

Penarth Heights Sustainability Statement



FEBRUARY 2007

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Summary

The sustainability issues addressed under each of these topics and accompanying planning application supporting statements formulate the Crest strategy for the re-development of the Penarth Heights site and the surrounding area. The strategy broadly accords with sustainable development policies of the VoG Unitary Development Plan, the Penarth Heights Planning & Design guidelines (March 2004) and SPG on Sustainable Development.

The headings go beyond the criteria set by the BRE Ecohome environmental labelling system, however, our approach to sustainability include and demonstrate measures to achieve a 'very good' rating. The appendices include a more specific Ecohomes prediction indicating a score over 60 required achieving **'very good'**.

Finally, attached is a copy of the Crest Sustainable Development Policy reiterating the Crest commitment to sustainability by the company and its Board.

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Introduction

Crest Nicholson (South West) Ltd, operating from Bristol, is part of the residential arm of the Crest Nicholson Group. Crest Nicholson has been building houses for over forty years.

Crest has assembled an experienced team including Edward Cullinan Architects and Nicholas Pearson Landscape Architects. The whole team view Penarth Heights as a unique opportunity to create a **cohesive, sustainable** and imaginative addition to the town, which will be an **integral** part of the community.

Sustainable development, design innovation and build quality are the core values that differentiate Crest. This enabled Crest Nicholson to become the partner of choice for the public and private sectors. Our strategy is to work with local planning authorities, housing associations and other land owning agencies in raising social and environmental standards in main stream housing and community regeneration. We have adopted modern methods of construction that exceed the increasing standards set for affordable, secure and flexible homes and will make energy efficiency, waste reduction and water conservation economically viable.

Crest Nicholson plans to select contractors with 'good climate' change capabilities, developing and promoting expertise in climate change design.

"Crest Nicholson is a residential and mixed-use development company with emphasis on creating sustainable communities."



Stephen Stone
Chief Executive

1.0 Site Layout

1.1 Use of previously developed land

A fundamental issue for sustainable development is the type of land on which to build housing. Housing people on previously developed or 'brownfield' land that is derelict, vacant or in other use, is environmentally preferable as it conserves undeveloped or 'greenfield' land as countryside, agricultural land, or amenity space in existing urban areas. The Billy Banks is a major brownfield opportunity.

1.2 Location

The site lies on the northern edge of Penarth Town. The site enjoys breathtaking views of Cardiff Bay and the Severn estuary. For a community to be socially sustainable, people must want to live in it, now and in the future.

This site is in an area where there is demand for housing and people want to live in this location. The development site is within easy walking distance of a range of amenities; car usage can thereby be reduced, thus alleviating traffic congestion and reducing energy use. Access to bus routes and the railway station is in close proximity. Shops and other amenities can be found in Penarth Centre and Penarth Haven, all in easy walking distance (see Transport Assessment and Planning Statement).

New development will assist in raising the quality of environment for the benefit of new and existing residents in the area.

1.3 Land use

The proposal is for 100% residential development of 1-5 bed properties, including 20% affordable housing, thereby ensuring vitality and diversity of community. Employment with retail, commercial, leisure and community uses are also all very nearby. All dwellings will also include home-office facilities, enabling residents the necessary space and services to be able to work from home.

Landscape quality and environmental capacity has been considered from the outset in the planning of the development, responding to the wider landscape by looking at movement of people, water flow, wildlife and ecosystems. Formal and informal recreational opportunities are also provided in a variety of opportunities on and adjacent the site, e.g. Plassey Square, the Bowl, surrounding woodland and Paget Road play area etc.

1.4 Urban Design

The quality of public space between homes and other buildings is as important as the private space within homes and contributes to the success of neighbourhoods and settlements. The context of the site, and the way it relates to adjacent residential areas and activities has determined and informed the design strategy. (See Design and Access Statement with regard to the constraints and opportunities of the site and an explanation of the design concept).

1.5 Density

The development will consist of 377 dwellings consisting of 1, 2 and 3 bedroom apartments and 2, 3, and 4 bedroom houses giving a diverse mix over a broad range of house types. 20% of the housing will be affordable. This represents a density 56 dwellings/hectare based on a gross site area of 6.7 ha .

2.0 Buildings

2.1 Adaptability

Adaptability is a prerequisite of sustainability.

Adaptability has been achieved by:

- adaptable built forms i.e. terraced houses;
- studwork to allow for the later installation of adaptations such as stair-lifts or handrails;
- use of eco-joists that permits non-load bearing internal partitions.
- provide service installations that are easily accessible for replacement and improvement.

2.2 Durability

Durable buildings reduce the use of resources in the long term. Inclusion of a durable specification and detailing will be complemented by designing for adaptability and good maintenance. The specification of materials and products will consider value and performance and will the replacement cost and frequency of components including roofs, windows, heating systems, bathrooms and kitchens.

2.3 Accessibility

The affordable housing will comply or exceed the Welsh assembly Government 'Pattern Book' house type standards. All affordable housing will comply with the Welsh Housing Quality Standard and specifically meet 'Secured by Design' and Lifetime Homes' standards.

2.4 Low environmental impact

No ozone depleting substances are to be used in the construction of this development.

A high proportion of structural timber used in this development would be FSC – certified imported or local grown timber, above all, threatened species will be avoided.

The energy 'embodied' in the construction of the home itself is a significant proportion of the total energy used and resulting emissions during the lifetime of a low-energy building. We will consider using materials that are:

- recycled;
- minimally processed;
- locally produced.

A significant proportion of building elements used in the construction of this development will achieve an 'A' rating taking account of the full life cycle and in accordance with 'The Green Guide to Housing Specification.'

To reduce the nitrous oxides emitted into the atmosphere boilers used in this development would less than 40 mg/kWh (Dry NO_x level).

See section 7.0 Energy, also.

2.5 Re-use and recyclability

When designing new buildings for this development consideration will be given to the following:

- potential for using second-hand materials.
- preference to new materials that can be easily recycled and have a high recycled content.
- design in a way that permits the re-use or recycling of materials at the end of the building useful

life.

- where buildings have to be demolished on this site, recycle or re-use of the demolition materials.
- specify materials rated 'A' in 'The Green Guide to Housing Specification' for recyclability.
- assess the ease with which the building can be deconstructed when no longer required.

2.6 Health and wellbeing

Improvements in energy efficiency, heating systems and ventilation would be integral to providing affordable warmth. These measures would be undertaken with care to ensure that all health and quality-of-life outcomes are positive. Attention must also be paid to adaptability and control of the thermal environment.

The lighting of houses, particularly the use of daylight and sunlight, has a significant effect on well-being and quality of life. Domestic lighting design would integrate natural and artificial light effectively to create spaces that are pleasurable to be in at all times of day. Optimising the design of lighting would require consideration of the energy trade-off between natural light and heat losses.

Environmental noise can have a profound effect on quality of life. Extraneous noise sources outside the site will be carefully considered, the development will be designed to mitigate any potential problem. Care in design, specification and construction of houses will ensure effective acoustic insulation from outside sources or between dwellings.

Indoor air pollutants have many possible adverse health effects. The use of materials with toxic emissions would be minimised through good design and the use of natural alternatives considered.

2.7 Procurement

Crest will ensure that everyone involved in planning and implementing this sustainable development understands the relevant issues and is committed to the aims of the project. Crest will seek to adopt a partnership form of contractual relationship that requires the client, consultants, contractors and sub-contractors to work together, pooling their knowledge and experience towards commonly agreed goals, which include sustainable development.

3.0 Society

3.1 Social exclusion and poverty

Developing more sustainable forms of housing and building sustainable neighbourhoods is not confined to environmental and technical issues; social and economic factors, people and their communities are the vital elements.

3.2 Social cohesion

Social cohesion means that society as a whole cares for all its members and works to keep everyone as part of the whole. It means a neighbourhood with a sense of community. Designing a high-quality design of spaces between buildings and care for the environment will foster social cohesion. The new development demonstrates a mix of dwelling type and tenure creating a balance of ages and household types.

3.3 Community involvement development

Crest has implemented an active public participation strategy, designed to maximise the existing community and key stakeholders in the decision making process from inception to completion of the project.

3.4 Mix

The development will have a mix of rental properties, housing for sale, and shared ownership. The mix of tenure, unit type and size will contribute to a more sustainable community, avoiding concentrations of certain groups such as isolated elderly or vulnerable people. The sustainability of communities can depend on how well the needs of older people, teenagers and young families are met both singly and collectively.

The layout demonstrates a flexibility to enable 'pepper potting' of owners, tenants and low-cost home owners. The range of dwellings is appropriate for the location and local housing needs.

3.5 Crime

The design of the development will promote a sense of personal and community safety.

The proposed development would;

- design in safe and secure environments by ensuring natural surveillance and human presence.
- provide safe routes for pedestrians and cyclists.
- design in territoriality and community involvement.
- consider which Secured by Design recommendations are appropriate to this site.

3.6 Environmental awareness

Our lifestyles and the way in which we live in our homes affect the environment significantly. So clear instructions should be given on the environmental benefits of "green" housing and the best way to occupy and operate it.

Consideration will be given to;

- help residents accept the green agenda: emphasise cost savings on water and fuel bills and encourage take up of green energy tariffs.
- provide a separate environmental awareness section in the purchaser's manual.

3.7 Local economy

Crest will implement a strategy for using local construction labour and local businesses for the new development and for maintenance. Locally source, building materials and components for the development and for maintenance. Participate in and support local training and job creation schemes.

4.0 Travel

Crest is awaiting guidance from VoG on proposed improvements to the local transport infrastructure as part of the S106 contributions package.

4.1 Reduce the need to travel

There is good local access to amenities, within walking distance or easily reached by a good public transport service. The new development will help support local services and facilities, and make public transport more viable. Providing space and services to be able to work from home could reduce the need to travel.

4.2 Alternatives to cars

The new development could;

- encourage bus companies and local authorities to introduce new services to meet the needs of new development.
- make existing services more viable by increasing the overall population density.
- make it convenient to catch the bus by designing clear direct routes to the bus stop, with convenient crossing places on major roads.
- provide information on local public transport routes and services.

The site is close to and can be easily linked to existing cycle networks.

The new development promotes 'shared space/homezone' concepts that encourage pedestrian priority over the car, throughout the scheme. Cycle storage will be provided for apartments. The new development is close to and can be easily linked to existing and planned safe pedestrian route networks.

4.3 Cars

The development would be designed to enable the layout of buildings and enclosure to calm traffic and reduce speeds. Shared streets would be considered to give pedestrian priority with less emphasis on the car, combining landscape and amenity into an attractive living environment. Parking on the development would be provided at approximately 150%. Parking is to be integrated in a way which does not dominate the external environment and does not inconvenience pedestrians and cyclists. Car parking would be integrated with landscaping and trees.

5.0 Waste

5.1 Waste

All dwellings on the new development would be provided with opportunities and facilities to recycle household waste by provision of internal and external storage. In addition, residents will be provided with information regarding what local facilities are available for recycling and composting.

The following measures will be taken during construction to reduce site waste

- provide a waste minimisation strategy to be implemented and monitored
- segregated waste bins for construction waste to be provided
- review the design from the viewpoint of ease of construction and waste management.
- use prefabricated assemblies where possible.
- re-use materials.
- recycle materials where possible.

6.0 Landscape

6.1 Ecological value

The site will be developed in a way that protects and enhances the most important ecological attributes. A planting strategy has been developed that combines native species with carefully selected non-natives maximising the use of locally occurring or site-based resources (soils). Landscaping materials would be selected on the basis of low embodied energy. Long-term management and maintenance implications are to be considered thinking about minimal mowing regimes, avoiding sprays and pesticides, encouraging natural pest control (companion planting), encouraging minimal use of water and fertiliser, specifying organic alternatives to peat and organic forms of fertilisers and pesticides - this can often reduce maintenance costs.

6.2 Microclimate

Deciduous trees would be sited to provide summer shading to south-facing elevations. Shelterbelts could be considered against noise and strong winds. Water and the planting of shrubs and trees would modify the local microclimate and act as dust and pollution filters. Lined porous paving systems, attenuation (temporary holding) tanks or ponds, could provide summer irrigation. Plant drought-resistant trees and flora would be incorporated.

6.3 Access to open space

The quality of landscaping has a great effect on the quality and value of a residential environment and the health and wellbeing of residents. High-quality landscaping of external spaces is a key way of making dense urban environments an attractive alternative to the suburbs or rural locations. Mature landscape features are a valuable resource which would be maintained where possible. The maintenance regime should be effective in preventing litter and vandalism. The public open spaces would be overlooked by surrounding buildings or supervised by activity, also well lit at night. The landscape plan overlaps with the urban design strategy - open space, water, movement corridors, parks (different types), squares, streets, street furniture, hard and soft surfaces, and public art.

7.0 Energy

7.1 Low energy design

Energy conservation is the most important issue from an environmental viewpoint. Crest would wish to maximise opportunities on this development for energy conservation and reducing carbon dioxide emissions in balance with economic and social constraints.

Crest will minimise emissions of carbon dioxide to the atmosphere arising from the operation of a home and its services by less than or equal to 20kg/m²/yr. (CO₂ emissions). Crest will reduce energy consumption by measures that will include:

- **planning** homes to reduce heat loss by adopting a compact built form and incorporating lobbied entrances;
- **construction** of an airtight, well-insulated building envelope;
- **systems** for heating, hot water and ventilation which are efficient.

The dwellings are in terrace forms in tight housing clusters to minimise thermal loss and to maximise shelter from the wind.

The issues to be considered in designing the envelope of the buildings will include:

- selecting the type of insulation in the roof, floor and walls;
- deciding on the appropriate thickness of insulation;
- considering how it is to be incorporated into the construction;
- selecting the appropriate specification of windows and external doors;
- avoiding thermal bridges;
- ensuring that the construction is airtight;
- avoiding the risk of condensation.

Consideration would be given to how the reduced energy requirement is delivered in the most efficient and least-polluting manner.

- Use natural gas as the CO₂ emissions are the lowest of all fossil fuels.
- Reduce electricity consumption as far as possible.
- Specify efficient heating, hot water and ventilation systems.
- Install heating systems which are efficient, zoned, easy to programme and flexible in operation
- Install efficient hot water and ventilation systems.
- Minimise the amount of energy used to dry clothes and provide secure drying space
- Include the purchase of only A+ energy efficient white goods.
- Provide external lighting systems which are low energy.
- Encourage residents to buy their electricity on a 'green' tariff.
- Design simple measures such as south-facing windows to gain benefit from solar energy.

8.0 Water

8.1 Water conservation

All houses on the site are to be specified with low water use sanitary ware including dual flush toilets, reduced flow showers and smaller capacity baths; where appropriate any white goods will be specified with low water use.

To reduce water demand of planting drought resistant species would be specified and planted areas provided with moisture retaining mulch.

8.2 Storm water

See Drainage Strategy.

8.3 Sewage treatment

See Drainage Strategy.

Conclusion

The team has considered the main elements of sustainability; economic, social and environmental and devised a considered sustainable strategy for the development.

The solution is simple and effective responding to the constraints and opportunities presented by the site and the surrounding area.

We believe best use has been made of the site with a mix of dwelling type and tenure, a high density development with the right balance of green space and amenity creating a pleasant living environment.

The scheme achieves predicted '**Very Good**' rating as assessed with BRE Ecohomes, we have carefully chosen environmental measures that achieve this rating by simple measures over the broad spectrum of the Ecohome labelling assessment.

Crest believe that the proposed solution reflects the main aspirations of the Penarth Heights Planning & Design Brief (march 2004), and given the opportunity, we could create and deliver a *cohesive, sustainable and imaginative* addition to the town, which would be an integral part of the community.

Ecohomes 2006 - The environmental ratings for Homes				Penarth	12/01/2007	
Energy		Max	% Score	Comments		
Ene 1	Dwelling Emission Rate	13.75	8.25	Less than 20kg/m2/yr		
Ene 2	Building envelope performance	1.83	0.92	Less or equal to 1.3W/m2		
Ene 3	Drying Space	0.92	0.92	Provision of drying space		
Ene4	Eco Labelled white goods	1.83	0.92	No white goods		
Ene 5	Internal lighting	1.83	1.83	75% lighting specified as energy efficient		
Ene 6	External lighting	1.83	1.83	Space lighting CFL/intruder max 150w +sensors		
Transport						
Tra 1	Public Transport	2	2	Yes		
Tra 2	Cycle storage	2	0	No		
Tra 3	Local Amenities	3	3	Yes		
Tra 4	Home office	1	1	Provision of space and services		
Pollution						
Pol 1	Insulation and GWP	0.91	0.91	GWP less than 5 ODP 0		
Pol 2	NOx emissions	2.73	2.73	Less than or equal to 740NOx mg/kWh		
Pol 3	Reduction of surface runoff	1.82	0	No		
Pol 4	Renewable and Low Emission Energy Source	2.73	0	No		
Pol 5	Flood Risk Mitigation	1.82	1.82	Proof low probability of flooding		
Materials						
Mat 1	Environmental Impact of Materials	7.23	4.05	Roof, External Walls, Internal Walls, Floors, Windows, External surfacing, Boundary		
Mat 2	Responsible sourcing of Materials: Basic Elements	2.71	2.71	Basic building elements responsibly sourced		
Mat 3	Responsible sourcing of Materials: Finishing Elements	1.35	0	No		
Mat 4	Recycling facilities	2.71	2.71	Internal storage+LA collection		
Water						
Wat 1	Internal Potable Water Use	8.33	5	Less than 42m3/bedspace		
Wat 2	External Potable Use	1.67	1.67	Rain water collection		
Land Use and Ecology						
Eco 1	Ecological value of site	1.33	1.33	Low Ecological Value		
Eco 2	Ecological enhancement	1.33	1.33	Accredited expert		
Eco 3	Protection of ecological features	1.33	1.33	Protection of features		
Eco 4	Change of ecological value of site	5.33	4	Change of species +3 - +9		
Eco 5	Building Footprint	2.67	0			
Health and Well Being						
Hea 1	Daylighting	5.25	1.75	Living Rooms		
Hea 2	Sound Insulation	7	0			
Hea 3	Private Space	1.75	0	Provision of private or semi		
Management						
Man 1	Home User Guide	3	3	Simple non technical guide		
Man 2	Considerate Constructors	2	1	Best practice site management		
Man 3	Construction Site Impacts	3	2	Monitor sort and recycle		
Man 4	Security	2	1	Security standards for external doors and windows		
Final Score			59.01			
Rating						

Score%

36

Pass

48

Good

58

Very Good



Sustainable Development Policy

This policy covers all Group activities including land buying, planning, design, procurement, construction and the supporting office services. The Group is seeking to achieve partnership in community regeneration and the provision of housing to a broad section of society. The Board is committed to high levels of customer satisfaction by constructing well built sustainable homes and creating communities using designs and materials that respect our heritage and living environment. The Board recognises that economic, environmental and social responsibilities must be linked to clear commercial objectives if shareholder value is to be increased through high levels of corporate governance. A 'Committee for Social Responsibility' has been established to develop positive relationships with all of our shareholders, employees, development partners and the communities that we create.

The Board commits to:

- Provide capital for sustainable development that yields a fair return to our shareholders
- Implement and maintain high standards of corporate governance
- Comply with all relevant social and environmental legislation
- Prevent pollution and waste of resources to protect the environment
- Keep customers informed and provide them with high quality sustainable products and services
- Report annually on non-financial performance in accordance with recognised guidelines

Operationally Crest Nicholson commits as follows:

- Land buyers – to address community and environmental issues when seeking to secure future land supply
- Designers – to seek community input to achieve mutually acceptable social and environmental development solutions
- Procurement – to develop long term, non-adversarial partnerships with contractors and suppliers promoting higher social and environmental standards where possible
- Project Directors – to develop good local relations, raise site health and safety standards and improve control over environmental impacts
- Regional Managers – to help promote local employment by forming partnerships with voluntary groups to help train the unemployed
- Sales, Marketing and Customer Services – to raise the awareness of our customers to the benefits of sustainable homes
- Office Managers – to improve environmental performance and cost effectiveness in the areas of paper use, transport reduction, waste minimisation, water use and energy conservation

The Committee for Social Responsibility will monitor, review and report on these commitments annually. Staff training programmes cover the Groups Sustainable Development policy and the objectives to achieve continual improvement. The annual report and supporting monitoring programmes should ensure our sustainable development objectives and targets are communicated to all stakeholders.

Stephen Stone, Chief Executive

1st November 2005

Sustainability Checklist

Sustainable measure		Tick box if you have taken this into account. If Yes , what measures are proposed? If No , or not applicable, state why not.
Site Assessment		
Accessibility to neighbouring developments, local services and facilities	Yes	Good accessibility to Penarth Town centre.
Connections to existing pedestrian, cycle, rights of way and public transport	Yes	See Transport Assessment
Existing infrastructure and its capacity	Yes	See Drainage & Utilities Reports
Topography & site orientation	Yes	See Design Statement
Archaeological or historic interest	No	Not Required by GG Archaeological Trust
Boundary Features, such as hedges, stone walls and tree lines	Yes	Full survey undertaken and where appropriate existing features retained
Local building characteristics and important views	Yes	See Design Statement
Ecological impacts assessment	Yes	See Ecological Report
Landscaping/amenity impacts including trees and green spaces	Yes	See Landscape Appraisal
Site Layout		
Orientation of buildings utilises the benefits of solar gain	Yes	East/West site orientation means the majority of dwellings will have north-south aspect and therefore will benefit from some south facing windows.
Infrastructure layout accords to the transport user hierarchy	Yes	Shared space principles adopted to encourage walking and cycling before car use.
Maintains or improves existing pedestrian and cycle network	Yes	Improves footpaths in the vicinity of the site.
Allow for easy and safe access to public open spaces?	Yes	Plassey Square to be improved. New POS provided and improved access to surrounding woodland and escarpment areas.
Street lighting designed to reduce light pollution and other environmental impacts	Yes	Street lighting specified by VoG
Transport & Movement		
Safe movement for children, pedestrians and disabled persons	Yes	Shared space principles reduce amount of kerbing and slow traffic to allow safe access
Provision made for cyclists e.g. secure cycle storage	Yes	Cycle provision made within apartments and storage for visitors throughout shared spaces and proposed on POS.
Encourages public transport use	Yes	Contributions made to improve public transport infrastructure
Maintain the transport user hierarchy	Yes	See above
Sustainable Energy Use		
Undertake an Eco-home, BREAM, or NHER standards assessment to determine the overall environmental performance of the proposal	Yes	Eco-home VERY GOOD to be achieved

An EcoHomes Assessment is required for Affordable housing funded through Social Housing Grant	Yes	Eco-home VERY GOOD to be achieved
BREEAM Assessment is required for WAG procured buildings	No	N/A
Passive solar design	Yes	East/West site orientation means the majority of dwellings will have north-south aspect and therefore will benefit from some south facing windows.
Natural daylighting	Yes	Enlarged windows in living rooms (min 1.5%)
Natural ventilation	Yes	Habitable rooms not reliant on mechanical ventilation
Reduce energy consumption e.g. installation of A rated appliances, condensing boilers	Yes	All appliances A rated and condensing boilers to be installed
Provision of internal drying space or external communal drying	Yes	Balconies to apartments, gardens to dwellings etc
Renewable Energy Sources		
Solar Photovoltaics	No	Not required to achieve Eco-home VERY GOOD rating
Solar Water Heating	No	Not required to achieve Eco-home VERY GOOD rating
Small scale wind	No	Not required to achieve Eco-home VERY GOOD rating
Biomass	No	Not required to achieve Eco-home VERY GOOD rating
Combined Heat and Power	No	Not required to achieve Eco-home VERY GOOD rating
GeO thermal	No	Not required to achieve Eco-home VERY GOOD rating
Energy Efficiency & Material Choice		
Use reclaimed or recycled materials	Yes	Crushed material from demolition for fill and substructures
Materials sourced from sustainable sources e.g. FSC certified	Yes	Use of FSC certified timber
Use natural energy efficient materials e.g. timber, stone etc	Yes	Predominantly brick and render construction
Sustainable construction techniques e.g. straw bale, green roofing	No	Financial viability, although some ongoing research into use of lime mortars.
Street lighting		
Low energy street and other external lighting	Yes	Street lighting specified by VoG
Water Conservation		
Installation of dual water supplies e.g. rainwater run-off for toilets and or grey water reuse	No	Financial viability
Installation of low/dual flush toilets	Yes	
Installation of rain water collectors for landscape maintenance and/or domestic garden use	Yes	
Installation of water efficient A rated white goods	Yes	
Use natural techniques, such as reed bed infiltration system to treat waste water	No	Site ground conditions not suitable

Sustainable Drainage		
Installation of Sustainable Urban Drainage	No	Ground contamination and impact on slope stability.
Soakaways	No	Ground contamination and impact on slope stability.
Permeable Surfacing	No	Ground contamination and impact on slope stability.
Swales and basins	No	Ground contamination and impact on slope stability.
Infiltration Trenches and Filter Drains	No	Ground contamination and impact on slope stability.
Pond & Wetlands	No	Not suitable site
Onsite Stormwater Detention	Yes	Attenuation tanks to be installed
Green Roofs	No	Financial viability
Waste Management		
Internal recycling/separation facilities	Yes	
Communal external recycling/separation facilities	No	VoG operates recycling collection boxes
Re-use/recycle existing building materials	Yes	Crushed material from demolition for fill and substructures
Implementation of an on site waste management scheme during construction	Yes	Waste Plaster board, timber and bricks & tiles etc sorted and reused or recycled
Landscape, Trees and Ecology		
EIA of other ecological assessment/surveys conducted	No	EIA not required
Retention of existing trees as part of site layout/landscape scheme	Yes	Trees retained where appropriate (Arcot Triangle)
Incorporation of ecological mitigation or compensation measures	Yes	Woodland Management Plan and new meadow grassland to be provided.
Creation of new wildlife habitat	Yes	As above
Inclusion of post-development management, monitoring and review	Yes	To be agreed
Retention/enhancement of existing landscaping features	Yes	As above
Plant locally sourced indigenous trees and plants	Yes	To be advised by VoG
Minimise opportunities for crime	Yes	Secured by Design principles considered throughout
Mixed use development proposed	No	Not required by development brief.