borough Green, Sevenoaks. Kent TN15 8QY.
Phone: 01732 882 387
Email: sales@fixfast.com

Mechanical Fixings - Parafoam Ultra Insulation Attachment
For Metal and Timber Deck Applications: Use Surefast® SF-RS 5.8 carbon steel fasteners and SF Tube Insulation Washers. Fixings must protrude a min 15mm beneath the deck (steel) or 12mm (plywood or timber).

For Concrete Deck Applications: Use Surefast® SF-RS 6.1 carbon steel fasteners and SF Tube Insulation Washers. Fixings must achieve a min 25mm embedment into the deck (subject to pullout testing).

Minimum number of fasteners per board is subject to project specific wind load calculations. However, as an absolute minimum: 4 per 1200mm x 600mm board, min 5 per 1200mm x 1200mm board and min 6 per 1200mm x 2400mm board. The requirement for additional fixings should be assessed in accordance with BS 6399-2: 1997 (Loadings for buildings. Code of practice for wind loads) or BS EN 1991-1.4: 2005 + A1: 2010 (National Annex to Eurocode 1. Actions on structures. General Actions. Wind Actions).

Fasteners at insulation board edges must be located > 50mm and < 150 mm from edges and corners of the board and not overlap board joints. Boards to be close butted with staggered joints.

Important Note: All existing and concrete deck types must undergo pullout testing to establish relevant mechanical performance is achieved. In exceptionally humid conditions (swimming pools, commercial kitchens etc) stainless steel fixing must be used.

For Surefast® fixings, technical assistance for wind load calculations and pullout testing please contact: Fixfast Ltd. Tel. 01732 882 387 sales@fixfast.com.

Bonding PIR Insulation with LangStik SF PU Adhesive
LangStik SF PU Adhesive - Canister (18.5 kg).
Guidelines for Use: Please note: A spray-tip is not required.
1. Ensure the insulation board or other roof substrate is dry and clean from grease, dirt and other contaminants before applying adhesive.
2. Set the canister up as described in the Set-Up and Maintenance Guide.
3. Ensure the LangStik SF Canister is applying a bead of adhesive approximately 20-40mm wide.
4. Apply beads at 300mm centres in the field area and 200mm centres in exposed perimeter zones of the roof or in compliance with specific wind uplift calculations.
5. Place the insulation board directly into LangStik SF.
6. Apply pressure to the insulation board to ensure full contact with LangStik SF Canister.
7. Allow to cure before weatherproofing the insulation board.

LangStik SF PU Adhesive - Can (6.5 kg).
Guidelines for Use: Applied direct from the can. Note. Once opened, contents of can must be used. Do not re-seal.
1. Substrate to be swept clear of all dirt, debris and loose material, prior to application of adhesive.
2. Pierce can to form a 20 mm hole.
3. Apply 20mm beads at 300mm centres in the field area and 200mm centres in exposed perimeter zones of the roof or in compliance with specific wind uplift calculations. Beads to be applied in a serpentine pattern.
4. Set board into the beads within 10-15 minutes and immediately walk-in the board to spread the beads for maximum contact.
5. Repeat walking-in every 5-7 minutes, until the board is firmly attached.
6. Allow to cure before weatherproofing the insulation board.

Bonding Pararock Insulation with LangStik SF PU Adhesive
Guidelines for Use with Canister (18.5 kg). Please note: there is no spray-tip required.
1. Ensure the insulation board or other roof substrate is dry and clean from grease, dirt and other contaminants before applying adhesive.
2. Set the canister up as described in the Set-Up and Maintenance Guide.
3. Ensure the LangStik SF Canister is applying a bead of adhesive approximately 20 - 40 mm wide.
4. Apply beads at 150mm centres in the field area and 100mm centres in exposed perimeter zones of the roof or in compliance with specific wind uplift calculations.s.
5. Place the insulation board directly into LangStik SF.
6. Apply pressure to the insulation board to ensure full contact with LangStik SF Canister adhesive.
7. Allow to cure before weatherproofing the insulation board.

LangStik SF PU Adhesive - Can (6.5 kg).
Guidelines for Use: Applied direct from the can. Note. Once opened, contents of can must be used. Do not re-seal.
1. Substrate to be swept clear of all dirt, debris and loose material, prior to application of adhesive.
2. Pierce can to form a 30 mm hole.
3. Apply 30mm beads at 150mm centres in the field area and 100mm centres in exposed perimeter zones of the roof or in compliance with specific wind uplift calculations. Beads to be applied in a serpentine pattern.
4. Set board into the beads within 10-15 minutes and immediately walk-in the board to spread the beads for maximum contact.
5. Repeat walking-in every 5-7 minutes, until the board is firmly attached.
6. Allow to cure before weatherproofing the insulation board.

ParaFurb Outlets
ParaFurb Outlets must not be installed to outlet positions that already have an existing refurbishment outlet in place. Any existing refurbishment outlets or lead sleeve inserts must be removed with surrounding substrates being made good prior to any new ParaFurb Outlets being installed.

Fitting Instruction for units with EPDM rubber RibSeals:

- Select the correct size of outlet to suit the diameter of the downpipe.
- Check depth of existing outlet / downpipe and, if necessary, cut spigot to length. Minimum length of spigot must be 150mm.
- Prior to installing outlet, fix in place required system underlay or underlay soaker, 500mm x 500mm.
- Insert EPDM rubber Ribseal onto the end of the spigot. Ensure Ribseal fits tightly and shoulder is in full contact with the end of the spigot. Then Insert the complete assembly into the downpipe, ensuring the stainless steel supporting flange under the membrane flange is in full contact with the underlay / soaker. Secure in position with suitable fixings and washers through the four holes provided. Fully bond the outlet membrane flange to the underlay / soaker. Where applicable, fully bond the system cap sheet to the membrane flange. Install leaf guard / grating supplied.

LangVent

- Remove telescopic outer sleeve from vent assembly. Ensure rubber "O" ring seal is in place approximately 25mm from the end of the inner spigot.
- Place inner sleeve with the flexible flange over existing vent pipe.
- Temporarily slide telescopic outer sleeve over the inner pipe and into existing vent pipe, ensuring rubber "O" ring is in place to centralise the inner pipe and flange.
- Ensure the s/s supporting flange beneath the flexible membrane flange is in full contact with the underlay / soaker. If necessary, secure in position with suitable fixings and washers through the four holes provided.
- Fully bond the flexible membrane flange to the underlay / soaker.
- Temporarily remove telescopic sleeve and fully bond the system cap sheet to the membrane flange.
- At base of sleeve form a fillet with Langley Gap-Seal mastic.
- Re-fit telescopic outer sleeve over the inner sleeve and push fully home.
- Fix s/s vent cowl to top of assembly with fixings provided.

Note: Not to be used with hot flues.

Exposed Substrates - General Requirement
All structural deck types and detail substrates must be kept dry at all times during the construction phase.

Skirtings Behind Existing Slates / Tiles, Cladding, etc
When forming skirtings behind existing roof tiles / slates, vertical cladding or timber boarding, particular attention must be paid to the risk of fire due to old, dry and dusty materials. Torch-on application must be undertaken with great care and, if necessary, following an assessment of the risk on site, an alternative method of attachment should be used.

Cold Roof Construction - Ventilation
The roof voids in cold roof constructions must be ventilated in accordance with BS 6229: 2018 and BS 5250: 2021.

Hybrid Roof Construction
In hybrid roof constructions, consideration must be given to ensuring that adequate condensation control is achieved in accordance with BS 6229: 2018 and BS 5250: 2021.

Damp Proof Course
Where waterproof skirtings and counter-flashings are being installed at a higher position than an existing damp-proof course, a new cavity tray must be installed above the new proposed finishes, especially in exposed conditions. Any damp-proof courses that are covered by Langley waterproofing membranes are done so purely at client risk and will not be covered by the Langley Guarantee.

Pararapide Resins (2 Components) - Mixing
Mix tub of resin with a twin paddle agitator for a minimum of 1 minute until the liquid has a uniform colour. Add the pre-measured Pararapide Catalyst and continue mixing for 2 minutes until the powder is completely mixed. Note. The catalyst is completely dissolved when there no white specs remaining.

Pararapide SL Mortar (3 Components) - Mixing
Mix tub of resin with a twin paddle agitator for a minimum of 1 minute until the liquid has a uniform colour. Pour the mixed resin into a large (32 litre) polythene bucket and add Pararapide SL Mortar Sand at a ratio of 2.3 kg of sand to 1 kg of resin. Add the pre-measured Pararapide Catalyst and continue mixing for 2 minutes until the powder is completely mixed. Note. The catalyst is completely dissolved when there no white specs remaining.

Pararapide Fleece
NB fleece must be dry. Apply directly to the wet Pararapide resin coating. Side & end laps 50 mm. Roll out, smooth side up, avoiding any folds or wrinkles (the fleece will rapidly saturate with the resin). Use the 250 mm roller (for details use the 100 mm roller) or a brush to work the fleece into the resin, working from the bottom up, to eliminate air bubbles, wrinkles etc. Once fleece is saturated, immediately apply a second coat of mixed resin.

Pararapide Detailing Fleece
NB fleece must be dry. Roll out, smooth side up, avoiding any folds or wrinkles and apply directly to the wet Pararapide resin coating. The fleece will rapidly saturate with the resin. Use the mini 100 mm roller or a brush to work the fleece into the resin, working from the bottom up, to eliminate air bubbles, wrinkles etc. Once fleece is saturated, immediately apply a second coat of mixed resin.

Pararapide - Adhesion Testing
For main field area membranes and details. Substrates must be dry (maximum moisture content 6% (or 75% RH). Substrate to be prepared as per specification. Using the Pararapide Adhesion Testing Kit, carry out tests with 150 x 150 mm patches of Pararapide WP, leaving 50 mm of reinforcement exposed, and allow to cure. Satisfactory adhesion is deemed to have been achieved if either; the Pararapide coating cannot be removed; the reinforcement tears and the coating cannot be removed, or; inter-layer delamination occurs within the coating. These tests should be carried out periodically throughout the course of the works.

Design Note - Application Temperature
Pararapide PMMA cold applied waterproofing can be undertaken whilst air temperature is between - 15°C and 35°C. Note. The substrate must be a minimum of 3°C above the dew point.
An integrated, electronic measuring device is recommended for determining the dew point.

General Guidance and Requirements

Drying Out - Equipment Suggestions
Commercially available equipment includes the following:

- Leaf Blowers
- Hot Air Blowers
- Roof Pumps (puddle suckers)
- Bowdry Roller

Latent Defects
All specifications provided by Langley Waterproofing Systems Ltd are written on the basis that the substrates, roof deck and structure are sound and durable. We cannot accept responsibility for the consequences of latent defects in the roof deck and / or structure.

Installation
Waterproofing systems are to be installed in accordance with BS 8217: 2005, BS 8000: Part 4: 1989 and Langley Fixing Instructions.

Ventilation - Cold Roof Construction
Roof voids in cold roof constructions must be ventilated in accordance with BS 6229: 2018 and BS 5250: 2021.

Hybrid Roof Constructions
Consideration should be given to ensuring that adequate condensation control is achieved in accordance with BS 6229: 2018 and BS 5250: 2021.

Building Works - Caution Note
Building works adjacent to roofing operations: It is the roofing contractor's responsibility to ensure suitable protection of semi-completed or completed works is provided should any building works be undertaken, either by the roofing contractor or others; such as cutting of chases, re-pointing, new brickwork, rendering, etc.

Lead Work
Flashings and other sheet lead work must be carried out in accordance with the recommendations of the Lead Development Association and the Lead Sheet Association.

Protection of Works - Caution Note
Any references within this specification relating to plant, equipment or materials being temporarily removed and / or stored for use / re-use, must not be stored, during the entire course of the works, at any time, on semi-completed or completed areas unless suitable protection measures are provided beneath. No claims arising from failure to protect Langley Waterproofing Systems Ltd installed products will be entertained.

Damp-Proof Courses / Cavity Trays
Where there is no existing damp-proof course, or where the skirtings and / or counter-flashings are being installed at a higher level than the existing D.P.C., a new cavity tray should be installed, especially in exposed conditions. Where tops of new waterproof skirtings will be above the line of the existing damp-proof course or cavity tray, it is a requirement that the contractor makes suitable provision to renew and raise these to a higher level. The contractor must liaise with, and seek separate instruction from the client contract administrator as to the method of raising these details. Claims arising from failure to seek client instruction prior to commencement of works or provide suitable cost provision for this item will not be entertained by Langley Waterproofing Systems Ltd.

Exposed Openings - Caution Note
It is solely the contractor's responsibility that any exposed openings created during the construction phase; removal of rooflights / structural glazing, ducting, replacement of deck substrates, etc. must be temporarily and fully protected at all times to protect workforce and building occupants. Furthermore, any and all openings must be made watertight at the end of each working period.

Langley Felt Membrane Systems - Storage
Rolls of Langley waterproofing are to be stored under cover, on end, on a flat firm surface and, if outside, clear of the ground or supporting surface and sheet covered.

Unforeseen - Deleterious Materials
During the construction phase, any exposed or discovered unforeseen deleterious materials must be notified immediately upon finding to the client contract administrator and Langley Waterproofing Systems Ltd to await further instruction before works proceed. No claims arising will be considered through failure to report such findings.

Prepared Surfaces - Requirement
Prepared surfaces and substrates to receive new waterproof coverings must be prepared all in accordance with detailed specification notes contained herein and must be swept clean of all dirt, debris and loose material. In addition, all surfaces must be dry.

Upstand Skirtings - Requirement
For guarantee purposes, all upstand and skirting details must be a minimum height of 150mm above the finished roof surface level.

Upstand Skirtings - Requirement
It is the contractor's responsibility to ensure that any and all details found to be below the required 150mm requirement are raised to accommodate the extra thickness created by the new waterproofing system. No claims arising from failure to do so will be entertained by Langley Waterproofing Systems Ltd.

Perimeter Kerbs - Requirement
It is the contractor's responsibility to ensure that any perimeter non-watershed check kerb details meet the 50mm height requirement. The contractor must raise any perimeter kerbs where necessary to accommodate the new finished levels created by the new waterproofing system. No claims arising from failure to do so will be entertained by Langley Waterproofing Systems Ltd.

Langley Insulation Products - Storage
All insulation materials ***must be*** stored under cover. Plastic wrappings should not be considered to be sufficient protection for storage outside. If stored outside, insulation materials should be adequately protected with tarpaulins / sheeting and also be clear of the ground or supporting surfaces.

Completed Works Protection
Each layer of the installed Langley waterproofing system ***must be*** protected from any following trades, foot traffic, or other sources of damage during installation and other construction work. Where necessary, appropriate protection, such as new plywood sheets, must be provided.

Fire Safety
The Roofing Contractor is to provide adequate fire extinguishers and fire safety measures throughout the duration of the contract period.

Protection of Internal Outlet Positions - Requirement
All outlets must be temporarily covered throughout the contract period to prevent debris entering the outlet / drainage system. Covering to be such, that water run off is not impeded at any time.

Safe Working
All works are to be carried out in accordance with current Health and Safety Legislation.

Inclement Weather Protection
All necessary measures and allowances ***must be*** made for protecting the works from damage due to inclement weather. The contractor must ensure at the end of each working day or period, that any exposed membranes or substrates that are susceptible to damage through water ingress are sealed with a Langley system compatible membrane to ensure complete water tightness. No loose laid membranes or other such covers are permitted.

House Keeping
The Roofing Contractor is to maintain and keep the site tidy at all times. All debris, wrappers and surplus materials, etc. to be removed from the site each day or deposited in secure storage.

Gas Cylinders
Remove from roof levels at the end of each working day and store in a secure compound designed for the purpose.

Temporary Removal - General
Roof mounted plant and equipment to be temporarily removed and set aside for re-fixing upon completion. No plant and equipment is to be stored on semi-completed or completed areas of new works during the course of the contract unless suitable protection has been provided beneath.