Sustainability Statement

Camden Highline

atelier ten

Sustainability Statement

[5166] Camden Highline
Revision 4 April 2022

Prepared by:	Ivan Jovanovic	21/12/2021
Checked by:	Younha Rhee	19/04/2022
Approved by:	Meredith Davey	19/04/2022

1 Sustainability Statement

Ecology and sustainability are core values of the Camden Highline, beginning with planting and encompassing a circular understanding of materials and construction methods.

1.1 Introduction

This Sustainability Statement was produced in support of the planning application for the "Camden Highline" 'Phase 1'. The planning application seeks permission for:

Works relating to the "Camden Highline" 'Phase 1', a high-level garden on an existing viaduct, including access at Camden Gardens and Royal College Street, Commercial kiosks (within existing arches-Class E), seating area, pedestrian walkway, event spaces, woodland balcony and ancillary waste and storage facilities."

1.2 Executive summary

Historically, overground rail was perceived as a major physical barrier between neighbourhoods, often dividing them socially, economically and ecologically. Some of the world's greatest cities have now started city-scale projects to turn this major infrastructure into economic, social and environmental regenerators, linking the urban fabric back together by providing exciting, shared space for community and business activity whilst at the same time improving human and natural wellbeing.

Our approach to sustainability is rooted in design for circular resource flows and whole life cycle impacts. This approach prioritises reuse and upcycling, which is epitomised by reuse of the viaduct structure, the use of reclaimed materials, and our approach to future adaptability, operation, and end of life. The proposed furniture and kiosks are designed as a kit of parts at standard sizes, and use simple mechanical fixings to facilitate fast and simple adaptation, removal and reuse at the end of life. They are constructed from reclaimed material wherever possible, including timber railway sleepers, reclaimed beams from industrial warehouses and found objects. The screens and park decking will be made of lightweight fibre reinforced plastic which will be demounted and reused elsewhere at the end of life.

Embodied carbon emissions from the development and construction are greatly reduced by the reuse of the viaduct as the supporting and enclosing structure, finish, shelter and thermal mass for kiosks. Circular economy strategies and use of reclaimed materials further reduce embodied carbon, demand for new/raw materials and transport emissions.

Over the project life, the proposed Highline will store a considerable amount of biogenic carbon. Carbon will be stored within the landscape, its soil, planting (primarily trees), timber for urban furniture (e.g. reclaimed railway sleepers, beams), timber structure, wood fibre insulation and timber-based finishes for kiosks.

The Highline will use energy for the operation of the kiosks and outdoor lighting, but the energy use density will be very low. Electricity will be supplied from the grid, and to demonstrate net zero carbon in operation, all consumed power will be procured from certified renewable sources that can demonstrate additionality.

Ecological sustainability is one of the core values of the Camden Highline. Emergent plantings (typical of abandoned rail sites) will be embraced and enhanced with more curated horticultural plantings that will create a dynamic and unusual mix of experiences. The proposed planting design will enhance the visitor experience across seasons, provide wildlife habitats, and delivers significant ecological and biodiversity gains. The landscaping proposal will maintain and improve the existing ecological corridor along the rail line, helping to bring nature back to the city whilst providing health outcomes to both visitors and the local community.

The Camden Highline proposal is to create an elevated linear park in a dense urban landscape. The Highline will be new public realm, a connector of local neighbourhoods and ecological habitats, and a space for local businesses and amenities whilst also providing much needed access to open space, leisure, recreation, and nature. Over its lifetime, the project has the potential to deliver around to £92m worth of aggregable gross value added (GVA) benefits to the local (Camden) economy, as part of a collective total of up to £225m benefits over 20 years.

1.3 Circular economy and whole life cycle approach

Our approach to sustainability is based on circular economy principles and whole life cycle impacts. We have considered resources and processes before, during and after the project's lifetime to ensure that materials and resources are reused for as long as possible.

The existing viaduct structure will be reused in its entirety. It will provide a platform for the elevated park and outdoor activities whilst its arches provide structure, shelter and passive insulation for the kiosks. The viaduct is very robust and with good periodic maintenance it can continue to store its embodied carbon for generations whilst avoiding extraction and transport of new/raw materials.

Use of reclaimed materials and components for construction and upcycling at the end of life will be prioritised over new/raw materials use, recycling, and disposal to landfill. Where possible reclaimed material sourced on-site and demolition material arising from the construction activities will be diverted from landfill and reused on-site as an infill and substrate for biodiverse landscaping.

The proposal is to use fibre reinforced plastic (FRP) panels for fencing and decking. FRP is as robust as conventional concrete and steel, but significantly lighter, so its production and transport produces less carbon emissions.

The furniture, stairs and platforms will be made of reclaimed materials such as railway sleepers, timber beams, found objects and components available on the local market of reclaimed materials. The benches on the Highline will be made from heavy timber from reclaimed industrial warehouse beams. They are very robust, require little or no maintenance and have a very long life, which will further lock-in embodied carbon and avoid using new/ raw materials.

A flexible but robust kit of parts will form the backbone of the Highline's design, allowing variations of layout and accommodation in response to local conditions. The system can easily be adapted to found conditions, added to or removed. A perforated decking system allows for both water porosity and vegetal entanglement, blending and merging the organic with the built elements of the site.

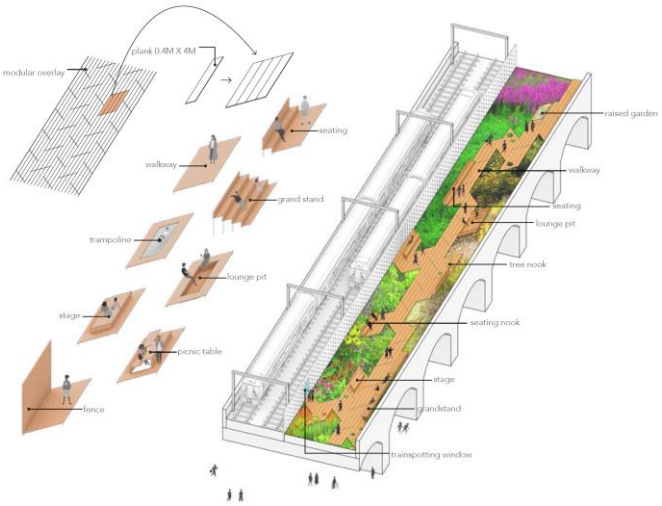
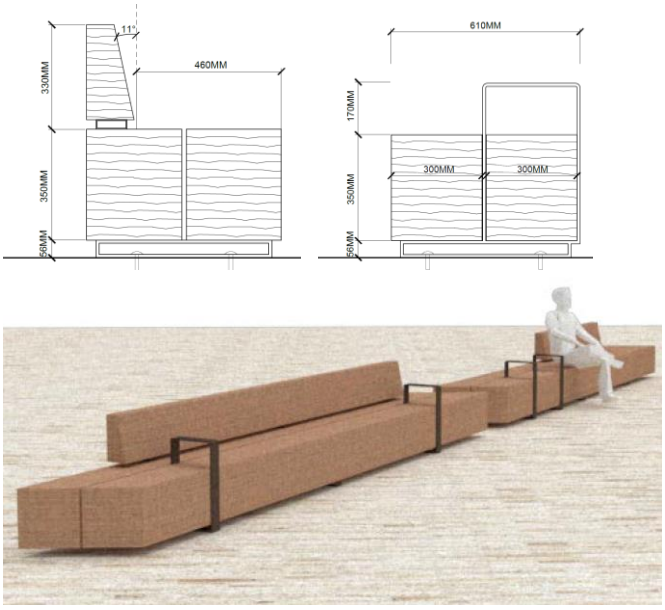


Figure 1.1 Highline urban furniture kit of parts

Credit James Corner Field Operations

The FRP screen and decking panels will be reclaimed at the end of life. Circularity will also be enabled through standardisation of the FRP panels size and by using standard mechanical fixings to make them easier to demount and remount elsewhere maximising the flexibility of future use. Panels will have numerous possible upcycling options such as fencing, pavement for walkways in industrial, transport, leisure and natural environments (e.g. wetlands).

The aim is to also use standard size industrial lifts which will also have a long life, require minimal maintenance and can easily be demounted, refurbished and reused elsewhere. Both lifts and lighting will be leased from the supplier ensuring they are properly maintained, refurbished or reused at the end of life.



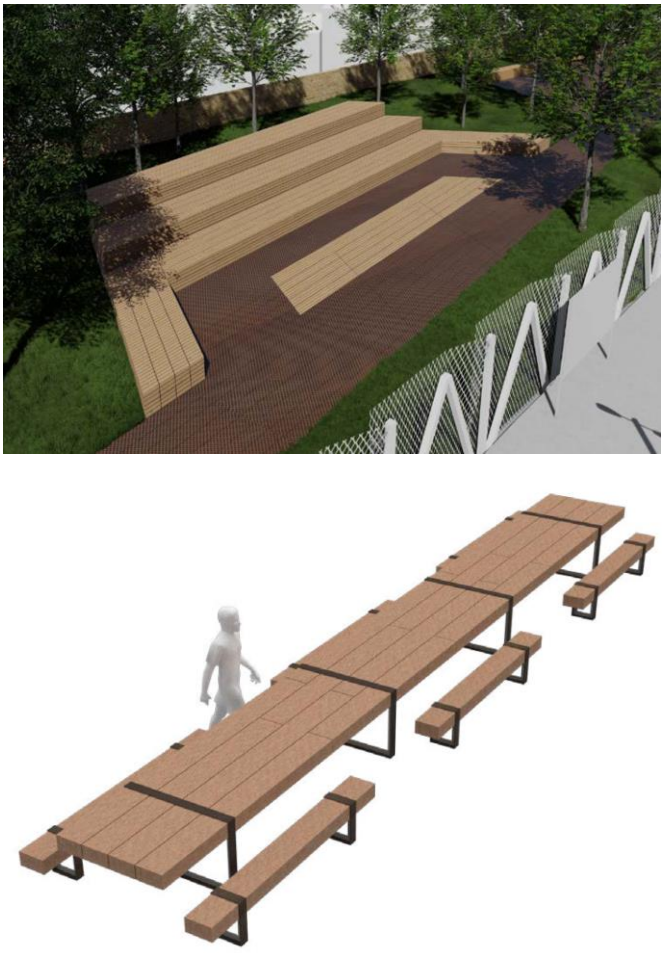


Figure 1.2 Urban furniture made of reclaimed lumber

Credit James Corner Field Operations

Our procurement strategy will include a requirement for the FRP manufacturing process to use natural or recycled fibres and clean (fossil-free) fuels as much as feasible to further reduce their environmental footprint.

Responsible, reclaimed, local material sourcing, component circularity and whole life embodied carbon targets will inform the procurement strategy for the project. This will also include sourcing materials from a local reclaimed material specialists and material banks such as GlobChain, Reyooz etc.

Our circular economy approach will minimise upfront embodied carbon well below industry best practice benchmarks such as LETI or RIBA 2030 targets, primarily due to the reuse of the existing viaduct structure and low impact, natural and reclaimed materials. The carbon emissions for construction and operation of the Highline, new materials for kiosks, etc. over its lifespan are much lower than the embodied energy saved by retaining the existing viaduct and avoiding the construction of a new elevated park and public realm infrastructure.

Over the project's lifetime, the Highline will store a considerable amount of biogenic carbon. Carbon will be stored within the landscape, planting (primarily trees and roots), soil, timer for urban furniture (e.g. reclaimed railway sleepers, beams), timber structure, wood fibre insulation and timber-based finishes for kiosks. Biogenic carbon stored within the Highline could be greater than the embodied carbon resulting from the construction and new materials, helping the Highline to become an exemplar of low carbon development, acting to avoid the worst effects of climate change before the 2030 cut-off date.

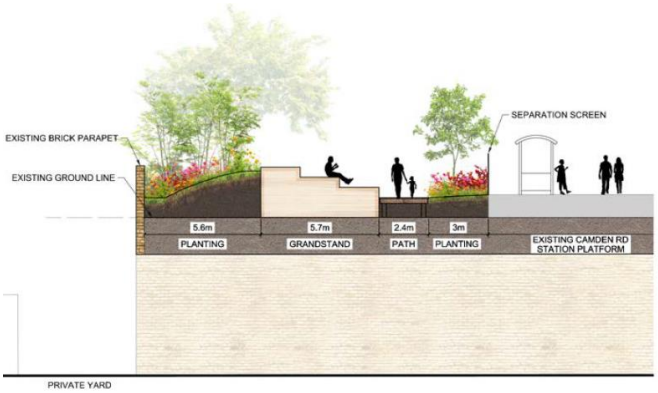


Figure 1.3 Highline will sequester biogenic carbon through planting, reclaimed lamber, finishes, insulation and soil

Credit James Corner Field Operations

1.4 Energy and carbon emissions

The Highline's energy use will include lighting for the public footpath, operation of the kiosks, and electricity and fuel to power the construction plant and ancillary construction infrastructure.

The lighting design will minimise energy use by designing for minimal illuminance levels and lighting control for safety whilst at the same time avoiding any negative impact on wildlife, glare and night sky pollution as well as light spill to neighbouring properties.

The main energy use of the existing viaduct is lighting. The existing inefficient lighting will be removed and replaced with longer lasting and energy efficient LED light fixtures. This will reduce the requirement for maintenance and ongoing replacement. Lighting life span, energy efficiency, colour temperature and rendering efficiency targets will be used to inform the selection of appropriate lighting equipment suppliers for the project.

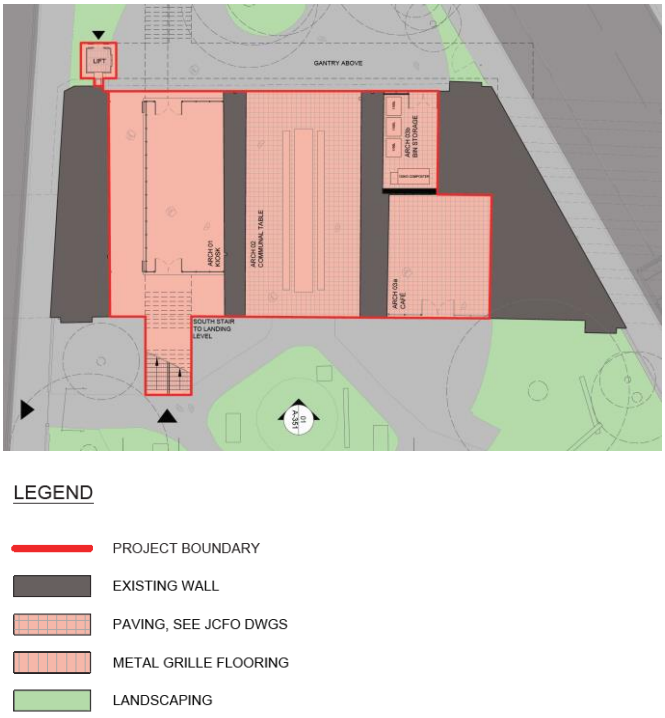


Figure 1.4 Highline Phase I - Enclosed kiosks under arches

Credit James Corner Field Operations and vPPR Architects

The proposal's new amenities include several kiosks which will require building services such as heating, hot water, ventilation and potentially cooling. Phase I of the Highline includes two small kiosks under the arches which will exceed building regulation Part L size threshold of 50m² and will need to comply with the relevant requirements of building regulations, conservation of fuel and power: Approved Document L (AD Part L).

Overall, the energy use of the proposed Highline will be much lower than a typical urban development since only a small proportion of the development area is internal space. Most of the Highline's energy demand is for outdoor lighting, which is minimised by the use of LED lighting, controls and design for energy and light efficiency.

Due to the Highline's low energy demand density, the biogenic carbon absorbed by the trees and planting on it may match or exceed carbon emitted from its operation (i.e. energy, water, and waste), effectively absorbing carbon from the environment and storing it in the biomass of the landscape and potentially resulting in the project being net carbon neutral or carbon positive.

The constraints of the site make it a poor target for renewable energy generation. Instead, power will be supplied from the local electrical infrastructure. To demonstrate net zero carbon emissions in operation we will procure green/renewable electricity from a dedicated renewable source off-site that ensures additionality in line with UKGBC guidelines.

The contractor procurement process will include requirements to monitor, report and minimise energy use on-site and use emission-free machinery to minimise local emissions and noise.

1.5 Waste

There are no existing waste streams associated with the viaduct, other than the minimal waste associated with ongoing maintenance. The proposed Highline will result in minimal additional waste from visitors and the small food and beverage programme. Any waste arising will be sorted at source, sent to reuse and recycling facilities or disposed to landfill in line with best practice for London.

Construction waste can be primarily crushed and reused on-site, as infill for landscaping where possible. Any other waste will be diverted from landfill (>95%) for recycling.

1.6 Socio-Economics and human health

Successful cities like London depend on high quality public spaces to generate social and economic activity. The Camden Highline is a major regeneration project that will create new public realm, local amenities, and an improved streetscape which will be enjoyed by both visitors and the local community. The High Line in New York was a major catalyst for local businesses and communities, generating social and economic value that did not exist before.

The proposed Highline park and planting will create a dynamic and unusual mix of experiences by enhancing seasonal interest, variation, and habitats. Better access to nature, open spaces and new green walking corridors will generate recreational benefits for residents and visitors. It is well documented that access to nature and recreation significantly reduces social costs including healthcare.

A comprehensive process has been undertaken to establish the potential direct, catalytic, and wider strategic benefits offered by the Highline scheme. This has applied the baseline evidence gathered from stakeholders and knowledge of the potential functional roles of the Highline to develop an overarching impact framework. A total of six impact topics have been identified covering direct and catalytic impacts:

- **Construction and operational impacts**: direct employment and business benefits
- **Development and property impacts**: uplift in existing residential and commercial properties and future development values
- **Benefits to Camden's economy**: expenditure impacts from additional visitors
- **Benefits for users**: travel and safety benefits, health and wellbeing impacts
- **Environmental impacts**: ecological, heritage & townscape, and noise & air quality impacts engendered by the scheme
- **Public sector benefits**: changes to business rates and council tax returns and health service expenditure

Over its lifetime the project has the potential to deliver around £92m worth of aggregable GVA benefits to the local (Camden) economy, as part of a collective total of up to £225m worth of benefits over 20 years. Approximately one third can be realised from the Phase 1 development.

Figure 1.5 Camden Highline benefits assessment - Summary of Impacts for the whole Highline over 20 years

Credit Regeneris

1.7 Ecology

In a city like London it is nearly impossible to cut through the dense urban fabric and create biodiversity corridors to enable wildlife migration. The continuity and connectivity of habitats along the rail corridor is of value as it provides an opportunity for a variety of species to use and exploit what would otherwise be a series of small, fragmented areas in neighbouring amenity spaces and gardens. It also offers an opportunity to connect to a city-wide network of habitats and to create new ecosystems on top of and in the vicinity of the viaduct.

Part of the Highline site is a 'Strategic Wildlife Corridor' identified by the Camden Local Plan which includes a number of rail corridors across the borough.

The Highline proposal is to provide new connections by creating an elevated park and walking route that will eventually connect Camden Gardens to York Way, north of King's Cross which would also act as a high ecological value biodiversity corridor.

Figure 1.6 The Camden Green Loop

Credit Camden Town Unlimited/Euston Town

To inform the Highline design, a Preliminary Ecology Assessment of the Highline (Phase 1) was undertaken by Peter Massini in September 2021. The survey concluded that the site currently has low ecological value. It's dominated by sycamore and buddleia scrub which are ubiquitous and dominant along rail-sides in Camden, and [does] not provide the variation in species and structure that would provide opportunities for a wider range of wildlife.

The current structure of habitats on site (i.e. patches of trees and shrubs interspersed with more open areas of grasses and flowering plants) will be replicated, as this provides a series of ecotones which is likely to maximise the diversity of wildlife that will utilise the proposed linear park.

The Highline site already has value as a city-scale biodiversity corridor. The recommendation is to maintain it and expand it where possible. The following improvements will be implemented to allow it to support a great variety of wildlife and maximise its potential as an ecological and biodiversity corridor:

- The mature trees will be retained where possible
- A mix of new native and ornamental shrubs bearing spring flowers and winter berries.
- Patches of bare sand and occasional logs in the grassland to provide a variety of niches, formed into banks or mounds where possible to maximise the micro-topography.
- A range of nesting and roosting sites for birds, bats and invertebrates.
- A place for drinking and bathing for birds and habitats for invertebrates that are semi-aquatic.
- New planting on the bridges, which are currently bare metal. This will help knit together the habitats on the Highline into a corridor.

The design team partnered with the London Wildlife Trust to help define appropriate plant species for the Highline, with the aim of increasing biodiversity and animal habitats. In addition to recommending plant species, the London Wildlife Trust undertook a habitat survey which detailed the plant and animal life on and around the viaduct structure. They recommended not only structural habitats, like birdhouses, could be incorporated into the park design, but also tree and plant species that could create happy homes for bats, birds, and foraging animals. Landscape designers will also use shade and specimen trees from Network Rail's list of approved tree species.

Figure 1.7 Typical ecological habitats

Credit James Corner Field Operations

Each area of the Highline will be planted with different plants, flowers, and trees grouped into four ecotypes that will characterize the different segments of the park and create distinct ecosystems and experiences:

- Ecotype 1: Young woodlands
- Ecotype 2: Hedgerows planting
- Ecotype 3: Meadows
- Ecotype 4: Productive gardens

Figure 1.8 Four distinct ecosystems and experiences are proposed

Credit James Corner Field Operations

Local birds, like the Crested Tit and the Redstart, will be drawn to the Highline's abundant trees and planting. To augment these natural habitats, there will be bird houses with holes sized for these species.

Bats are an integral part of London's ecosystem and they provide critical ecological functions. By providing homes for these winged critters in the form of bat boxes, the Highline can add to the ecological health of Camden and the London region.

Insects are a vital, and often overlooked, part of urban ecology. By providing food for larger animals, and by pollinating plants and flowers, insects of all kinds form a key link in the ecological cycle. With "insect hotels" in the form of bee posts, blocks with nooks and crannies that evoke a log in the forest, the Highline landscape can be home to these life-preserving insects.

Figure 1.9 Local birds, bats and insects and new enhanced habitats

Credit James Corner Field Operations

1.8 Air quality

The Highline concept is based on zero and low emission transport modes and walkable neighbourhoods' concept which will result in a better local air quality.

Additional Highline planting will filter particle pollution from the rail and minimise spread into the public realm and adjacent properties.

The proposed energy strategy will be all-electric, which will result in zero local emissions and pollution. Kitchen exhausts from café's will be filtered and discharged so that adequate dilution is ensured before affecting adjacent properties of public areas.

1.9 Traffic and transport

The Highline concept celebrates walkability and localism. The Highline area lies in a highly convenient location that benefits from a high-quality provision of public transport, typified by the Overground network adjacent to the Highline.

The Green Loop is a four-mile walking route that will link Camden Town, King's Cross and Euston together into a cohesive destination. The route will also remove pedestrians from the highway, creating a new segregated walking route connecting key locations in the area and will therefore enhance and improve the walking environment in the area significantly.

The development will be highly positive for the local area, creating new and enhanced green links that will provide both a movement function, and also new spaces to spend time. The movement function will connect key areas, while the time spending function will help in achieving the aspirations set out within the Healthy Streets objectives.

Rail services will be used to deliver equipment and material to the Highline to reduce the traffic and environmental impact of construction. Our construction management plan is proposing to bring as much material as possible on site via the rail line since freight trains share this line.

The Transportation Statement was produced by AKT II, It concludes that there won't be added traffic due to additional visitors. The analysis calculated that the Arches would generate in the region of 741 two-way movements per day, of which 95% would be undertaken on foot. Traffic impacts for deliveries and waste servicing to the kiosks will be easily accommodated with the exiting roadways and parking areas.

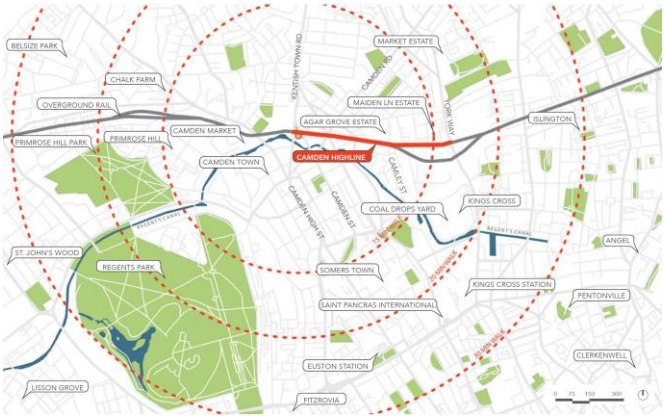


Figure 1.10 A 15-minute neighbourhood

Credit James Corner Field Operations

1.10 Water Management and Flood Risk

The proposed Highline will not increase flood risk as the site's stormwater runoff rate or quality will not increase. The newly planted areas will further filter the storm water, increase the water storage capacity of the viaduct, and allow for increased water evaporation and therefore reduce runoff. Water can be harvested for productive gardens along the Highline, and used to form small rainwater-fed wetland features to support local fauna.

1.11 Ground Contamination

Tony Gee undertook an initial ground contamination survey. As expected, the soil on the viaduct is contaminated with PAHs and metals due to the decades of industrial use of the site, though concentrations were lower than anticipated and only trace (<0.001 %) asbestos was found. A few options are being explored for capping the existing soil and providing clean subsoil for the planting including strategic importation of clean soil and the use of deployable soil bags.

Figure 1.11 Clean soil for landscaping (mounds and soil bags)

Credit James Corner Field Operations