

FRANCIS CRICK INSTITUTE, LEVEL 05NE/06SW TERRACE

Biodiversity Net Gain Assessment

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Francis Crick Institute
B
December 2023

REPORT

Quality Management

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Approval for issue

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1 INTRODUCTION

Background to the study

- 1.1.1 This Biodiversity Net Gain (BNG) Assessment has been developed in relation to revised proposals contained within a new planning application to the recently approved planning permission (2022/2667/P), for the installation of a permeable deck above the existing brown roof on the eastern end of the Level 05 (NE) terrace, together with a refreshment kiosk under the roof eaves, provision of perimeter planters, glass safety screen and additional landscaping.
- 1.1.2 Permission was granted in November 2022, with the construction starting in Autumn 2023. However, a number of issues have since come to the forefront in respect to the 2022 permission, including specifically matters related to health and safety aspects; meaning that a Heel-guard decking would have to be installed, as opposed to the currently installed metal grate system. As a consequence further works associated with the 2022 scheme were suspended.
- 1.1.3 In addition to the proposed changes to the decking system, this application will also seek to include permission for the following:
- A series of landscape enhancements as follows:
 - Green wall along the North Eastern face of Level 05 NE roof vault.
 - Additional planters along the north and east aspects of the Level 05 NE terrace.
 - Green / planted roof on top of the proposed new pavilion at Level 05 NE.
 - The planting of wildflower mounds across the whole of Level 06 SW.
 - A 44.84m thermally efficient glazed pavilion is proposed, facilitating a social gathering space protected from the elements;
 - A DDA toilet and a small preparation area are proposed within the un-utilised riser, to the west of the terrace within the existing roof volume.
 - Installation of an irrigation network which is intended to access the SUDs water attenuation level of the existing brown roof.

Biodiversity Net Gain – Methods

- 1.1.4 This report addresses the concept of Biodiversity Net Gain (BNG) and provides:
- Details of the current biodiversity value of the site, based on a recent site survey;
 - Details of the baseline assessment of biodiversity units for habitats;
 - Assessment of baseline ecological value and ecological value of the application site post-development;
 - A summary of habitat enhancement and creation proposals designed to ensure that net gain is achieved; and
 - Results of the overall net gain assessment demonstrating that net gain of >10% can be achieved compared with the pre-development baseline.
- 1.1.5 The offsetting strategy for the site has been largely based on maximising the value of open space on the Level 05 NE Terrace; by incorporating innovative biodiversity strategies to maximise the value for habitats and species alike and in enhancing the Level 06 SW terrace.

Biodiversity Net Gain and Methods

- 1.1.6 Biodiversity Net Gain is defined in Baker *et al* (2019)¹ as:
"Development that leaves biodiversity in a better state than before"
- 1.1.7 The requirement for developments to seek to achieve BNG arises from the National Planning Policy Framework (NPPF), which states in Para. 185(b) that:
"Planning policies and decisions should contribute to and enhance the natural and local environment by ... minimising impacts on and providing net gains for biodiversity."
- 1.1.8 There is no single set method for quantifying the assessment of BNG, but one method is the use of biodiversity calculators to assess the biodiversity value of habitats pre- and post-development based on habitat type, distinctiveness and condition.
- 1.1.9 A biodiversity index is derived for the baseline and for the proposed development, and BNG is considered to be achieved where an increase in value is delivered (on or offsite), and where habitats of a higher value are not replaced exclusively with habitats of a lower value.
- 1.1.10 Habitats are used as a proxy for biodiversity and therefore the change in habitat units gives the biodiversity score of the site (as defined by DEFRA in the Biodiversity Metric Guidance, published in 2023).
- 1.1.11 The methods of calculating BNG for this project followed the guidance produced by Natural England's revised Biodiversity Metric 4.0 (JP039) (Pank *et al.*, 2023). Defra made available its beta test BNG assessment tool in July 2019, which was subsequently updated in July 2021, April 2022 and March 2023. This tool has been used for the assessment in this report. The tool and associated documents were downloaded from:

<http://publications.naturalengland.org.uk/publication/6049804846366720>

Condition Assessment

- 1.1.12 Using the data collected from the Phase 1 Habitat Survey, a habitat condition assessment was undertaken for the habitats present within the project boundary. The appropriate 'condition sheet' was first selected via the Table TS1-1a in the technical supplement provided in the Biodiversity Metric 4.0 -Technical Annex 1: Condition Assessment Sheets and Methodology (Panks, et al., 2023).
- 1.1.13 The condition sheet was then used to assess the individual habitats by comparing how they scored against pre-set condition assessment criteria. The criteria describe what components are needed for the habitat to be of good, moderate or poor value.
- 1.1.14 Each habitat was scored the following:
- 1 – Poor;
 - 2 – Moderate; and
 - 3 – Good.
- 1.1.15 The calculator allows these to be further divided and provides categories for fairly good and fairly poor. The ecologist undertaking the assessment used their professional judgement, considering the habitat condition assessment criteria, to decide when it was suitable to use these categories.

Baker, J., Hoskins, R. & Butterworth, T. (2019). *Biodiversity Net Gain – good practice principles for development*. Ciria, London.

1.1.16 It should be noted that some habitats are given a fixed score and do not need assessing.

2 PRE-DEVELOPMENT HABITATS

NVC Botanical Survey / Phase 1 Habitat Survey

- 2.1.1 A site visit to update the Phase 1 Habitat Survey of the application site was undertaken in October 2023, a suitable time of year for such a survey.
- 2.1.2 The site was initially separated into homogenous stands, within which the species distribution and composition was relatively uniform. The surveyor then assessed each stand for the species present and their level of dominance.
- 2.1.3 These suggestions were reviewed by the surveyor and the most appropriate classification was attributed to each stand as per Rodwell (1992 & 2000). In line with the guidance on BNG, this was then translated into the most appropriate UKHabs Classification.
- 2.1.4 The habitats are described in turn, with specific reference to guidance on habitat conditions. It should be noted, that in consultation with the Local Authority, the conditions used in the baseline assessment are the intended conditions of the habitats, had they successfully established.
- 2.1.5 Based on the below, the pre-development score for the site is **0.19 biodiversity units**. The difference in this baseline score (compared to the previously submitted assessment) is down to this assessment using the statutory (V4) of the metric, as opposed to now superseded V3.

Brown Roof

LE05 NE

- 2.1.6 It should be noted by the LPA that the baseline condition used in the assessment is that which was intended/consented (a moderate condition); which is in line with initial pre-app discussions between the project ecologist and Nature Conservation Officer.
- 2.1.7 The retained biodiverse roof at Level 05 NE currently sits below a new mesh platform that overcovers the roof and has been replanted with the species mix which failed to properly establish under the original permission. Regular watering, monitoring and weeding was proposed to be carried out as needed within the first year, to give this habitat the best chance of a successful re-establishment.
- 2.1.8 Notwithstanding the above, it is RPS Ecologists current opinion, that this system is not working as was intended (with species failing to establish); and so, the decision has been taken to mitigate the loss of the brown roof in its entirety and recreate the habitat elsewhere, in a more suitable location; with the correct irrigation and substrate, in addition to enhance other areas too.

LE06 SW

- 2.1.9 Similarly, the original approval and construction for the Level 06 SW roof included a brown roof, of an identical structure and species composition as the Level 05 NE. Although this roof does not currently sit below a mesh, it is noted that similar failings have been encountered, likely due to lack of substrate and irrigation.
- 2.1.10 Notwithstanding the above, it is considered that the brown roofs be classified as being of a moderate condition in the baseline assessment, due to the variety of sward height, micro-climates, and lack of invasive species, and in line with its' desired habitat condition.

3 Biodiversity enhancement strategy / Post development habitats

Habitats

- 3.1.1 Habitats on the proposed development site are taken from the Detailed Planting Strategy (see Appendix A, drawing number JSL3923_005 A) and the associated planting palette. Appendices B and C relate to the green wall structures, and green roofs, respectively. These systems will ensure the long-term survival of the proposed habitats on the scheme.
- 3.1.2 Taking into account the proposed use of the site, the post development planting will include an intensive green roof, a façade bound green wall and areas of ornamental planting, incorporating shrubs, bulbs, climbers, herbaceous planting and ornamental grasses; all of which will enhance the biodiversity value of the scheme.

Green (intensive) roof

- 3.1.3 An intensive green roof system will be included atop the proposed pavilion. This habitat will be classified as an intensive biodiverse green roof within the metric as it will comprise a deep substrate with a minimum depth of 600 mm which will achieve additional condition criteria G.
- 3.1.4 The habitat created will provide pollinator resources for invertebrates and foraging opportunities for bats and birds from Spring through to Autumn, and will achieve condition criteria B. No invasive Schedule 9 species (as listed on Wildlife and Countryside Act 6) will be included in the planting scheme, to ensure delivery of condition Criteria C. The proposed planting and management will aim to deliver three criteria within the condition assessment and therefore the proposed assigned condition for this habitat is moderate. This will deliver **0.01 biodiversity units**. Full details and specification for the green roof are provided in Appendices A and B.

Green Wall

- 3.1.5 A façade bound green wall is to be incorporated into the proposals, and this will measure circa 0.0148 ha, assuming that it covers the majority of the identified façade of the building which receives sunlight (see Appendix B for the exact specification). The species to be included within the planting schedule have included those known to thrive well in such situations, such as *clematis*.
- 3.1.6 In order to ensure that the green wall survives in the long-term, beyond the initial establishment, an irrigation system has been designed and will be installed (see Appendix C). The assessment has also assumed that the green wall will only successfully establish where suitable amounts of sunlight are received; as opposed to the entirety of the façade.
- 3.1.7 The green wall, taking the above into account, will be considered to be of a moderate habitat condition, in line with the Natural England guidance on habitat conditions, and will deliver **0.05 biodiversity units**.

Introduced Shrubs

- 3.1.8 Areas (53m²) of introduced shrubs and herbaceous plants chosen predominantly for their wildlife value will be incorporated on the roof terrace of the Level 05 NE Terrace and on the Level 02 Terrace, in raised planters within an area of the roof outside of the buildings projecting roofline. The planters were designed to ensure that there was sufficient soil volume to maintain the planting in the long-term including providing some protection to the rest of the roofscape. will also be created to ensure that the planting establishes and is successful through effective management to maintain the intended plant diversity.
- 3.1.9 The planting scheme for this area was carefully chosen to ensure the species are suitable for the roofscape environment whilst supporting pollinators in particular. Species within this area included:

Ornamental grasses; Rosemary; Thyme; Cone Flower; Sage; Daylilies; and Evergreen shrubs for shelter.

- 3.1.10 In line with the Natural England habitat condition guidance, ornamental planting is not considered suitable for a condition assessment, and is therefore, given a value of N/A.
- 3.1.11 This will deliver **0.01 biodiversity units**. This habitat will hold low distinctiveness by default and does not require a condition assessment.

Level 06 SW (Wildflower Mound Enhancements)

- 3.1.12 Wildflower mounds will be created to improve the roof top biodiversity. This involves the placement and seeding of small mounds of substrate suitable for supporting extensive wildflower species directly onto the brown roof currently in place. This creates islands of high floral biodiversity within the roof top landscape which can in turn greatly increase the biodiversity of invertebrate species supported.
- 3.1.13 These areas will total 0.0169 ha, and be of a moderate habitat condition, delivering **0.12 biodiversity units**.

4 SUMMARY

- 4.1.1 The assessment above indicates that the development proposals for the site will deliver a net gain of **18.99%** for habitats **(the pre-development being 0.19 biodiversity units and post-development being 0.22 biodiversity units)**.
- 4.1.2 These proposals can also be considered against the Biodiversity Net Gain value of the 2022 scheme. Planning permission was granted with a score of 7.87% (i.e. increase of 0.01 biodiversity units). The new proposals assessed here substantially exceed these levels and therefore meet the policy requirement to leave the biodiversity of the site in a better state than previously.
- 4.1.3 Proposed habitats include targeted conditions and the score provided is based on the delivery of habitats that meet the criteria for these conditions.
- 4.1.4 It is recommended that the habitats be audited at various stages throughout the life-cycle of the project, to ensure that the habitat units and conditions have been delivered as intended. The ongoing monitoring and management of these habitats will feed into the wider sustainability and biophilia accounting exercise for the Francis Crick Institute, which aims for a % increase in the biodiversity value of the site.

5 MANAGEMENT ACTIONS

Habitat Creation

Green (intensive) roof

Creation of Habitat

Management of Habitat during the Five-Year Establishment Period

- 5.1.1 In order to ensure the establishment of this habitat, the following is recommended:
- No storage of any materials on the green roof.
 - No trafficking by anyone across the roof.
 - Regular, sufficient and appropriate watering for the first 10-12 weeks for wildflower, seed and plugs.
 - Providing nutrients to vegetation is a necessity for ongoing success and the application of fertiliser between March and September is recommended.
- 5.1.2 In order to ensure the ongoing success of this habitat, the following should be followed, as appropriate:
- Ensure all dead vegetation is removed with a strimmer and provision made for the debris to be safely removed to the ground and disposed of.
 - Any vegetation which has invaded into drainage outlets, inspection chambers, walkways and the vegetation barriers (pebbles) should be removed. Additional washed stoned pebbles, similar to existing, can be added if movement or settlement of the pebble vegetation barrier has occurred.
 - In a biodiverse roof, with the exception of saplings which should always be removed, weeds are only considered as an aesthetic problem. If weeds become invasive, they can be manually removed.
 - The use of pesticide should be discouraged to avoid damaging insect populations utilising new habitats on the site.

Ornamental Planting

Creation of Habitat

- 5.1.3 The planting scheme for this area has been carefully chosen to ensure the species are suitable for the roofscape environment whilst supporting pollinators in particular. The planters should be a suitable depth to ensure establishment.

Management of Habitat during the Five-Year Establishment Period

- 5.1.4 The use of pesticide should be discouraged to avoid damaging insect populations utilising new habitats on the site. Management may be necessary to prevent infestation by weed species which should be removed by hand.
- 5.1.5 Any plants which fail to establish in the first year should be replaced. Re-firm any plants that have been disturbed by adverse weather or interference.
- 5.1.6 Suitable irrigation has been implemented, utilising the existing drainage strategy and attenuation tanks on the site, to ensure that the plants do not go through any periods of drought.

Ecological Monitoring

- 5.1.7 Monitoring visits will be undertaken by appropriately experienced ecologists in at suitable times during the project scheme, to ensure the successful establishment and ongoing management.
- 5.1.8 Following completion of the Biodiversity Audit in 2025 (or earlier if necessary) alternative mitigation measures will be considered to replace/mitigate any areas identified in this plan that are not performing to the level expected in the biodiversity net gain report, submitted with the planning application. Records of use will also be sent to the local biological records centre for London, Greenspace Information for Greater London (GiGL).

REFERENCES

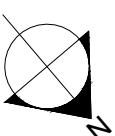
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RHS (2021) *How gardeners can help our declining bees and other pollinators*. Online guide available at: <https://www.rhs.org.uk/wildlife/help-our-declining-bees-and-other-pollinators>.

Department for Environment Food and Rural Affairs (2014). *The National Pollinator Strategy: for bees and other pollinators in England*. Edited 2019. Pollinators and Plant Health Policy, Defra, Sand Hutton, York, YO41 1LZ

Proposed Planting Scheme and Schedule



All plant material to be in accordance with the specified Plant Schedule and the following industry standards; BS 3936 Part 1 (1992), 'Nursery Stock Specification for Trees and Shrubs', BS3936 Part 10: 1990 'Nursery Stock Specification for Ground-cover Plants', BS3969 1998+A1:2013 'Recommendations for Turf for General Purpose' and 'Handling and Establishing Landscape Plants' HTA 1985, revised edition March 2002. Any stock planted outside the recognised planting season shall be containerised. Containerised plant stock shall have fully developed root system within the specified pot size.

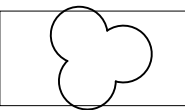
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Notes

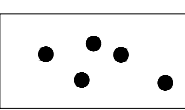
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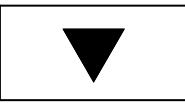
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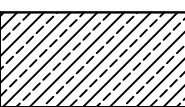
PLANTING DIVISIONS



SEASONAL BULBS



CLIMBING PLANTS



SEMI INTENSE GREEN ROOF AS PLANT SCHEDULE

Note; All planters and roof planting to have a weeping pipe irrigation system to be detailed by others

B	Climbers added to pavilion roof	NJ	CT	Dec. 23
A	Pavilion added and additional planters	NJ	CT	Nov. 23
Rev	Description	By	CB	Date



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Project Level 5 Terrace

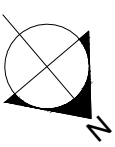
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Status	Drawn By	PM/Checked by
Approval	NJ	CT

Job Ref	Scale @ A1	Date Created
JSL3923	1:50	Jan. 2022

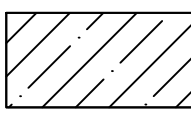
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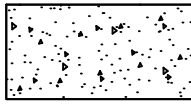
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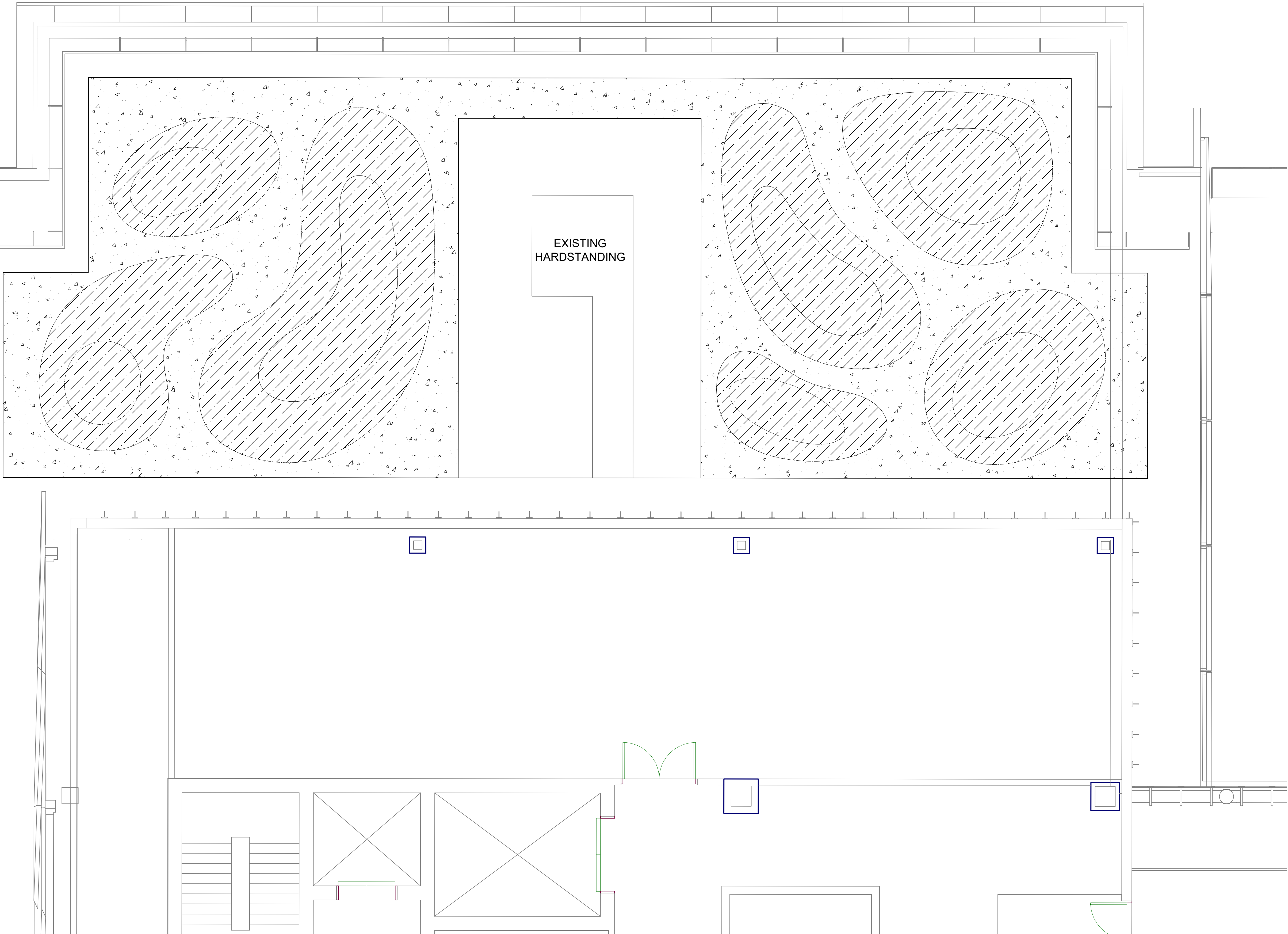
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KEY

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EARTH MOUNDS COVERED BY WILDFLOWER TURF
Varying in height up to 1m
- 

EXISTING BROWN ROOF
Including maintenance margin



Rev	Description	By	CB	Date
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Client **The Francis Crick Institute**

Project **Level 6 Terrace**

Title **Planting Plan**

Status	Drawn By	PM/Checked by
Approval	NJ	CT

Job Ref	Scale @ A1	Date Created
JSL3923	1:50	Dec. 2023

RPS Drawing / Figure Number	Rev
006	-

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Soft Landscape Palette

Client: The Francis Crick Institute

Status: Planning

Project: Level 5

Date: February 2022

Dwg Ref: JSL3923-005

Revision: A

Doc Ref: JSL3923_550

BIOSECURITY STATEMENT

RPS ARE COMMITTED TO THE PROTECTION OF THE UK ENVIRONMENT AND RECOGNISE THE IMPORTANCE OF RISKS POSED BY IMPORTED PESTS AND DISEASES

- All trees and shrubs are to be sourced responsibly, in the first instance, from UK Nurseries / suppliers, where they have been propagated and/or grown on for a minimum of 2 years in the UK (1 year for shrubs);
- In light of this, all suppliers shall be approved, shall share our values and must have a sound Biosecurity Policy / Management Systems in place to demonstrate the traceability of their stock, and an awareness of the prevalence of all current biosecurity threats, both domestically and abroad;
- The contractor is responsible for ensuring that they operate in strict accordance with the latest guidelines set out by DEFRA, including regularly checking for updates in relation to the latest plant health controls / diseases; i.e. (<https://planthealthportal.defra.gov.uk/>)
- Inspections will be carried out at selected nurseries and plant health certification / passports will be sought to identify traceability of tree and shrub stock as required.

PLANT SCHEDULE

Mix	Quantity	Botanical name	Girth / size	Stock	Density / %
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ORNAMENTAL PLANTING

Ornamental Grasses

Calamagrostis x acutiflora 'Karl Foerster'	Clump	5L
Pennisetum alopecuroides 'Hameln'	Clump	3L
Stipa tenuissima	Clump	3L
Stipa gigantea	Clump	5L

Herbaceous

Achillea 'Feuerland'	Clump	3L
Ajuga reptans	Clump	2L
Alchemilla erythropoda	Clump	3L
Agastache 'Blackadder'	Clump	3L
Bergenia cordifolia 'Purpurea'		2L
Centaurea nigra	Clump	3L
Echinacea purpurea	Clump	3L
Euphorbia amygdaloides var. robbiae	Clump	1L
Geum 'Totally Tangerine'	Clump	3L
Geranium endressi	Clump	3L
Geranium 'Rozanne'	Clump	3L
Hakonechloa macra	Clump	2L
Helenium 'Moerheim Beauty'	Clump	3L
Hemerocallis lilioasphodelus	Clump	3L
Hylotelephium telephium 'Purple Emperor'	Clump	3L
Kniphofia 'Royal Standard'	Clump	3L
Liriope muscari	Clump	2LL
Nepeta 'Walkers Low'	Clump	3L
Panicum virgatum	Clump	5L
Perovskia 'Little Spire'	Clump	3L
Phlomis russeliana	Clump	3L
Salvia nemorosa 'Ostfriesland'	Clump	3L
Stachys byzantia 'Silver Carpet'	Clump	3L
Stipa tenuissima	Clump	2L
Verbena bonariensis	Clump	2L

Shrubs

Agapanthus 'Midnight Star'	Clump	3L
Asplenium scolopendrium	Clump	3L
Dryopteris filix-mas	Clump	3L
Hebe rakiensis	30-40cm	7.5L
Kniphofia 'Brimstone'	30-40cm	5L
Lavandula angustifolia 'Grosso'	30-40cm	5L
Pittosporum tenuifolium 'Golf Ball'	40-60cm	7.5L
Pittosporum tenuifolium 'Tom Thumb'	40-60cm	7.5L
Rosmarinus prostrate	20-30cm	3L
Sarcococca hookeriana var. humilis	30-40cm	5L
Thymus Bressingham	Clump	1L
Viburnum davidii	30-40cm	5L

Climbers

Clematis armandi	80-100	5L
Pileostegia viburnoides	80-100	5L

Bulbs

Allium sphaerocephalon	Grade 12/+	BI
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Semi Intense Green Roof Mix

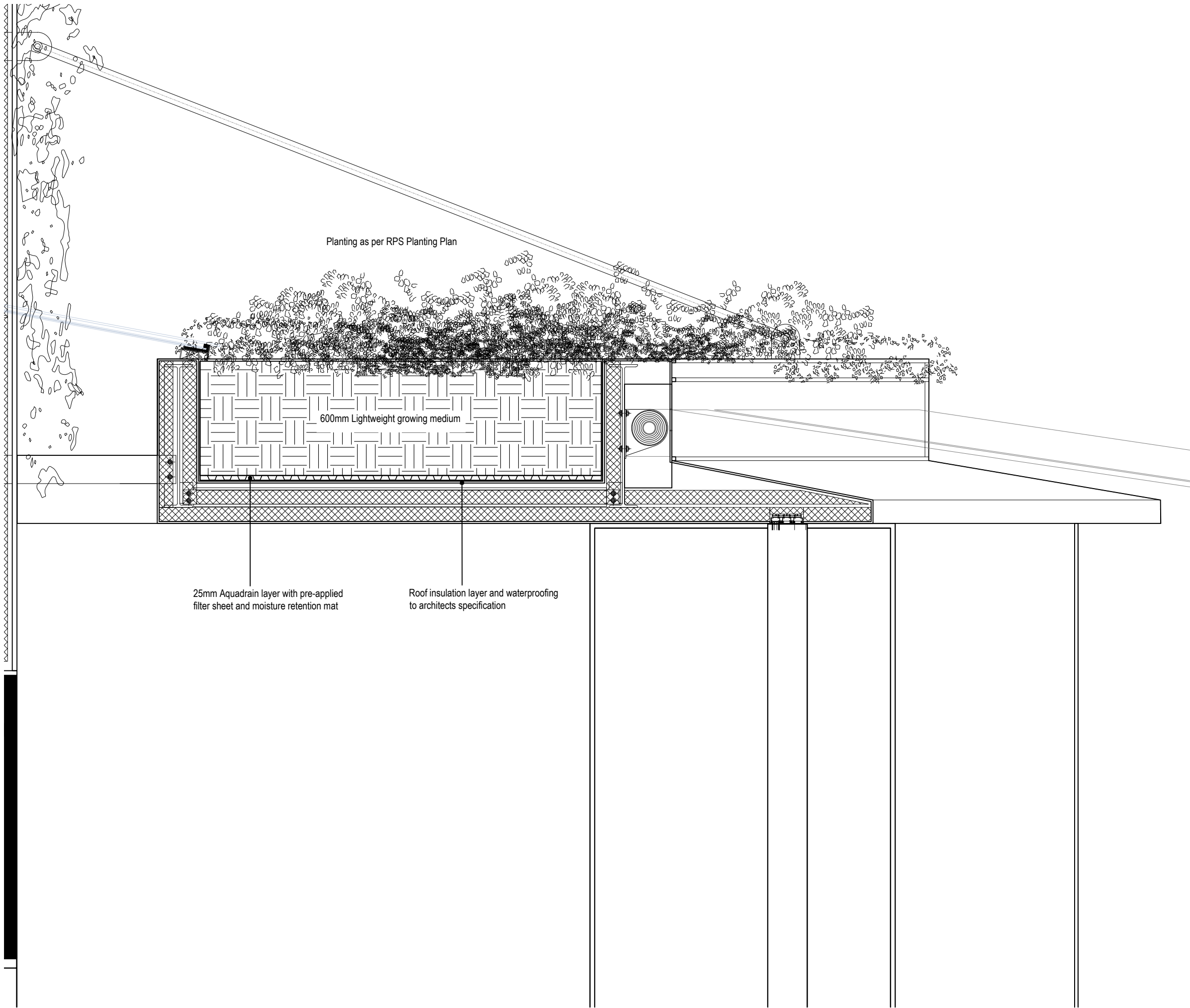
5%	12	Achillea millefolium	Clump	P9	10/m2
5%	12	Agrimonia eupatoria	Clump	P9	10/m2
5%	12	Bellis perennis	Clump	P9	10/m2
5%	12	Campanula glomerata	Clump	P9	10/m2
3%	6	Carex flacca	Clump	P9	10/m2
5%	12	Centaurea nigra	Clump	P9	10/m2
5%	12	Centaurea erythraea	Clump	P9	10/m2
5%	12	Erigeron acer	Clump	P9	10/m2
5%	12	Galium verum	Clump	P9	10/m2
8%	17	Geranium robertianum	Clump	P9	10/m2
5%	12	Helianthemum nummularium	Clump	P9	10/m2
5%	12	Knautia arvensis	Clump	P9	10/m2
8%	17	Leucanthemum vulgare	Clump	P9	10/m2
5%	12	Lotus corniculatus	Clump	P9	10/m2
3%	6	Nassella tenuissima	Clump	P9	10/m2
5%	12	Origanum vulgare	Clump	P9	10/m2
5%	12	Sanguisorba minor	Clump	P9	10/m2
5%	12	Scabiosa columbaria	Clump	P9	10/m2
5%	12	Silene vulgaris	Clump	P9	10/m2
5%	12	Thymus polytrichus	Clump	P9	10/m2

Note: Based on recommended plant list for UK native plants for Green roofing by British Flora
Species to be clustered in groups of 5 -7 maximum

Any alterations to species, stock sizes or planting densities shall only be with prior consent of the CA / LA

Appendix B

Green Roof Specification



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Notes

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A	Updated roof dates	NJ	CT	12.23
Rev	Description	By	CB	Date



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Client The Francis Crick Institute

Project Level 5 Terrace

Title Pavilion Green Roof Detail

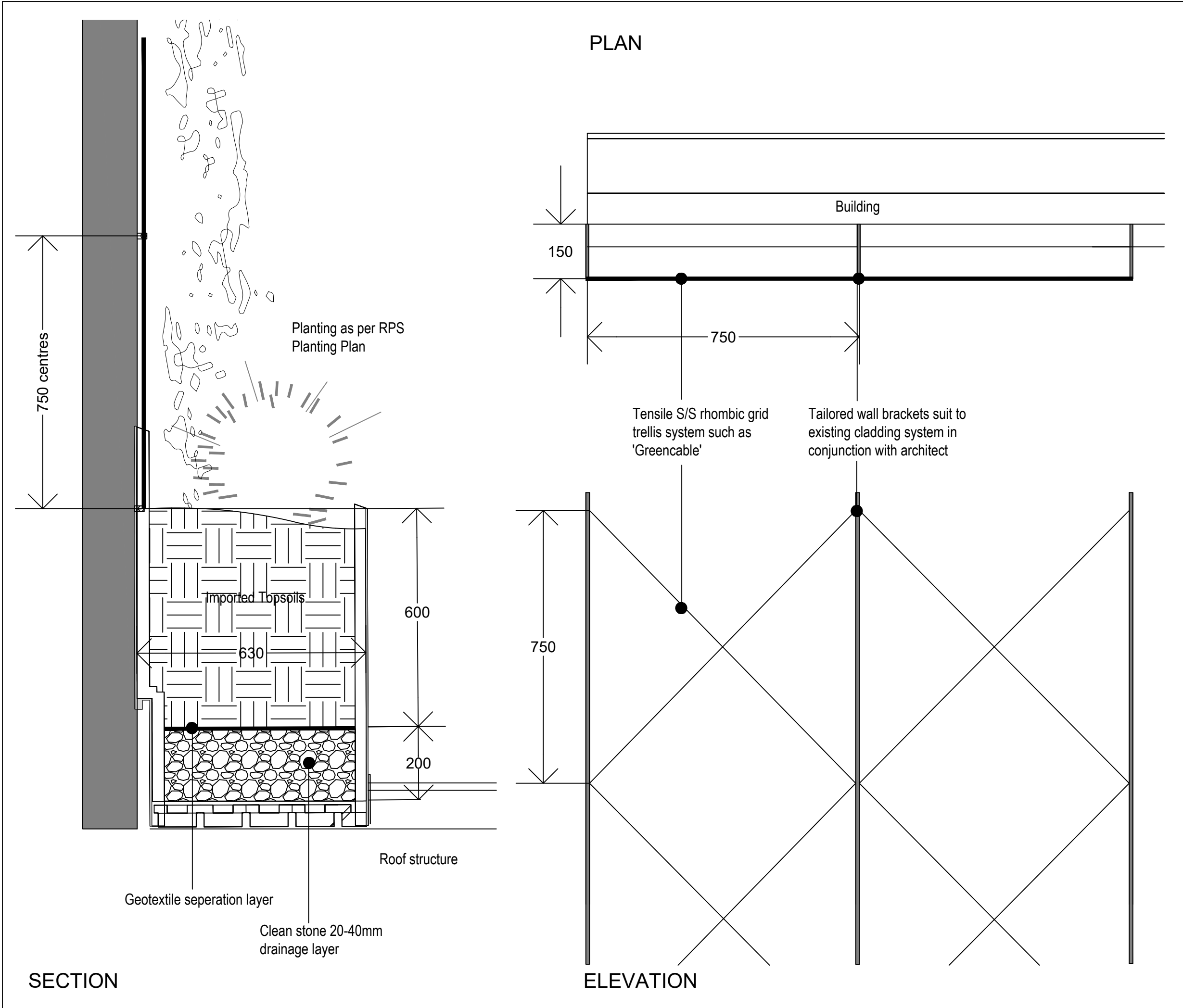
Status	Drawn By	PM/Checked by
Planning	NJ	CT

Job Ref	Scale @ A3	Date Created
JSL3923	1:20	Nov. 23

RPS Drawing / Figure Number	Rev
015	A

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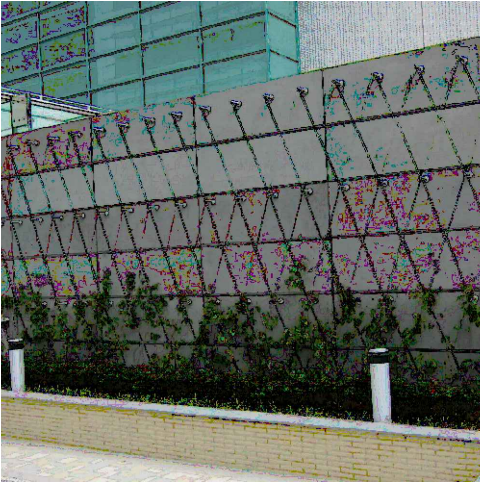
Appendix C
Green Wall Specification



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Example of stainless steel cable system

Rev	Description	By	CB	Date



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Client The Francis Crick Institute

Project Level 5 Terrace

Title Planter and Trellis System

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