

Stage 4: Landscape Material Report (Roof Terraces & Loggia)

KXC-P2-001-ALD816-L-91-904 rev P01

Date:	5 th October 2018	Original issue:	28 th Sept 2018	Project Ref:	ALD 816/18
Prepared by:	MF / HQ	Applied Landscape Design		Checked by:	KmJ
Re:	Kings Cross Central: Building P2 – Stage 4 Material Report				

1.0 Introduction:

- 1.1 This report is prepared in support of the preparation of the Stage 4 Detailed Design Drawing pack for the external works areas known as the Level 5 Terrace and the Loggia's on the 1st, 2nd, 3rd, 4th, and 9th floors. The material information defined here in sets a level of performance and product quality to be achieved – ultimately the suppliers, products fixing information and setting out will be subject to construction stage coordination with specialist contractors and suppliers (Stage 5 information).
- 1.2 This report outlines both hard and soft materials, and products proposed for the external works associated with the P2 project. It should be read in conjunction with the following General Arrangement drawings:
- | | |
|--------------------|----------------------------|
| 1st Floor: Loggias | KXC-P2-001-ALD816-L-91-001 |
| 2nd Floor: Loggias | KXC-P2-001-ALD816-L-91-002 |
| 3rd Floor: Loggias | KXC-P2-001-ALD816-L-91-003 |
| 4th Floor: Loggias | KXC-P2-001-ALD816-L-91-004 |
| 5th Floor: Terrace | KXC-P2-001-ALD816-L-91-005 |
| 9th Floor: Loggias | KXC-P2-001-ALD816-L-91-009 |
- 1.3 The report is broken down into the following sections:
- | | |
|-----------|---|
| Section 2 | Edges (planters, paving, façade interfaces) |
| Section 3 | Floor Finishes (level 5 terrace, loggias) |
| Section 4 | Pedestals (supporting granite) |
| Section 5 | Drainage Considerations |
| Section 6 | Soils (lightweight and fill materials) |
| Section 7 | Tree Anchors |
| Section 8 | Planting Proposals |
| Section 9 | BREEAM Considerations |
- 1.4 Where a product type has not been identified / proposed to date by the Employers Requirements / Stage 3 design information, the information presented illustrates options incorporated into the Stage 4 design pack. Where technical considerations arise, or potential installation / drainage / loading / procurement issues are identified, ALD utilise this report to explore alternatives or share the concerns to ensure a collaborative resolution. There are challenges in relation to the chevron pattern (cutting to points and at material interfaces), drainage, underlying drainage mats, down pipes from the floors above, and the use of either compacted gravels or resin bound gravels over a loose drainage board.

2.1 The following collates reference material on the various edge conditions encountered on the level 5 terrace and the loggia's. Details should be read in conjunction with the ALD drawings and the architectural information prepared by AHMM – particularly where the edges interface with door thresholds, columns, cladding and balustrade alignments. Further detail continues to evolve as the cladding contractors and manufacturers information comes together (this may remove the need for some edges in Stage 5).

2.2 Reference drawing: KXC-P2-001-ALD816-L-91-110 5th Floor Terrace Landscape Edges Layout

2.3 **Edge Type 1 – Paving edge**

2.3.1 5mm thick perforated aluminium edge by Kinley or equivalent – positioned below perimeter balustrade and retains the edge between either the Resin Bound Gravel maintenance route, or the granite chevron paving, and the adjacent finishes that sit below the balustrade / planter and the outer building ledge.

2.3.2 The top of the metal edge is to sit flush with terrace or loggia paving surface finishes (note that the finishes on the outside of the balustrade on level 5 is set slightly lower – but the outside face of the metal edge is deemed not visible from anywhere).

2.3.3 The 'L' shaped unit is to sit directly down on to the rigid insulation/waterproofing/protection layer. Consistency of the insulation to be assessed on installation – Edge Type 1 is to be laid level and as such a smaller 'upstand height might be required to allow a shallow bed / packer arrangement to be used – however – this must NOT block the flow of water over the waterproofing layer (see drainage section 5). Fixing to be confirmed in Stage 5 in discussion with the installation contractor and material suppliers.

2.3.4 In order to ensure the top of the L shaped profile is flush with the terrace or loggia finishes, it is noted that there are different levels / build ups from the top of waterproofing to the FFL as follows:

- 5th Floor Terrace 116mm build up zone (AHMM Detail 06, KXC-P2-001-18040-A-47-601).
- Loggias Varies as follows:
 - 72mm build up zone (AHMM Detail 01, KXC-P2-001-18040-A-47-640)
 - 88mm build up zone (AHMM Detail 01, KXC-P2-001-18040-A-47-601)
 - 123mm build up zone (AHMM Detail 02, KXC-P2-001-18040-A-47-601)

2.3.5 **Product: Roofedge range by Kinley** (extract below) or equal and approved

Standard product available in 50mm, 75mm, 100mm, 120mm, 150mm (and upwards) profile heights. Most appropriate product to be selected as per depth requirements listed above (where localised material build ups can take out any lips, consideration must be given where adjacent to perimeter balustrade to ensure that the height of the protection measures are not compromised).

Where 'shorter' units are used, packing out (without impacting movement of water across the waterproofing) or a localised drop in level could be considered.

2.4 **Edge Type 2 – Paving Edge**

As Edge Type 1 (116mm profile height) - located below cills to windows and doors, at building façade to 5th floor terrace. Units are effectively completely hidden from sight but are used to hold paving and landscape finishes in place. There is an opportunity to review façade / threshold details developed at Stage 5 to see whether these can be omitted if protection to façade / insulation not required. There is no movement of drainage water needed through these edges so no requirement for perforation.



Product properties	121022 (flexible)	121023 (rigid)	121024 (flexible)	121025 (rigid)	121010 (flexible)	121011 (rigid)	121012 (flexible)	121013 (rigid)	121014 (flexible)	121015 (rigid)	121016 (flexible)	121017 (rigid)	121018 (flexible)	121019 (rigid)	121020 (flexible)	121021 (rigid)
Edging Height	50mm	75mm	100mm	120mm	150mm	200mm	250mm	300mm								
Edging length	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm	2400mm
Edging foot width	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm	100mm
Available finishes	Mill finish/ powder coated to order															
Material specification	Aluminium															
Recycling	100% recyclable															

Description

L-profile aluminium edge restraint for green or ballasted roof applications available in either Flexible or Rigid lengths in various heights and thicknesses. Rigid lengths shown in the images above. Powder coat finishes available on request.

Applications

To edge or demarcate grass, planting, ballast and any other roof garden materials. Suitable for most green roof projects on residential or commercial buildings.

Installation Information¹

By installing the edge free-standing (weighed down by surface material) or bonding to membrane using a proprietary roofing adhesive (e.g. hot bitumen) or conventional torch-on membrane weld.

Storage & Handling

The product is securely packed in a single flute cardboard carton to ensure no movement of the product in transit and each carton is sealed with a fibre tape. Depending on the size / weight of the consignment this may be palletised.

Whilst there is no specific weight restrictions on what is or is not safe to lift in manual handling, an assessment of the health and safety risks should be undertaken and measures taken to reduce the risk of injury so far as reasonably practicable.

The following guidelines may be useful:

- Each person should be fully trained in manual handling techniques.
- The use of handling aids such as a trolley, fork-lift, pallet truck or conveyor should be used if moving large volumes of cartons.
- Break up large consignments into more manageable loads.
- Ensure that the product is stored at a reasonable height, so avoiding the lifting of cartons from floor level or above shoulder height.
- Reduce carrying distances of cartons.

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Edging **ExcelEdge** **RoofEdge**
Division Collection Range

Item 1: Product Information – Edge Type 1, 2, 3 at various heights

2.5 Edge Type 3 – Paving Edge

As Edge Type 1 (116mm profile height) - located between the resin bound gravel footpaths and maintenance margins, and the planter upstand edges (as planter edges do not come down to the roof level). These units are only visible along the top face of the 'L' shape and are NOT recommended to be coloured / coated – effectively forming a edge for levelling and material separation. These units are perforated to permit side to side movement of drainage water through to the syphonic outlets in the roof slab / rigid insulation.

2.6 Edge Type 4 – Paving Edge / Pinch to Waterproofing

2.6.1 Non-perforated aluminium edge forming edge to paving and providing protection to the precast concrete cladding where it comes down to terrace level – L shaped edge sits tight up against the column (AHMM undertaking a review of the waterproofing position and support to the column finishes).

2.6.2 This unit previously was 'upstanding above resin bound finishes to hide waterproofing, but evolving design is using a precast infill skirting piece.

2.6.3 Product: AluExcel range by Kinley (extract below)_or equal and approved

NOTE: Maximum profile height in this range is 150mm – final height to be confirmed in conjunction with the column / cladding and waterproofing requirements,



Product properties	101010 (flexible)	101012 (flexible)	101014 (flexible)	101016 (flexible)	101018 (flexible)	101020 (flexible)	101022 (flexible)	101024 (flexible)	101028 (flexible)	101029 (flexible)
Edging Height	18mm	25mm	40mm	50mm	65mm	75mm	100mm	120mm	150mm	150mm(reverse)
Edging thickness (top bead)	5mm	5.5mm	6mm	6mm	6mm	6.5mm	6.5mm	7mm	8.5mm	8.5mm
Edging length	2500mm	2500mm	2500mm	2500mm	2500mm	2500mm	2500mm	2500mm	2500mm	2500mm
Edging foot width	30mm	45mm	45mm	45mm	45mm	70mm	70mm	70mm	70mm	70mm
Fixing stake length	N/A	250mm	250mm	250mm	250mm	250mm	250mm	250mm	250mm	250mm
Typical install rate linear metres/ hour	40-45 metres	40-45 metres	35-40 metres	35-40 metres	35-40 metres	35-40 metres	35-40 metres	35-40 metres	35-40 metres	35-40 metres
Typical supply/ install cost £ per m	£7.00	£10.00	£13.00	£14.00	£14.50	£16.50	£19.50	£24.00	£28.00	£28.00
Available finishes	Mill finish/ powder coat to order									
Material Specification	6005 T6 hardened aluminium									
Recycled content	Part recycled/ 100% recyclable									

Description

L-profile aluminium edge restraint for hard landscape surfaces available in either Flexible or Rigid lengths in various heights and thicknesses. Flexible lengths shown in the images above. Powder coat finishes available on request.

Applications

To edge or demarcate asphalt, rubber coating and other hard landscape surfaces. Suitable for parks, playgrounds and around building perimeters. AluExcel uses Aluminium Alloy 6005 T6 which is a high performance alloy with a high natural resistance to corrosive conditions in normal environments. It also has a higher resistance to heat than other aluminium alloys making it suitable for use with hot asphalt or tarmac/adam surfacing up to 180°C.

Installation Information

18mm profile: By mounting on bitmac basecourse using proprietary masonry fixings.
All others: By mounting on compacted substrate (e.g. MOT Type 1) using 250mm steel Spiral Fixing Stakes. Other sub-base materials can be used - please contact our technical team to discuss. A bedding layer of dry mix 3:1 sharp sand / cement is recommended to ensure continual support of the edge restraint. When mounting on existing asphalt or concrete, use masonry nails or screw and plug fixings. Lengths can be joined using a Strip Connector fitted onto the inside face of the product, except for the reversed profile where the Strip Connector is used on the rear of the product (in situations where the outside surface is higher than the inside surface, leaving the inside face visible).

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Edging Division
ExcelEdge Collector
AluExcel Range

Item 2: Product Information – Edge Type 4

2.7 Edge Type 5 – Planter edge to outside edge of planting areas (parallel with perimeter balustrade)

2.7.1 6mm thick steel planter edge with 30mm wide flat return with rounded edge along top.

Refer to detail drawing KXC-P2-001-ALD816-L-91-701 for section.

2.7.2 Consistent 75mm upstand height (above the adjacent 600mm wide gravel maintenance path finishes levels). Note this is 75mm higher than on the ER's (which were flush with the gravel levels, but the maintenance margin was narrower at 400mm wide)

2.7.3 Polyester powder coated to match spandrel panels (blue black colour which moves with the light / angle of refraction). NOTE: Required planter profile height to ensure 75mm upstand = 190mm above waterproofing. The corner of this unit meets Edge Type 7 where transitions are to be smooth and joints are to be positioned away from corners (i.e. all corners to be prefabricated to an agreed site / length either side of the corner).

2.7.4 Product: Planterline Bespoke by Kinley (extract below) or equal and approved

NOTE: standard profile heights between 300-1200mm, therefore, bespoke 'low' planter edge required to meet above upstand requirements.

2.8 Edge Type 6 – Planter edge to shallow planters adjacent to the façade / columns

2.8.1 6mm thick steel planter edge with 30mm wide flat return with rounded edge along top.

Refer to detail drawing KXC-P2-001-ALD816-L-91-706 for section.

2.8.2 Consistent 385mm upstand height above the adjacent hardworks finishes.

2.8.3 Polyester powder coated to match spandrel panels (blue black colour which moves with the light / angle of refraction). NOTE: Required planter profile height to ensure 385mm upstand = 500mm above waterproofing where planter base is placed directly on to the waterproofing.

2.8.4 Product: Planterline Bespoke by Kinley (extract below)_or equal and approved



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Planterline Bespoke

Data Sheet
Reference: DS-PLBS-1017
1 of 2

Product Properties		PLANTERLINE BESPOKE
Dimensions	Maximum straight panel length	1980mm
	Maximum curved panel length	NA (avoid curves)
	Maximum return at corners	100mm (for ease of transport)
	Height range	To suit design (300-1200mm)
	Steel thickness	3mm
Other	Material specification	Corten A, Stainless Steel or Powder Coated
	Corner types	Welded or bolted
	Panel details	Single panel and preformed corners
	Recycling	100% recyclable

*Other heights can be achieved – please discuss your requirements with the Kinley technical team

Example panels shown below.



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Planters Bespoke Planters Planterline Bespoke
Division Collection Range

Description
Premium quality steel planter panels available in bespoke sizes suited to a wide range of designs, available in two different types of steel (Corten A and Stainless). Powder coat finishes are also available. Available in straight panels only.

Applications
Suitable for roof terraces, parks, playgrounds and many other external spaces. Planterline has a high resistance to corrosive conditions in normal environments.

Installation Information
Height must stay consistent within each panel, and the bottom edge must always sit level (which will require a stepped foundation on sloped sites). Please discuss your project with the Kinley technical team to determine the most suitable installation method. No welding required.
General information can be found in the dedicated Installation Guide (IG-PLBS).

Storage & Handling
The product is securely packed and sealed in clear plastic sleeving to ensure no movement of the product in transit. Depending on the size / weight of the consignment this may be palletised.
Whilst there is no specific weight restrictions on what is or is not safe to lift in manual handling, an assessment of the health and safety risks should be undertaken and measures taken to reduce the risk of injury so far as reasonably practicable.
The following guidelines may be useful:
a) Each person should be fully trained in manual handling techniques.
b) The use of handling aids such as a trolley, fork-lift, pallet truck or conveyor should be used if moving large volumes of cartons.

Item 3: Product Information – Edge Type 5, 6, 7 & 8

2.9 Edge Type 7– Planter edge to high level planter edges

2.9.1 6mm thick steel planter edge with 30mm wide flat return with rounded edge along top.

Refer to detail drawing KXC-P2-001-ALD816-L-91-601 and 602 for long elevations.

2.9.2 This element of edging provides the main retaining to the soils for the planting finishes – with a varying upstand height against the resin bound gravel and granite paving finishes. The height rises from the corner interfaces with edge type 5, rising to bench positions, and then rising further (to over 1m above paving) where tree planting occurs. Refer to drawings for indication of material unit lengths, key targets for joint positions and treatment at corners – all details to be defined in conjunction with the specialist fabrication team at Stage 5 pre construction drawing work.

2.9.3 Polyester powder coated to match spandrel panels (blue black colour which moves with the light / angle of refraction).

2.9.4 Product: Planterline Bespoke by Kinley (extract above)_or equal and approved

NOTE: bracing fins cannot be to full profile height – these fins sit on concrete foundation pads which are sitting on the drainage mat. The top of the concrete pad is above the level of the adjacent paving finishes, so the face of the planter panel extends down below the fin, and in front of the concrete pad. Refer to drawing KXC-P2-001-ALD816-L-91-720 for detail.

2.10 **Edge Type 8 – Planter edge as it passes below the benches**

2.10.1 6mm thick steel planter edge running along and under the proposed timber benches. Fins and support to the planter face to be extended and double up as a bespoke support to the timber bench finishes

Refer to detail drawing KXC-P2-001-ALD816-L-91-705 for details.

2.10.2 Polyester powder coated to match spandrel panels (blue black colour which moves with the light / angle of refraction).

2.10.3 It is noted that in some locations the soils to the planter behind the bench, do not hide all the support components to the back of the planter or the underside of the bench. Consideration must be given during the detailing for fabrication to ensure that:

- There is no movement / flexibility in the bench finishes when sitting (or standing on) the bench
- The visibility of the fixings and bolts are minimised (preferable hidden)
- The framework connections between bench and planter edge are demountable for ease of replacement or renewal of timber is required.

2.11 **Edge Type 9 – Paving edge to granite finishes**

2.11.1 5mm thick perforated aluminium edge by Kinley or equivalent below perimeter balustrade within granite paved roof areas.

2.11.2 Set flush with adjacent surface finishes. To sit above insulation/waterproofing/protection layer to allow level placement, fixing method TBC.

2.11.3 Required profile height to ensure flush finish = 120mm (assuming buildup layering as shown on AHMM Detail 01, KXC-P2-001-18040-A-47-602).

2.11.4 Product: Roofedge range by Kinley (refer to extract under edge type 1) or equal and approved

Note: Available in the required 120mm profile height.

3.1 The following collates information relating to the hard landscape floor finishes to be installed across the loggia's and on level 5 terrace. Details provided should be read in conjunction with the ALD drawings and the architectural information prepared by AHMM – particularly where the paving finishes interface with door façades, external parapet arrangements, and balustrade alignments. Further detail continues to evolve as the drainage / water movement from down pipes, off surface finishes and into the syphonic system evolves and check calculations are run by Cundalls Engineers.

3.2 Reference drawings: KXC-P2-001-ALD816-L-91-001 to 005, and 009

3.3 **Chevron Granite Paving** – refer to KXC-P2-001-ALD816-L-91-702 for typical details

3.3.1 Material finishes to the loggia on levels 1, 2, 3, 4 and 9, and to the two terrace congregation areas on the main external space on Level 5. Uses a granite unit size set to a regular pattern with short edge at 400mm long and opposite long edge at 700mm long. Width 300mm. Thickness at 50mm. Short to long side cut at 45deg angle on plan (see drawings).

3.3.2 Laid to chevron pattern (two units back to back) – refer to plan layouts for orientation of chevrons and setting out alignments. Positioning of patterns to be finalised at Stage 5 relative to the need for numerous over sizes units and or cantilever supports where chevron pattern extends to material edges, balustrades, planters, facades and thresholds.

3.3.3 Granite to be supported on pedestals with 3mm open joints (joint width set by contractors supplier of the pedestal units – which vary from 3mm to 2.5mm and up to 6mm depending on manufacturer).

It is noted that the ability to install the granite on to a rail system has the following issues (a) lack of build up depth between FFL of the granites and the waterproofed rigid insulation below, (b) no ability to transfer any cables or irrigation pipework under the rails, and (c) no ability to transfer / ensure water can move around.

3.3.4 Granite finishes are undergoing architect and Client review process relative to the colours / tones and textures in the precast concrete cladding for the façade. The following information is subject to review / change, but offers a bench mark:

Finish:	Fine textured / bush hammered to achieve appropriate levels of anti slip resistance Or flamed textured (subject to base material / reaction to colour and impact on)
Colour:	The chevron will be formed by a dark and light grey patterning -illustrated on the drawings as Dark (A) and Light (B)
Supplier:	To be confirmed – current sample selections are by Hardscape.
Testing:	As the paving units sit with their 'points' on the pedestals, testing and performance is required to ensure that the units do not crack along the points when supported across the ends. Over sized units will be required at edges to avoid points on 'slithers' which will be even more vulnerable.

3.3.5 Material options based on original ER indication that units were light and dark greys (it is noted that current AHMM samples have a pinky / grey / white composition set alongside a darker grey – but the crystal sizes vary and are under require to ensure its colours / tones rather than density of fleck that defines).

3.3.6 **A. Hardscape Options:**

Light Grey Granite Potential Product: Mist (image of sample below)



Image 4: Dry sample



Image 5: Wet sample

Dark Grey Granite Potential Product: Kobra (image of sample below)



Image 6: Dry sample



Image 7: Wet sample

3.3.7 **B. Marshalls options**

Light Grey Granite Potential Product: Galatea (image of flamed sample below)

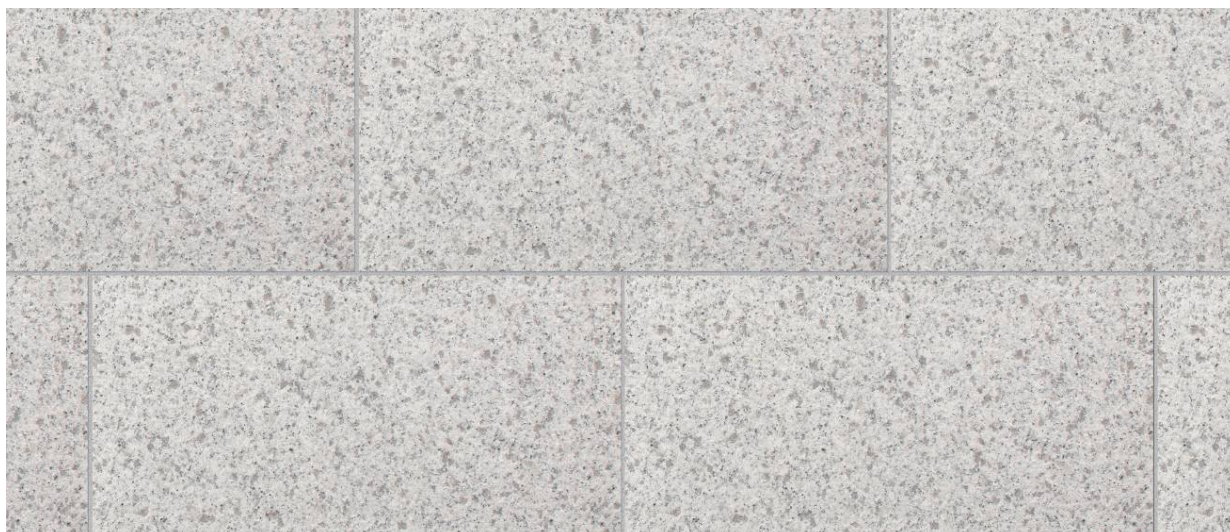


Image 8: Marshalls Light Grey Granite (fully bedded with joints)

Dark Grey Granite Potential Product: Despina (image of flamed sample below)

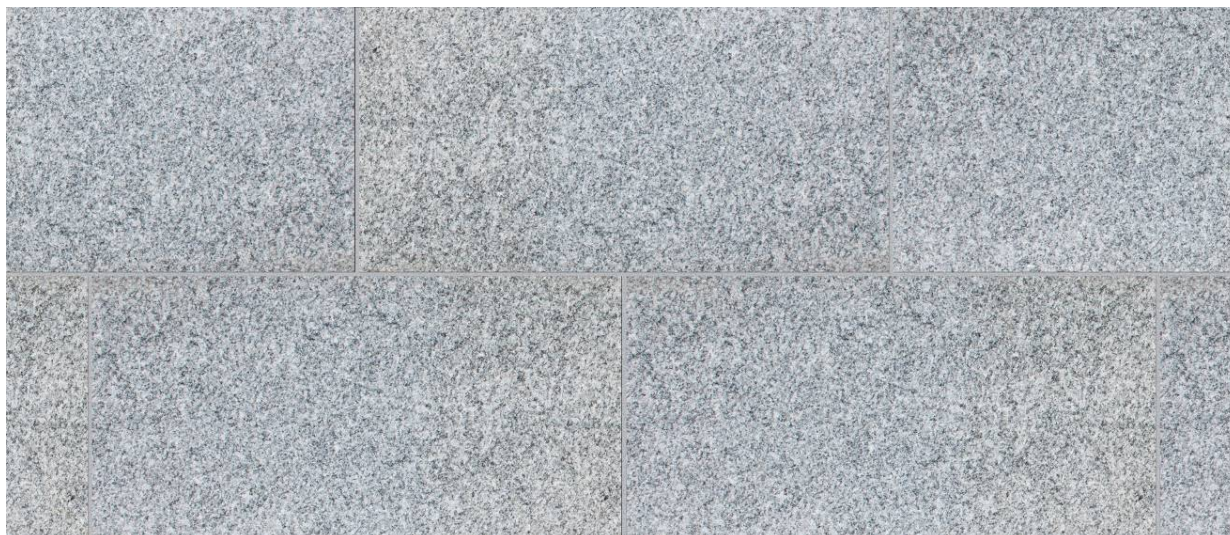


Image 9: Marshalls Dark Grey Granite (fully bedded with joints)

3.4 **Level 5 'Gravel Footpath'**

3.4.1 Through the course of the Stage 4 design development this finish has considered two options based on the information shown on the Dan Pearson drawings and the current thoughts from AHMM. Both materials present challenges when considering the shallow depth of build up, the requirement to move pipework between planters (and therefore under the finishes) and the need to allow drainage water to flow through and under the material (as there are upstands on either side, and as the drainage outlets are spaced around the roof).

3.4.2 **Approach One: Compacted gravel**

Potential issues arising: loose material, subject to movement over a flexible drainage board, and risk of gravel transfer into the building on shoes resulting in scratches to finishes. Maintenance considerations would be required in respect of splash of dirt / dust up planter faces and adjacent façade / column finishes.

Within the build ups, over a 25mm thick drainage board, the compacted gravel has a max 95mm depth

Colour: Grey

Supplier: CEDEC or equal and approved

Potential 'crushed gravel' product: CEDEC® Silver Footpath Gravel (extract below)



Product Description

The latest addition to our successful range of CEDEC® footpath gravels. As with the other products in the range this silver grey granite based product provides an inert and porous footpath gravel.

The principle of CEDEC® footpath gravels is to form a firm but porous structure that retains moisture yet allows any excess to flow through. The materials used are specially graded decorative aggregates ideal for areas where the traffic is too heavy for grass but where a natural appearance is desired.

CEDEC® footpath gravels comprise granite and quartzite, which are chemically inert and durable and will not affect the pH value of the surrounding soil. This is important where newly planted trees or pH-sensitive plants are sited and it's porous nature is good for trees generally. In order to function effectively, CEDEC® needs to be rained upon and walked upon; it will not be effective indoors or under permanent shelter.

After compaction, coverage of CEDEC® footpath gravel, is approximately 10m² per tonne @ 50mm thick, compaction being about 25%. So, to compact to 50mm, an initial non-compacted layer of 65mm is required.

Stock Sizes

- 6 - 0mm

Suitable Applications

- Footpaths

Image 10: CEDEC internet information

3.4.3 Approach Two: Resin Bound Gravel

Potential issues arising: bound material on a flexible drainage board build up could lead to flex in the surface, cracking in the resin and delamination of the finishes. With such shallow build ups the transfer of ducts for power, and pipes for irrigation, present a challenge. Consideration to be given to what happens with drainage over time as the pores begin to silt up?. *If used in a roof environment – a resin bound gravel is normally installed directly on to a concrete skim or the roof surface below.*

Within the build ups, over a 25mm thick drainage board, the resin bound gravel build up, including the surface layer, has a max 95mm depth

If using a SUDS compliance gravel size (to allow water to drain down through the gravels and on to the

Colour: Grey tones Sterling from the Sureset range

Scandinavian Pearl (Addaset) at 6mm gravel size

Supplier: Sureset Resin Bound Gravel

Addagrip Resin Bound Gravel

Composition: up to 10mm gravels for semi porous condition (surface course 22mm to 30mm thick subject to base build ups)

Potential 'resin bound' product: Sureset Resin Bound (extract below)



Image 11: SURESET internet information

[< Back to Colours](#)

Natural Aggregate

Natural Aggregate paving is our most popular product; providing the widest range of functional and aesthetically pleasing options of our permeable resin bound paving...

Available in different aggregate sizes and textures, the colours range from rich golden browns and mellow shades of honey to crisp whites and modern charcoal.

Our **Natural Aggregate** range offers something to suit all types of project and design.

If you are looking for a colour that isn't in our standard Natural Aggregate range, we will do our best to source a suitable product; please [contact us](#) with your requirements.

4.1 The following information records product data relating to the support of the granite units on the Level 5 terrace and on the loggia's on floor 1, 2, 3, 4 and 9.

4.2 Reference drawings: KXC-P2-001-ALD816-L-91-702 onwards

4.3 Pedestal Units

4.3.1 The paving patterns limit the options available across the wide pedestal market, it is understood that supplier communications have been undertaken in the development of the pattern to ensure that the spacings / angles for the spaces can be achieved as follows:

4.3.2 Manufacturer: Kinley

Product reference: Elmich VersiJack pedestals with Variable Angle Spacer Tab

Pedestal type: Screwjack.

Grade: Manufacturer's standard.

Material: PVC.

Adjustment: 40 - 65mm



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VersiJack Adjustable Pedestal

Data Sheet
Reference: DCAV-1117
 1 of 2



	Product properties	311016	311017	311018	311019	311020	311019 + 312022	311020 + 312022	311019 + 2 x 312022	311020 + 2 x 312022	311019 + 3 x 312022	311020 + 3 x 312022	
Dims	Pedestal height range *	37-50mm	50-75mm	74-117mm	117-201mm	197-281mm	277-446mm	357-526mm	437-691mm	517-771mm	597-936mm	677-1016mm	
	Pedestal base diameter	189mm	189mm	189mm	202mm	202mm	202mm	202mm	202mm	202mm	202mm	202mm	
	Marginal adjustment	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm	
Other	Ultimate compressive strength	15kN											
	Biological resistance	Unaffected by moulds or algae											
	Chemical resistance	Good resistance to alkali and bitumen											
	Material specification	Polypropylene											
	Recycling	100% recyclable											

Description

Height and slope adjustable pedestal systems for external flooring. Engineered to support pavers and decking, and to reduce material, construction and lifestyle costs.

Applications

Roof terraces or balcony areas.

Northpoint, Compass Park, Gimplecross, E Sussex, TN32 5BS
 +44 (0) 1580 830688
 sales@kinley.co.uk
 www.kinley.co.uk

Installation Information

Free standing installation.



Support Structures
Division



Adjustable Pedestals
Collection



VersiJack
Range

Image 12: Kinley Pedestal Trade Literature

4.3.4 Observations arising in relation to the pedestal selected:

- The VersiJack pedestal heights range from 37mm to 202mm.
- There is an area on the 1st Floor Loggia where the required build up height is extremely limited at just 22mm. For this area the alternative pedestal type would be the SpiraPave Adjustable Pedestal by Kinley. The heights available in this product type range from 12mm to 119mm. Extract below



Kinley
INSPIRED PLACES MADE POSSIBLE

SpiraPave Adjustable Pedestal

Data Sheet
Reference: SS-SP-1003
1 of 2



	311010	311011	311012	311013	311014	311015	311013 + 312018	311014 + 312018	311015 + 312018
Product properties									
Pedestal height range *	12-18mm	17-23mm	23-29mm	30-44mm	45-59mm	60-74mm	75-89mm	90-104mm	105-119mm
Pedestal base diameter	154mm	154mm	154mm	154mm	154mm	154mm	154mm	154mm	154mm
Marginal adjustment	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm	1mm
Other	Ultimate compressive strength 20kN								
Biological resistance	Unaffected by moulds or algae								
Chemical resistance	Good resistance to alkali and bitumen								
Material specification	Polypropylene								
Recycling	100% recyclable								

*Additional pedestal heights shown which include the 45° extender

Description
Height and slope adjustable pedestal systems for external flooring. Engineered to support pavers and decking, and to reduce material, construction and lifestyle costs.

Applications
Roof terraces or balcony areas.

Installation Information¹
Free standing installation.

Northpoint, Compass Park, Staplecross, Essex TN12 5BB
T: +44 (0) 1580 830588
enquiries@kinley.co.uk
www.kinley.co.uk

Storage & Handling
The product is securely packed into cardboard boxes to ensure no movement of the product in transit. Depending on the size / weight of the consignment this may be palletised.
Whilst there is no specific weight restrictions on what is or is not safe to lift in manual handling, an assessment of the health and safety risks should be undertaken and measures taken to reduce the risk of injury so far as reasonably practicable.
The following guidelines may be useful:
a) Each person should be fully trained in manual handling techniques.
b) The use of handling aids such as a trolley, fork lift, pallet truck or conveyor should be used if moving large volumes of cartons.
c) Break up large consignments into more manageable loads.

Support Structures
Division

Adjustable Pedestals
Collection

SpiraPave
Range

Image 13: Kinley Pedestal Trade Literature

- As a standard product the VersiJack pedestal comes with a right angle set of spacers. To achieve the 45° chevron angled paving cuts the installation would need = to use the adjustable spacer tab fixing (image below) to allow support at each angled corner.

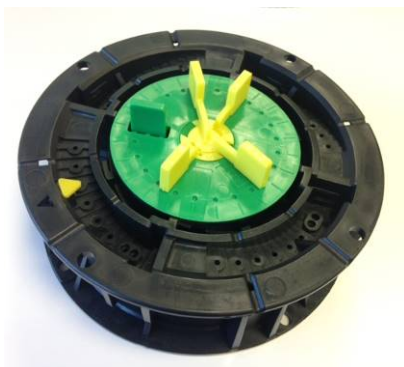


Image 14: Spacers rotated to required angles

- There would be no requirement for the proposed aluminium joist system as the build-up depths do not allow for this - the pedestals would be positioned directly onto the insulation (NO drainage mat below).
- Due to the proposed chevron pattern, there are small paving cuts to the outer edges of the paving areas. ALD have concerns as to how these cut paving units will be supported where it is not possible to position the pedestals in close enough proximity.

- Unit sizes at edge of paving areas are illustrated on the drawing extracts below.

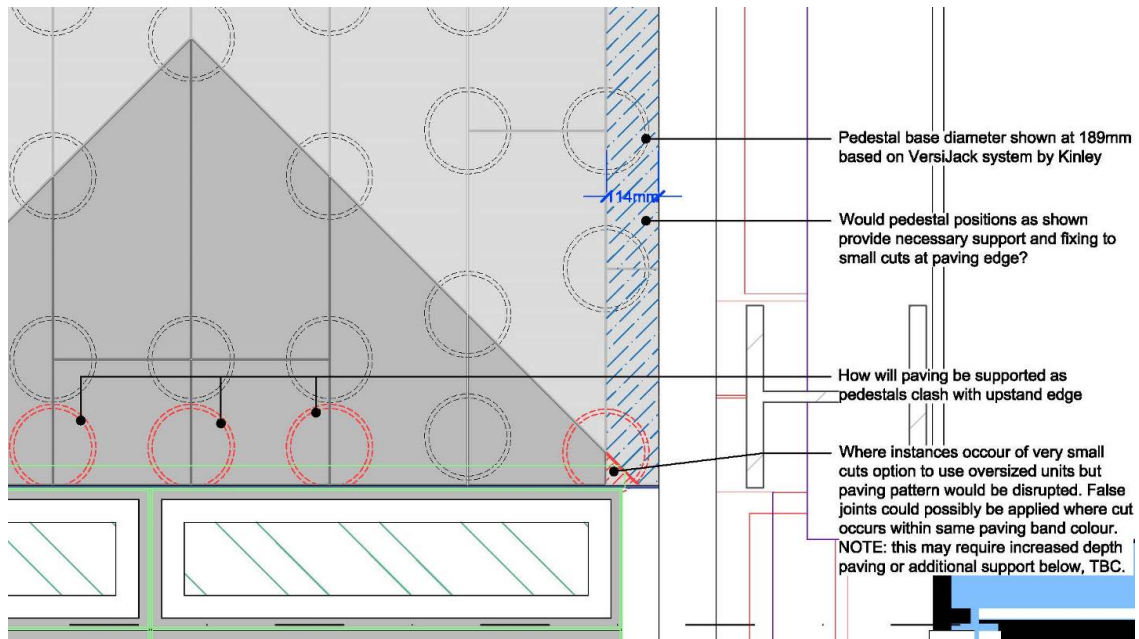


Image 15: Pedestal placement below corners, at ends and on points of the paving patterns

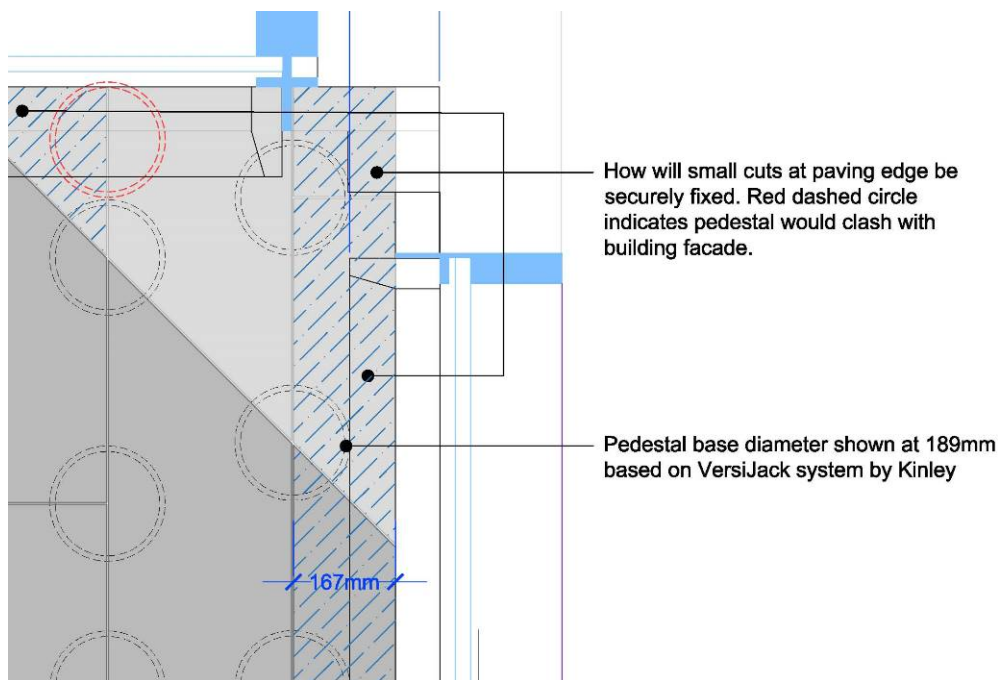


Image 15: Pedestal placement below corners, at ends and on points of the paving patterns

4.4 Considering an alternative approach:

- 4.4.1 (It is noted that this has been discussed with AHMM / Kier on the 2nd October 2018 and the approach described below is not the preferred design intent – the paving to the terraces is to reflect, but be different from that in Cubitt Square – the information is retained in this report to record the options considered).
- 4.4.2 In an attempt to explore / simplify the procurement and installation challenges of the pointed paving n pedestals, ALD acknowledge that the chevron paving pattern could be amended – avoiding using the 45° angled cuts. This would allow the pedestals to be laid at more regular spacings and small edge cuts could be better handled without excessive cantilever or special supports.

- 4.4.3 The images below, show paving installed at Cubitt Park. This achieves the herringbone pattern and colour banding using rectangular paving units, and avoids any angled cuts. The paving units sizes are 294mm L x 94mm W x 75mm D - the same strategy could be adopted for P2 on a larger scale unit.

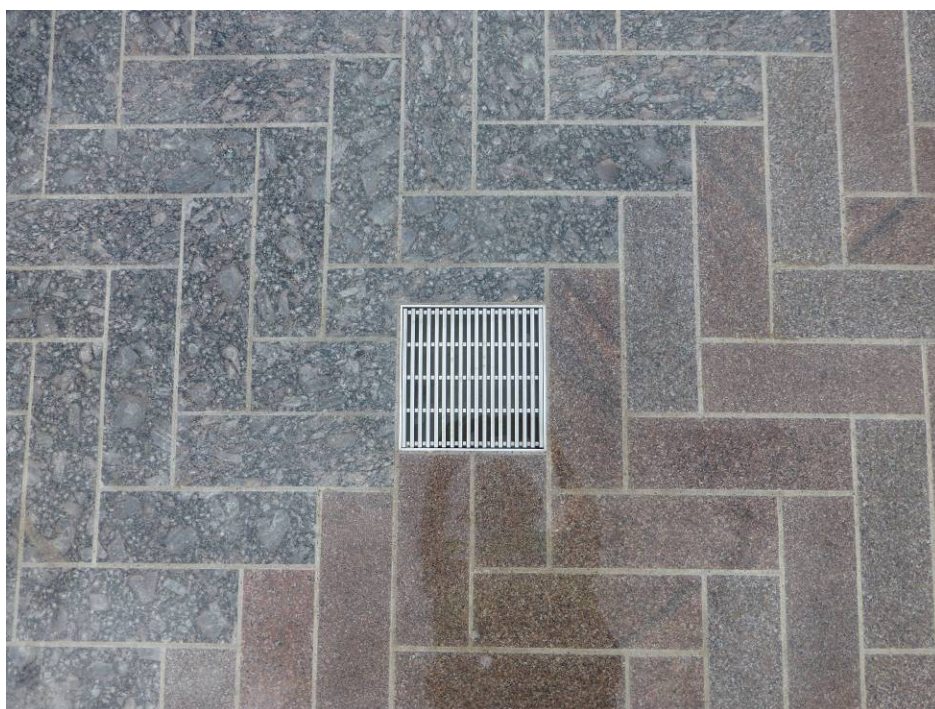


Image 16: Cubitt Square Kings Cross – rectangular units to create a herringbone / chevron pattern

- 4.4.4 The graphic below illustrates how the herringbone paving pattern could be adapted using 700L x 300W units for P2. On the Loggias, triangular units could be installed to the edges to simplify the edge detailing and installation. The over hatched areas to the sides (of the level 9 loggia) show proposed oversized units which could be incorporated to avoid small cuts. By using standard 90° angles, there is also no need for the special adjustable spacer tab fixings.



Image 17: Alternative approach to a paving chevron

4.4.5 The graphic below illustrates how the pedestals could be arranged with the alternative herringbone paving pattern.

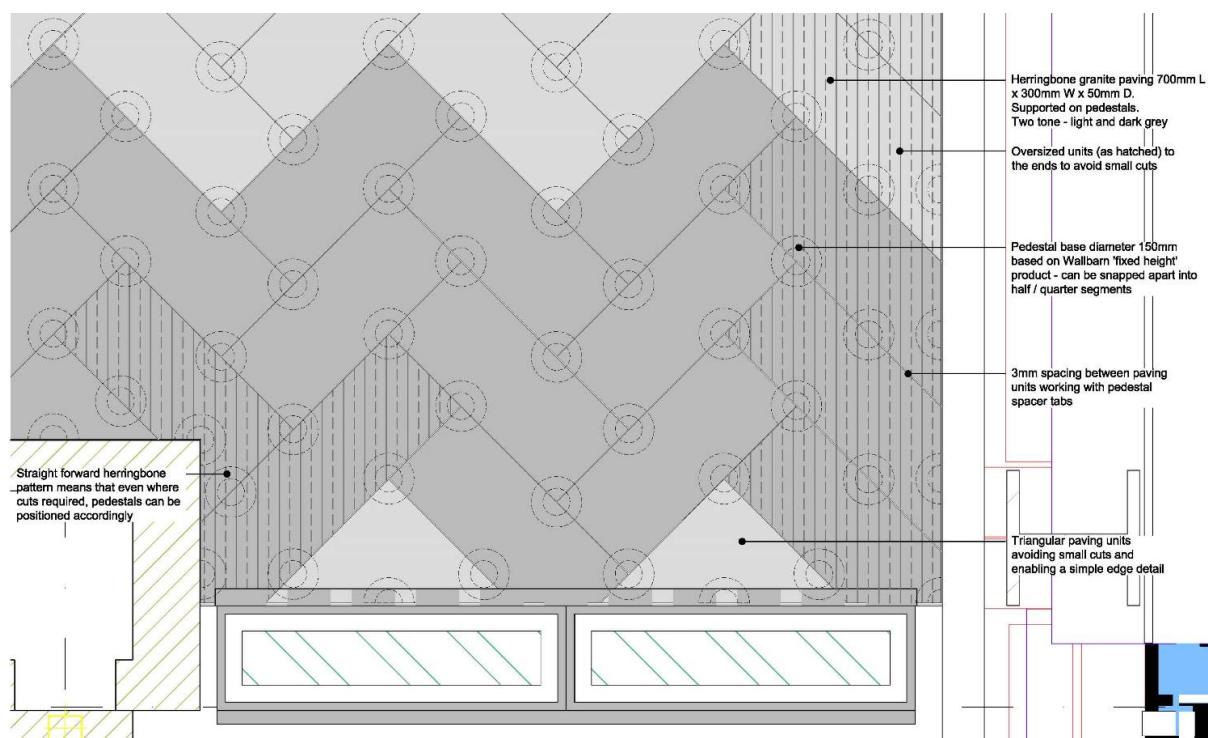


Image 18: Alternative approach to a paving chevron pedestal layouts

- 5.1 The loggias and level 5 roof terrace are laid as 'flat' roofs, with rigid insulation over which the building waterproofing membrane is applied. Any water collected over this waterproofing migrates around the roof level finding its way to the drainage outlets. These outlets are positioned by AHMM and Cundalls to coordinate with the structural requirements, the build ups, the ceiling configurations in the floors below, and the requirements for the volumes / water movement and symphonic transfer to occur.
- 5.2 It is noted that in order to give sufficient space for the syphonic pipework to sit in the rigid insulation layers, the build ups over the surface of the insulation is now minimal (Cundalls to advise how much build up depth of water over the waterproofing is anticipated as soils and planting sit in these areas).
- 5.3 The design of the floor plates to the storeys above Level 5, require the placement of downpipes from those facades – transferring water down onto the level 5 terrace. Originally proposed as emitting water from column / façade mounted pipework – into the planter soils (risk of erosion, spreading of mud and movement of material) – it has been suggested that a permavoid cell system be integrated into the planters at locations where the down pipes emerge. This is only a suggestion – Cundalls are to consider the volumes of water, the size of the permavoid, the ability for a planter that sits above the adjacent pavement finishes can hold the water and allow it to percolate out the base – across the roof – and over to a remote drainage outlet through the roof slab.
- 5.4 This permavoid strategy is now illustrated on AHMM and ALD details but no information has been received from Cundalls.
- 5.5 The strategy high lights that there are some technically challenge interfaces arising in order to get water to move around this roof.

5.6 Drainage Mat below granite paving

- 5.6.1 None required – pedestals sit on the waterproofing and water flows freely around the roof / around pedestals.

5.7 Drainage Mat below grating on the outside edge of the balustrade

- 5.7.1 AHMM are showing a drainage mat outside the balustrade – underneath the proposed maintenance route metal grille. ALD observe that the grille should be pedestal mounted (or even changed to a concrete slab) and water should be allowed to move freely across the roof. Mounting metalwork on the drainage mat would require the drainage mat to be more or a rigid board construction such as Versicell / Nordrain 30.

5.8 Drainage Mat below soils / planting

- 5.8.1 To offer some reservoir capacity, and to allow water to pass under the planting areas, the recommendation for drainage mat below planter soils is the Erisco Bauder FD40 (floradrain) or equivalent. The egg crate configuration allows a concrete pad to be cast into the top of it, and water to still flow under it (eg relevant to the pads for the planter edge fixings). Product literature item 19 included below.

5.9 Drainage Mat below soils / planting

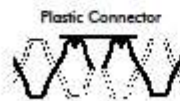
- 5.9.1 To offer some reservoir capacity, and to allow water to pass under the gravel paving areas, the recommendation for a drainage mat is the Erisco Bauder FD40 (floradrain) or equivalent. The egg crate configuration allows a paving sub base pad to be set into the top of it, and water to still flow under it (eg relevant to the pads for the planter edge fixings). If this is too flexible for the finishes above, a cell web arrangement or a filled version of Versicell / Nordrain 30 should be considered.

Product Data Sheet

Floradrain® FD 40-E



Drainage and water retention element of recycled polyolefin for use on extensive and semi-intensive green roofs with or without slope.



Plastic Connector

Technical Data

EDP No. 3041

Floradrain® FD 40-E

Drainage and water retention element of thermoformed recycled polyolefin.

Material:	Polyolefin, mainly PE (REC)	
Color:	dark grey	
Height:	ca. 1.6 in.	(ca. 40 mm)
Weight:	ca. 0.4 lbs/sq. ft.	(ca. 1.9 kg/m ²)
Diffusion opening:	ca. 0.1 in.	(ca. 2 mm)
Water retention capacity:	ca. 0.12 gal/sq. ft.	(ca. 5 l/m ²)
Filling volume:	ca. 0.42 gal/sq. ft.	(ca. 17 l/m ²)
Max. compressive strength (at 10 % compression):		
- without filling:	ca. 24.7 psi	(ca. 170 kN/m ²)
- with filling:	ca. 36.3 psi	(ca. 250 kN/m ²)
In-plane Water Flow Rate:		
- roof slope 1 %:	ca. 7.2 gpm/ft.	(ca. 1.5 l/(s·m))
- roof slope 2 %:	ca. 10.1 gpm/ft.	(ca. 2.1 l/(s·m))
- roof slope 3 %:	ca. 12.6 gpm/ft.	(ca. 2.6 l/(s·m))
Dimensions:	ca. 3.3 ft. x 6.6 ft.	(ca. 1.00 m x 2.00 m)

Accessories:

Plastic Connector EDP No. 9620 (to be pressed into diffusion openings)

Material: POM (Polyoxymethylene)

Features

- universal element for extensive and intensive green roof build-ups
- high drainage capacity
- also suitable for roofs without slope
- water retention even on sloped roofs
- walkable
- biologically neutral
- quick and easy installation
- connectors are also available for a more comfortable installation especially on gentle sloped roofs

Installation Instructions

Install the Drainage Element Floradrain® FD 40-E on the protection mat. The drainage elements are installed butt jointed, in green roof applications with the evaporation holes facing up, for hard landscape applications with the evaporation holes facing down and infilled with well graded coarse sand

(3/8 in. to # 100). Cut the drainage element in situ at roof penetrations. Consider an allowance for wastage of ca. 3 %. Floradrain® FD 40-E is, included, but not limited to, to be installed according to manufacturer's instructions, not exposed to UV-light, completely covered. Call manufacturer for further options.

Health and Safety

This product does not require a material safety data sheet (MSDS) according to the OSHA Hazard Communication Standard (29 CFR 1910.1200). When used as recommended or under ordinary

conditions, it should not present a health and safety hazard. However, an MSDS can be provided as a courtesy in response to a customer request.

ZinCo USA Inc.
401 VFW Drive · Rockland, MA 02370
Phone 866 766 3155 · Fax 866 766 3955
info@zinco-usa.com · www.zinco-usa.com

Life on Roofs



Item 19: FD 40 drainage mat below planting

Subject to technical developments and printing errors · First edition 05/2007, Revised 10/2016

Product Data Sheet

Floradrain® FD 25-E



Pressure resistant drainage and water retention element of recycled polyolefin for use on extensive green roofs.



Technical Data

EDP No. 3028

Floradrain® FD 25-E

Drainage and water retention element of thermoformed recycled polyolefin.

Material:	Polyolefin, mainly PE (REC)	
Color:	dark grey	
Height:	ca. 1.0 in.	(ca. 25 mm)
Weight:	ca. 0.3 lbs/sq. ft.	(ca. 1.6 kg/m ²)
Diffusion opening:	ca. 0.1 in.	(ca. 2 mm)
Water retention capacity:	ca. 0.1 gal/sq. ft.	(ca. 3 l/m ²)
Filling volume:	ca. 0.2 gal/sq. ft.	(ca. 10 l/m ²)
Max. compressive strength (without filling):	ca. 40.0 psi	(ca. 270 kN/m ²)
In-plane Water Flow Rate:		
- roof slope 1 %:	ca. 2.8 gpm/ft.	(ca. 0.59 l/(s·m))
- roof slope 2 %:	ca. 4.1 gpm/ft.	(ca. 0.85 l/(s·m))
- roof slope 3 %:	ca. 5.1 gpm/ft.	(ca. 1.05 l/(s·m))
Dimensions:	ca. 3.3 ft. x 6.6 ft.	(ca. 1.00 m x 2.00 m)

Accessories:

Plastic Connector EDP No. 9620	(to be pressed into diffusion openings)	
Material:	POM	(Polyoxymethylene)

Features

- tested and proven drainage capacity
- proven long-term reliability
- water retention, even on slightly sloped roofs
- walkable
- low profile height and light weight
- biologically neutral
- quick and easy installation
- connectors are also available for a more comfortable installation especially on gentle sloped roofs

Installation Instructions

Install the Drainage Element Floradrain® FD 25-E on the protection mat. The drainage elements are installed butt jointed, in green roof applications with the evaporation holes facing up, for hard landscape applications with the evaporation holes facing down and infilled with Zincblend M. Cut the drainage

Element in situ at roof penetrations. Consider an allowance for wastage of ca. 3 %. Floradrain® FD 25-E is, included, but not limited to, installed according to manufacturer's instructions, not exposed to UV-light, completely covered. Call manufacturer for further options.

Health and Safety

This product does not require a material safety data sheet (MSDS) according to the OSHA Hazard Communication Standard (29 CFR 1910.1200). When used as recommended or under ordinary

conditions, it should not present a health and safety hazard. However, an MSDS can be provided as a courtesy in response to a customer request.

Subject to technical developments and printing errors • Floradrain® 09/2003 • Revised 04/2016

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Life on Roofs



Item 20: FD 25 drainage mat below planting

TECHNICAL DATA SHEET**Bauder Versicell 20****DESCRIPTION**

Bauder Versicell 20 is a versatile, interlocking drainage and protection board for Intensive Roof Systems, designed to withstand very high loading whilst providing a high degree of multi-directional drainage. The product is to be used in conjunction with a Terram 1000 (or similar) filter sheet to prevent fines from washing through into the drainage zone.

TECHNICAL DATA:**Composition**

Material Polypropylene

Weights and sizes

Panel width 500mm
Panel length 500mm
Thickness: 20mm
Weight: 2Kg/m²
Compressive strength: $\geq 1000\text{KN/m}^2$

Supply Form

Boards

**UNITED KINGDOM****Bauder Ltd**

70 Landseer Road
Ipswich Suffolk England IP3 0DH
T: +44 (0)1473 257671 E: info@bauder.co.uk
bauder.co.uk

IRELAND**Bauder Ltd**

O'Duffy Centre Cross Lane Carrickmacross
Co. Monaghan Ireland
T: +353 (0)42 9692 333 E: info@bauder.ie
bauder.ie

Item 21: Versicell / Nordrain 30 rigid stormwater management drainage mat

6.1 All soils installed on the Level 5 terrace are to be free draining, sand based, lightweight manufactured soils with measurable composition – tested for compliance prior to delivery.

6.2 **Soil Profile 1: within balustrade planters to edge of terrace / loggias**

- 50mm Ornamental Bark Mulch
Potential Product: Melcourt Ornamental Bark Mulch or equivalent
- 400mm Lightweight Topsoil
Potential Product: Icopal Intensive Substrate as detailed below (note that this is the material that structural engineers have reviewed in the context of the Stage 3 design – other suppliers offer similar light weight soils – all options considered must match the composition and loading characteristics offered by the Icopal Product).
- 185mm Lightweight Aggregate
Potential product: Expanded clay aggregate with a particle size range of 4-10mm and no fines (<2mm). Product ref: Maxit LWA or Leca Light Expanded Clay Aggregate



Product Information Sheet

Icopal OG Substrate Intensive Type 1

Green Roof Growing Substrate

Total pore volume	> 60-70 Vol%	Areas of Use. 3-Layer Intensive Green Roof Systems on flat roofs Material. Crushed brick, punice, clay, green waste compost, peat Note: Depending on the region, different aggregates can be used.
Weight at maximum water-holding capacity and compaction:	dry 800-900 kg/m3 water-saturated 1200-1300 kg/m3	
Max. water capacity:	≥ 45 Vol%	
Organic content:	Grey < 50 g/l	
pH-value:	6,5 - 8,5	
Water soluble salts:	< 3,5 g/l	
Water permeability:	10-20- mm/min	
Compaction factor:	1.15	
Puncture resistance	1.200 N (EN ISO 12236)	
Vertical water permeability	130 l/s x m² (EN ISO 11058)	
Delivery form	Loose, silo tanker, in sacks and in big bags	
Storage:	Dry Sacks and big bags must be UV protected	
Delivery weight	Approx. 21.0 kg/roll - Approx. 255,0 kg/full euro pallet	
According to requirements of GRO/ FLL guidelines.		

The above data is to be used as guidelines which was collated using the company-owned Laboratory. The values underlie a Manufacturing tolerance of approximately 8-10%. Included in this product information is data corresponding to the technical information at the time of writing. It remains reserved with Icopal to supplement and change new knowledge at any given time so that the properties of the products can be modified.

Item 22: Typical lightweight soil system

6.3 Soil Profile 2: within planters to 5th floor terrace

- 50mm Ornamental Bark Mulch
Potential Product: Melcourt Ornamental Bark Mulch or equivalent
- 400mm Lightweight Topsoil
Potential Product: Icopal Intensive Substrate as detailed above (note that this is the material that structural engineers have reviewed in the context of the Stage 3 design – other suppliers offer similar light weight soils – all options considered must match the composition and loading characteristics offered by the Icopal Product).
- 185mm Lightweight Aggregate
Potential product: Expanded clay aggregate with a particle size range of 4-10mm and no fines (<2mm). Product ref: Maxit LWA or Leca Light Expanded Clay Aggregate
- **Subsoil materials:** Where depths and loading require, a blinding of subsoil / washed sand is integrated into the build ups to ensure smooth profiles over stepped void formers. Depth varies. Subsoil to comply with the following lower & upper limits:

Parameter (landscape subsoil)	Unit	Lower Limit	Upper Limit
Clay (<0.002mm)	%	0	10
Silt (0.002-0.05mm)	%	0	20
Sand (0.05-2.0mm)	%	70	90
Stones (2-20mm)	%DW	--	25
Stones (20-50mm)	%DW	--	5
Stones (>50mm)	%DW	--	0
Saturated Hydraulic Conductivity	mm/hr	35	180
pH Value	Unit	5.0	8.5
Electrical Conductivity	µS/cm	--	1500
Electrical Conductivity	µS/cm	--	2800
Exchangeable Sodium	%		15
Organic Matter	%		1.5
Calcium Carbonate	%		1

Washed sand to be a quarried washed sand that meets the following requirements. It shall not be a marine-dredged sand or a recycled sand.

Parameter (washed sand)	Unit	Lower Limit	Upper Limit
Clay & Silt (less than 0.05mm)	%	--	0
Very Fine Sand (0.05 – 0.15mm)	%	0	5
Fine Sand (0.15 – 0.25mm)	%	5	15
Medium Sand (0.25 – 0.50mm)	%	4	70
Coarse Sand (0.50 – 1.0mm)	%	25	45

Parameter (washed sand)	Unit	Lower Limit	Upper Limit
Very Coarse Sand (1.0 – 2.0mm)	%	0	5
Stones (2-10mm)	%DW	0	10
Stones (>10mm)	%DW	--	0
Saturated Hydraulic Conductivity	mm/hr	200	400
pH Value	Unit	5.0	8.5
Electrical Conductivity	µS/cm	--	600
Calcium Carbonate	%	--	1

- **Void Formers:** Where depths and loading require, light weight void formers are to be introduced into the planter soil profiles (the extent of this is to be balanced with the more flexible use of lightweight clay aggregate). The final layout will be subject to specialist suppliers input on unit sizes and thickness.

Potential product: Cordek Void Former for use in landscape build ups (Expanded Polystyrene EPS – Filcor)

Fire rating to accord with Architectural specifications

Loading / density to accord with Engineering requirements

7.1 A number of feature pine trees are proposed for the roof terrace on Level 5 – these are mature *Pinus mugo* (TBC) at 3 to 3.5m height – planted into made / placed soils. Consideration is to be given to securing these trees once the root ball sizes are confirmed, to ensure they stay upright without connection to the waterproofing surface which underlie the planting areas..

7.2 **Tree Anchors** Potential Product: D-Man Anchor System by Platipus Anchors (extract below)

TREE ANCHORING WITHOUT ANCHORS

D-MAN® Anchor System - Plati-Mat®

Introducing a NEW development in underground Tree Anchoring Solutions.



With the ever increasing desire to create beautiful landscapes in challenging urban environments and roof gardens there are many occasions where a standard tree anchoring system cannot be used due to the location of buried services or shallow planting areas. The award-winning D-MAN® is a strong, compact and lightweight system primarily designed to replace the traditional kerbstone or sleeper deadman.

D-MAN® can be used individually or in multiples and cells simply lock / unlock together. It has a distinctive letterbox style wire tendon anchor point and a unique cup for valuable water storage. D-MAN® is made from recycled plastic and when combined Plati-Mat® and our own engineered ratchet tensioner provides excellent stability to the tree.





The D-MAN® cells / Deadmen should be installed at least 30cm below the base of the rootball with the soil compacted above the cells to 60%, right up to the nursery line.

TREE HEIGHT / CIRCUMFERENCE	DESCRIPTION	PRODUCT CODE
2.5 - 4.5m / 12 - 25cm	3 x wire chokes, 4 metres of galvanised wire, 1 x ratchet tensioner, 3 x Plati-Mat® & 3 x D-MAN® Cells	RF1PDMAN
4.5 - 7.5m / 25 - 45cm	3 x wire chokes, 4 metres of galvanised wire, 1 x ratchet tensioner, 3 x Plati-Mat® & 6 x D-MAN® Cells (3 x 2 cells connected)	RF2PDMAN

D-MAN® STRUCTURAL SYSTEMS

D-MAN® cells can be easily connected together and stacked to create a structural system to suit any planting area or podium. This allows for trees with rootballs of varying heights to be planted level and also provides options to influence the architecture of the soil.

The D-MAN® Structural System alleviates many problems caused by planting in restricted urban areas.

- Cover and protect large planting areas & roof gardens
- Stack cells, by rotating them 180°, to allow planting areas to be built up.
- Secure trees & large shrubs with our D-MAN® Anchor System in any location
- Allows catchment water to drain underneath leaving the balance in cells




Item 23: Anchoring tree root balls in placed soils

8.1 Planting

- 8.1.1 The planting proposals are a direct reflection of the Dan Pearson Studio scheme – this is the basis against which soft landscape contractors have collated industry feed back for the Stage 4 works.
- 8.1.2 Refer to planting plans KXC-P2-001-ALD816-L-91-401 and 402 for planting to 5th Floor Terrace.
Refer to planting plans KXC-P2-001-ALD816-L-91-411 to 414 and 419 for planting to the loggia's.

8.2 Nursery supply & visits

- 8.2.1 All plants are to be procured from recognised industry suppliers – versed in the use of materials on roof terraces (it is note that some area of the roof require planting into shallow soils and as such the planting pots and roots need checking for compatibility prior to procurement).
- 8.2.2 All plants are to be collated at one or two recognised plant nurseries and are to be offered up to the Client team for inspection prior to transfer to site.
- 8.2.3 Where specified material is not available: Contractor to advise which species, and to what extent the material is non-compliant prior to the visit. Photographs of alternate species or sizes to be circulated in advance of any visits.
- 8.2.4 All plant material / species are to be reviewed in the context of poisonous / allergens prior to finalising the design list and layouts (it is noted that Euphorbia is in the design and at a reasonable installation size – these are strong good looking and distinctive texture giving plants – but they do give out a sap which causes a skin reaction for many people – ALD have moved them away from benches / potential for people to brush up against them but this does not mean maintenance people might be impacted).

8.3 Tree Planting

- 8.3.1 Refer to ALD design layouts and sections for earthworks and tree pit information.
- 8.3.2 Prepare trees and transplant in accordance with BS 8545, and recognised horticultural best practice (including the HTA guidelines). Raise programme issues or weather concerns in advance of the planting process to ensure trees and stock are not being transported or held on site in adverse weather conditions (including cold, heat, dry, windy conditions).
- 8.3.3 Underground guying to be used for all trees. Ensure tree is positioned correctly and vertically prior to tightening guy line tensioners.
- 8.3.4 Pinus mugo is specified as the feature tree for the level 5 terrace – this is typically a slow growing tree which means to achieve the specified height and size it will come to site at a reasonable maturity and with a significant rootball for its size. This is illustrated as having a potential impact on the slop profiles and could result in rootball exposure where the scheme has steeper slopes. Consider an alternative species, or a smaller rootball / with a smaller tree.

- 9.1 The following BREEAM information is provided for record purposes only at this stage – consideration will need to be given as to whether the Dan Pearson scheme can achieve the uplift in species – if not then direction will be required as to whether the BREEAM credits require a revisit of the scheme and what / where / how the Stage 3 Scheme Design can be amended (and by who).
- 9.2 **LE03 – Minimising impact on existing site ecology** (input required from RPS Ecologist)

Kings Cross P2

CUNDALL

Credit Information Sheet

LE 03 - Minimising impact on existing site ecology	
Credits available	2
Credits targeted	2
Current status	

Responsibilities: Ecologist, Landscape Architect

Aim:			
To minimise the impact of a building development on existing site ecology.			
Credit 1			
Requirement 1	Two credits The change in ecological value of the site is equal to or greater than zero plant species, i.e. no negative change, using the methods outlined in either (a) or (b) below: 1. Determine the following information and input this data in to the BREEAM LE 03/LE 04 calculator: 1. The broad habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state (see Table - 53). 2. Area (m ²) of the existing and proposed broad habitat types. OR 1. Where a Suitably Qualified Ecologist (SQE) has been appointed and, based on their site survey, they confirm the following and either the assessor or ecologist inputs this data in to the BREEAM LE 03/LE 04 calculator: 1. The broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed state. 2. Area (m ²) of the existing and proposed broad habitat plot types. 3. Average total taxon (plant species) richness within each habitat type. OR	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria. Where relevant: A completed copy of the BREEAM LE 03/LE 04 calculator.	
Requirement 2	One credit Where the change in ecological value of the site is less than zero but equal to or greater than minus nine plant species i.e. a minimal change, use the methods outlined in either 1(a) or (b) above.	As criterion 1.	

9.2.1 **Evidence needed:**

- Ecology report or LE02-05 proforma

9.3 LE04 – Enhancing site ecology (input required from RPS Ecologist)

Kings Cross P2

CUNDALL

Credit Information Sheet

LE 04 - Enhancing site ecology	
Credits available	2
Credits targeted	1
Current status	

Responsibilities: Ecologist, Landscape Architect

Aim:			
To encourage actions taken to enhance the ecological value of the site as a result of development.			
Credit 1			
Requirement 1	A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage.	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria.	
Requirement 2	The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report is based on a site visit/survey by the SQE (see also CN4).	As criterion 1.	
Requirement 3	The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final design and build.	As criterion 1.	
Credit 2			
Requirement 4	The criteria of the first credit are met.	As criterion 1.	
Requirement 5	The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, with an increase of six plant species or greater (refer also to Compliance note CN8 for alternative means of compliance).	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria.	
Requirement 6	The increase in plant species has been calculated using the BREEAM LE 03/LE 04 calculator, using actual plant species numbers.	A completed copy of the BREEAM LE 03/LE 04 calculator Documentary evidence supporting the data used to complete the calculator tool.	

9.3.1 Evidence needed:

- The ecology report/LE02-05 proforma made by the SQE including recommendations for the enhancement of the site's ecology and that they will be implemented.
- Letter proving that the client implemented the recommendations.
- Drawing uplifts (habitat enhancements for example) to achieve the ecological uplift (ALD have requested but not received any information from RPS).

9.4 MAT02 – Hard Landscape and Boundary Protection

Kings Cross P2

CUNDALL

Credit Information Sheet

Mat 02 - Hard Landscaping and Boundary Protection	
Credits available	1
Credits targeted	0
Current status	

Responsibilities: Landscape Architect, Architect

Aim:			
To recognise and encourage the specification of materials for boundary protection and external hard surfaces that have a low environmental impact, taking account of the full life cycle of materials used			
Credit 1			
Requirement 1	Where at least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieves an A or A+ rating, as defined in the Green Guide to Specification. Green Guide ratings for the specification(s) of each element can be found at www.thegreenguide.org.uk	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria. The Green Guide rating and element number for the assessed specifications.	

9.4.1 Evidence needed:

- Mat02 proforma showing the Green Guide Specification of the external hard landscaping and boundary protection of the area.

9.4.2 ALD note that the granites being considered for the chevron patterns will challenge the green guide specification is they are sourced and shipped from China.

9.5 **LE04 – Ecological Value of Site and Protection of Ecological Features** (input required from RPS Ecologist)

Kings Cross P2

CUNDALL

Credit Information Sheet

LE 02 - Ecological Value of Site and Protection of Ecological Features	
Credits available	2
Credits targeted	2
Current status	

Responsibilities: Ecologist, Landscape Architect

Aim:			
To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.			
Credit 1			
Requirement 1	Land within the assessment zone is defined as 'land of low ecological value' using either: 1. The BREEAM checklist for defining land of low ecological value (see Table -52); OR 1. A Suitably Qualified Ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey.	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria. Where a Suitably Qualified Ecologist is not employed: BREEAM checklist for defining land of low ecological value.	
Credit 2			
Requirement 2	All existing features of ecological value within and surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 2013.	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria.	
Requirement 3	In all cases, the principal contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).	As criterion 2.	

9.5.1 **Evidence needed:**

- The ecology report or LE02-05 proforma
- The recommendations from the SQE in order to protect the existing features of ecological value.

9.5.2 ALD assume that there are no features of ecological value to be protected.

9.6 LE05 – Long term impact on biodiversity (input required from RPS Ecologist)

Kings Cross P2

CUNDALL

Credit Information Sheet

LE 05 - Long Term Impact on Biodiversity	
Credits available	2
Credits targeted	2
Current status	

Responsibilities: Ecologist, Landscape Architect

Aim:			
To minimise the long term impact of the development on the site and the surrounding area's biodiversity.			
Credit 1			
Requirement 1	Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process.	One or more of the appropriate evidence types listed in The BREEAM evidential requirements section can be used to demonstrate compliance with these criteria.	
Requirement 2	Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.	As criterion 1.	
Requirement 3	Where additional measures to improve the assessed site's long term biodiversity are adopted, according to Table - 55. - One credit where at least 2 additional measures are adopted - Two credits where at least 4 additional measures are adopted Where the Suitably Qualified Ecologist (SQE) confirms that some of the additional measures listed in Table - 55 are not applicable to the assessed development, the credits can be awarded in accordance with the table in the Tracker Plus Additional Guidance document.	As criterion 1.	

9.6.1 Evidence needed:

- The ecology report/LE02-05 proforma
- A confirmation from the Suitably Qualified Ecologist that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process.
- A landscape and habitat management plan produced to cover at least the first five years after the project completion.
- A confirmation that the additional measures to improve the site's long term biodiversity are adopted according to BREEAM requirements.

9.6.2 ALD await information from RPS with regard to the targets, species numbers / types and mix, and the additional measures to be incorporated into the design..