

PLANNING STATEMENT FOR PROPOSED DWELLINGHOUSE
AT GREENRIG, BLAIR AVENUE, JEDBURGH



18 NOVEMBER 2021

Prepared on behalf of

SK/AD[®]

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1. Introduction

The surrounding area

The site sits within a predominantly residential area in the south west of Jedburgh, just over half a kilometre from the town centre, separated by the A68.

Surrounding properties are all residential, generally 1 and 2 storeys, but with some four storey flats a short distance to the south. To the east is the site of the former Howdenburn Primary School, and to the west is Allerly Well Park.



Figure 1: An OS map of the area with site highlighted red

The Site

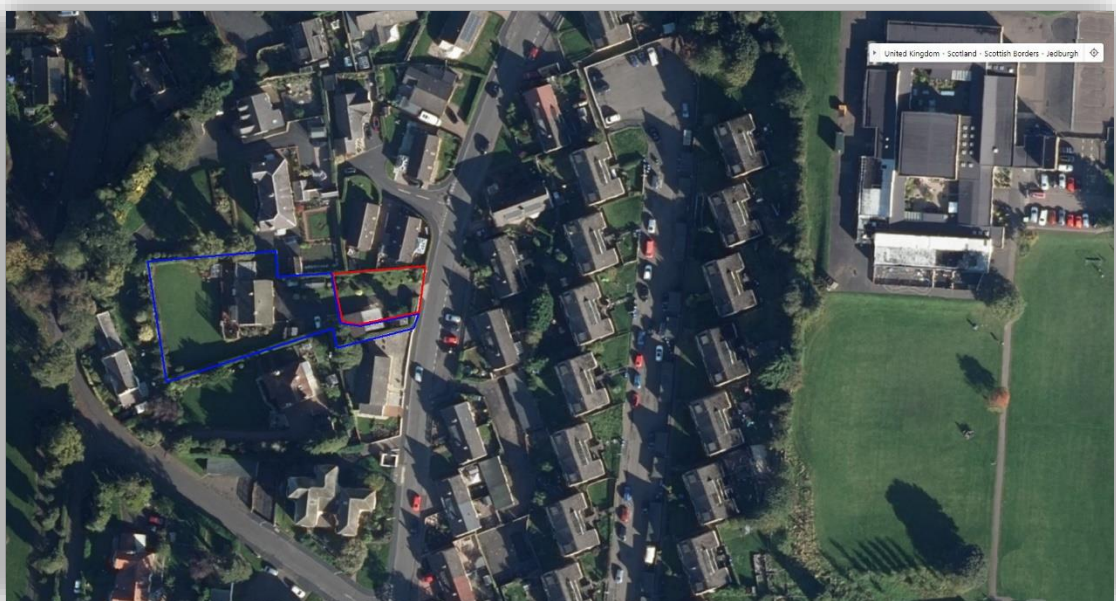


Figure 2: Aerial photo showing site and ownership

The site is an area of garden ground, 345 square metres, to the front of “Greenrig” a house that sits between the houses at Kielder and Leylang on Blair Avenue. Greenrig is set back significantly from the road (over 40 metres). There is an existing driveway central to the site.

The houses to either side, and the existing house, are all single storey gable-ended bungalows.

The site has an existing central driveway accessing Blair Avenue.

It is a significant curtilage which extends 80 metres from front to back. The garden ground was becoming too hard to maintain for the current occupants, and sub-division into two separate units seemed like a reasonable solution.

The applicant

The applicant is the owner of the site and resides in the existing house at Greenrig.

Site History

There is no planning history, other than a recent pre-application consultation (ref: 21/00482/PREAPP).



Figure 3: A streetview image of the site

Feedback from the pre-application expressed some concern that the proposed development might be seen to be “town cramming” and this has been taken into account in shaping the revised submission for full planning. It is believed that the response is a well-planned scheme that fits in to the urban form and creates an additional house in a sustainable location.

2. The proposal

It is proposed to erect a single dwellinghouse in the front curtilage area of Greenrig, Blair Avenue. This will be a single storey bungalow with gable ended roof design in a similar style to adjoining properties.

It will be a two-bedroom house. The house will have its own driveway with parking for two cars to the front. The driveway for Greenrig will be reconfigured to the south side of the street frontage. A large garage building will be demolished to make way for it.

Private garden ground will be created for the new dwelling, enclosed by a 1.8 metre fence for privacy.

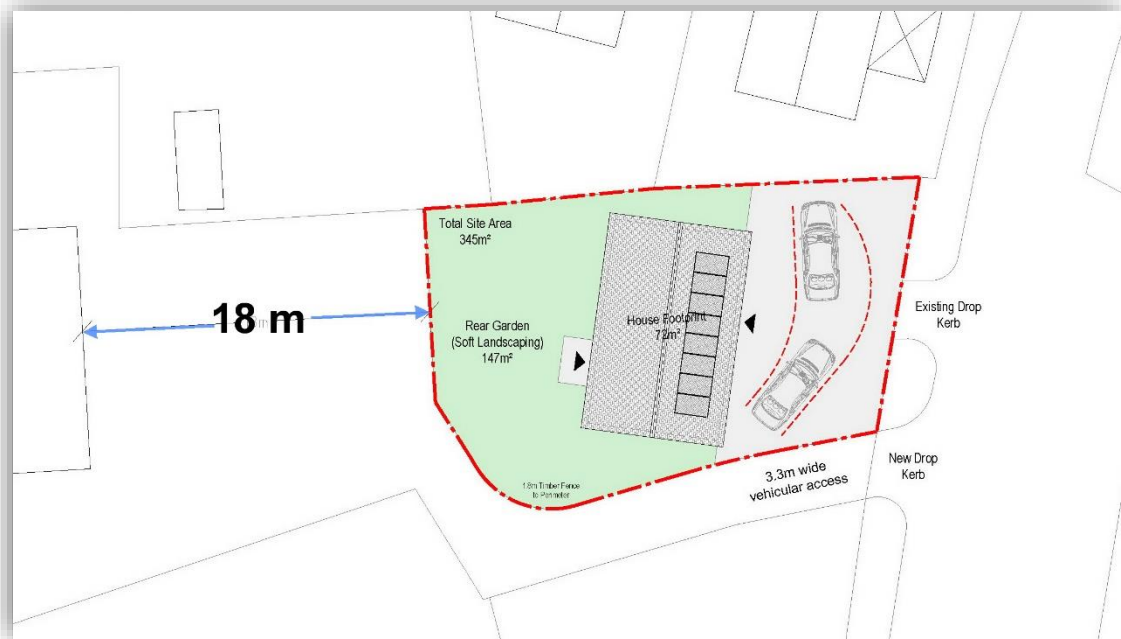


Figure 4: The proposed site plan

The building footprint will be 75m², the roof area 85m² and the driveway etc 112m².

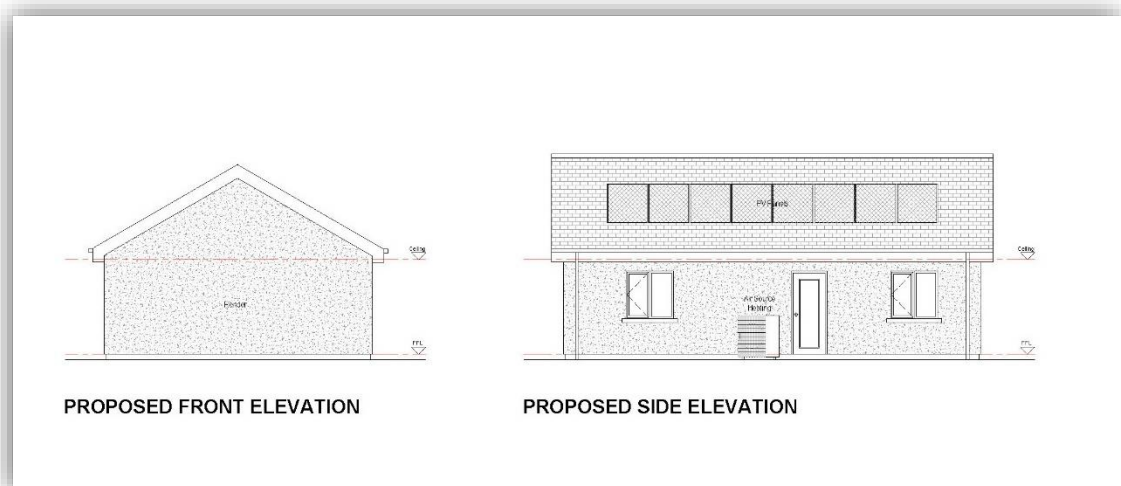


Figure 5: South and east elevations



Figure 6: The north and west elevations

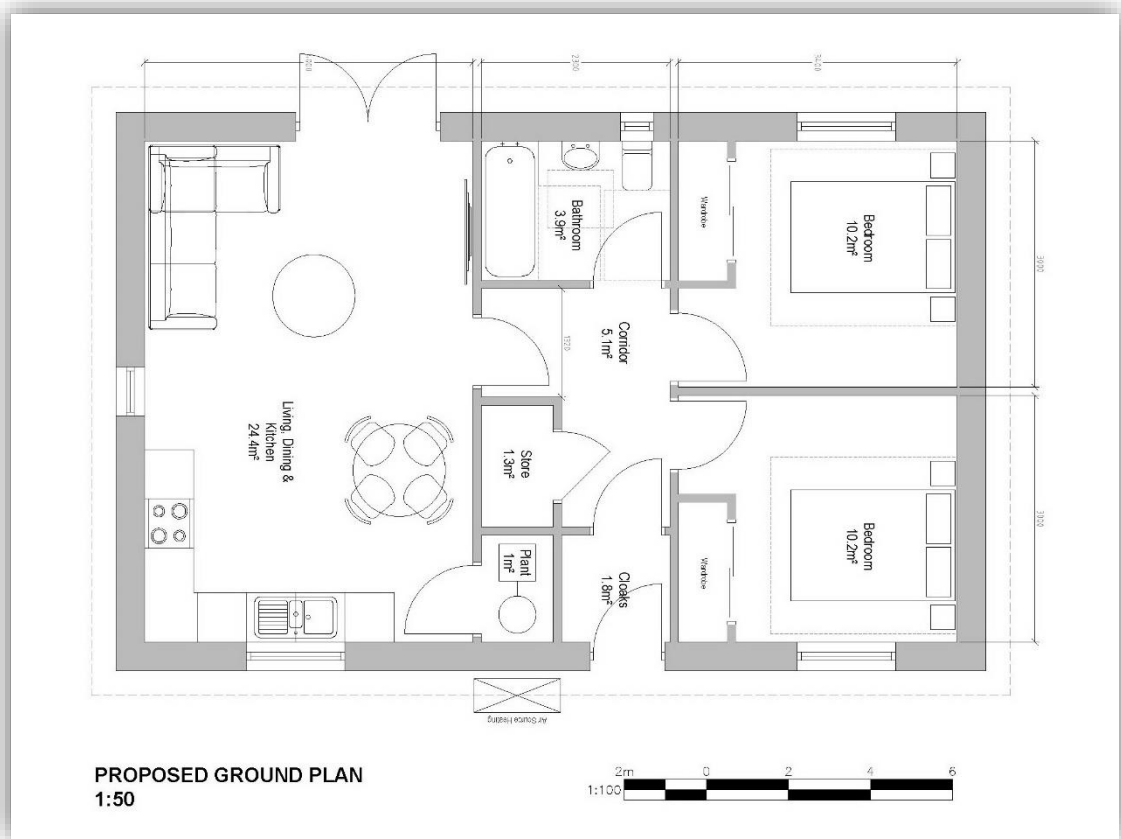


Figure 7: The proposed floor plan

The house has been orientated with the roof ridge roughly parallel to the street which ties in with adjoining houses. It is proposed to fit solar panels to the south east facing roof plane.

The rear garden boundary is 18 metres from the front of the existing house, Greenrig.

Solar panels are fitted to the east roof plane and air source heat pump system is proposed and has been shown.

3. Constraints and Policy Considerations

The site is within an established residential area, set within the settlement boundary of Jedburgh.

The site has an existing access to the public road.

There are no designations on or abutting the site.

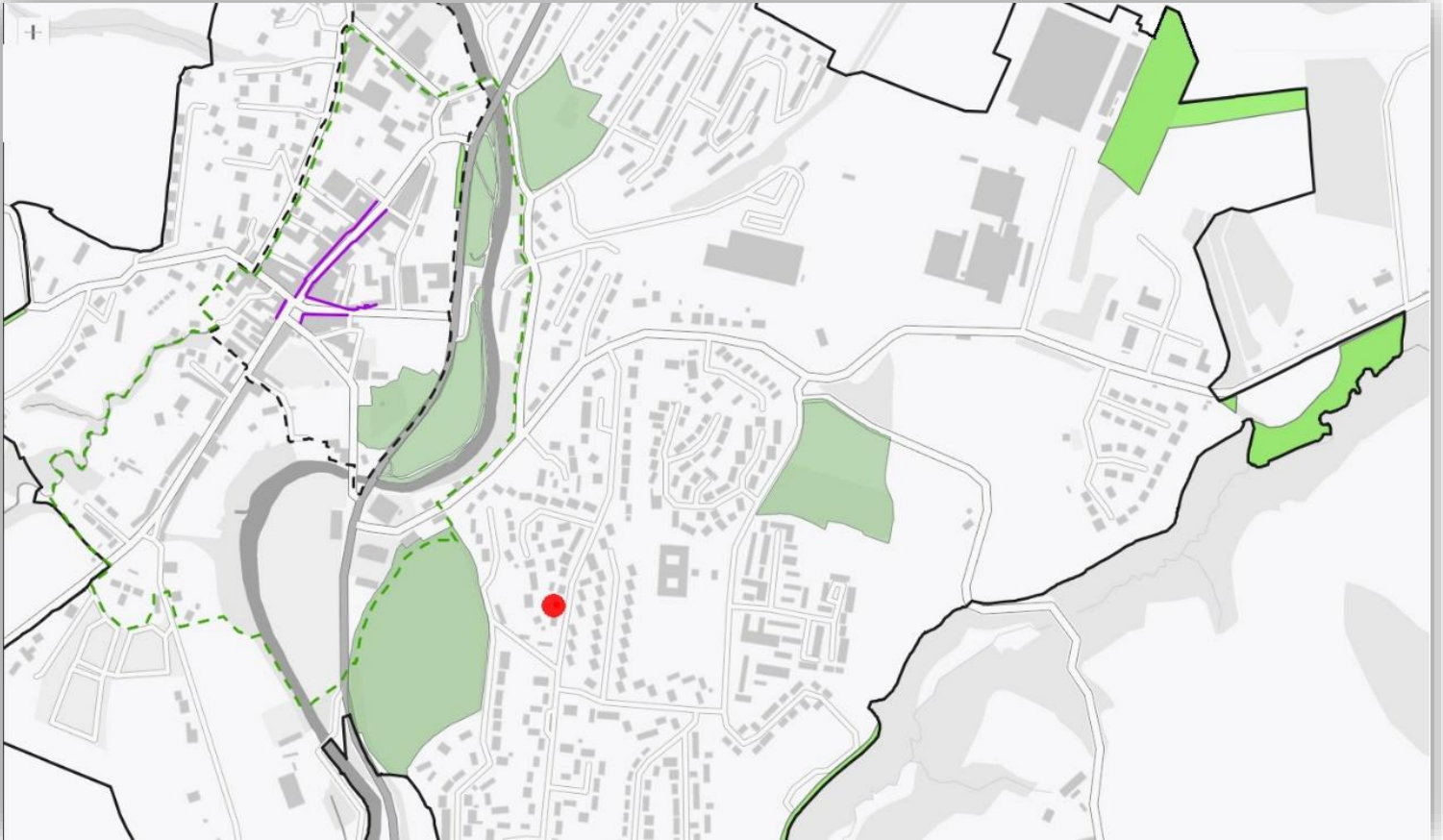


Figure 8: The site identified within an excerpt from the SBLDP

The most relevant policies of the Local Development Plan will be **PMD2** Quality Standards, **PMD5** Infill Development, **HD3** protection of Residential Amenity, and **PMD1** Sustainability.

Also relevant will be the non-statutory guidance “**Placemaking and Design**”.

4. Assessment

The principal of the use has to be accepted and the main issues to look at will be impact upon urban character, amenity, drainage and parking.

Locational Issues

The site sits in the midst of a wholly residential area on a plot of land which is presently private garden ground. The proposed use is deemed to be acceptable in principle. It has good access to local amenities, being only 850 metres from the town centre (The Wishing Well).

Landscape/Urban character Issues

The area around the site is very much characterised by single storey and one and a half storey houses.

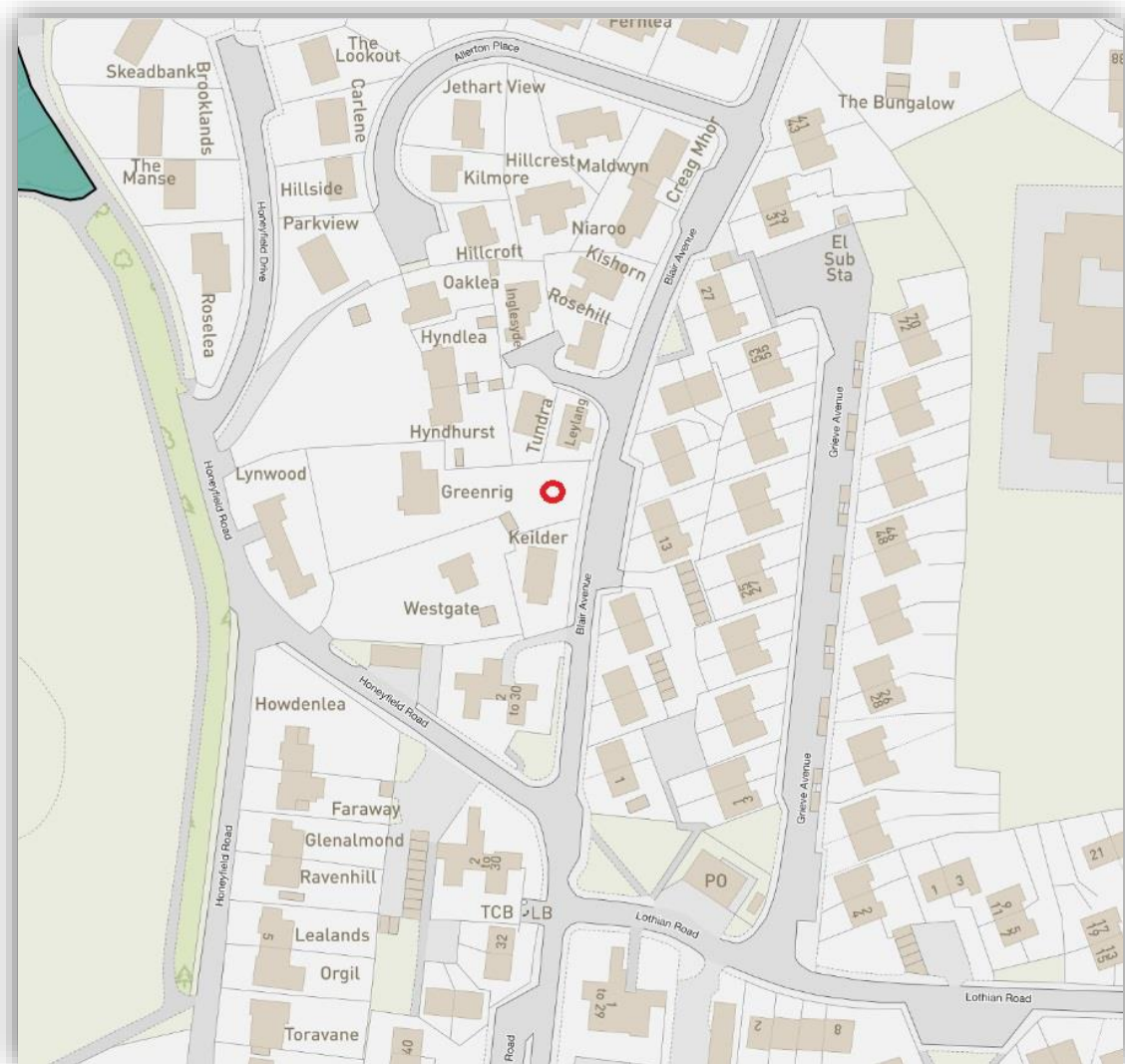


Figure 9: Local urban form

The proposed house has taken into account the scale and form of neighbouring houses. It will be a single storey house with a gable ended roof, and with a modest footprint of 75 square metres.

The design and layout have passed through a number of evolutionary stages, with the final one, as presented here, being for a house with its axis roughly parallel to the road (Blair Avenue). The set back from the road is sufficient that a small drive for two parked cars can be accommodated in the front garden.



Figure 10: The street context (site beyond timber fence on left)

Materials will be a roughcast render and roof tiles to match the local area. Solar panels will be fitted to the east roof plane, the most efficient of the two.

The layout allows for the retention of much of the front wall and hedge. Some will be lost for the newly positioned driveway to the existing house at the rear.

As figure 11 above shows, the proposal will be in keeping with the urban form of the area. This is looked at more closely in figure 6 below. The existing house sits in a secondary line of properties which includes Westgate, Hyndhurst, Hyndlea, and Oaklea. The new dwelling will complete the building line along the street in a manner which suits the density of the area, and which will not appear out of place.



Figure 11: The street context from the north (site entrance just beyond lamp post on right)



Figure 12: Alignment of properties near to the site

Policy PMD5 (Infill Development) advises that development on infill sites will be approved where it does not conflict with the established land use of the area; it does not detract from the character and amenity of the surrounding area; the individual and cumulative effects of the development can be sustained by the social and economic infrastructure and it does not lead to over-development or ‘town and village cramming’; it respects the scale, form, design, materials and density in context of its surroundings; adequate access and servicing can be achieved, particularly taking account of water and drainage and schools capacity; **and** it does not result in any significant loss of daylight, sunlight or privacy to adjoining properties as a result of overshadowing or overlooking.

The proposed dwelling will not detract from the character of the surrounding area and it could not be deemed to constitute town cramming. The previous two figures clearly demonstrate that the resulting pattern would be entirely in keeping with the layout and urban grain.

The proposed scale of the house, in elevation, will ensure that it also remains in keeping with the character of the area and will retain the visual amenity and character. It has been designed to replicate the immediately adjoining properties.

The **non-statutory guidance** provides extensive comment and advice on the issues to consider for the erection of a single dwellinghouse in the urban landscape. Development of a single house in the settlement has obvious sensitivities relating to the urban context and the need to be responsive to the surrounding built form. An understanding of the context is essential.

The proposed dwellinghouse fully complies with the terms of policy **PMD5**, and has followed the advice in the **SPG** “Placemaking and Design”. The development will be a positive addition to the urban landscape.

Built and Cultural Heritage Issues

There are no historic sites or buildings near to the site and there will be no related issues.

Wildlife/biodiversity Issues

The site sits in the middle of a housing estate and contains no buildings or mature trees. There will be no impact upon any wildlife designations or to any protected species.

Site drainage and flooding

The SEPA flood map (extract below) indicates that the site is not at risk from flooding from river or surface water sources.

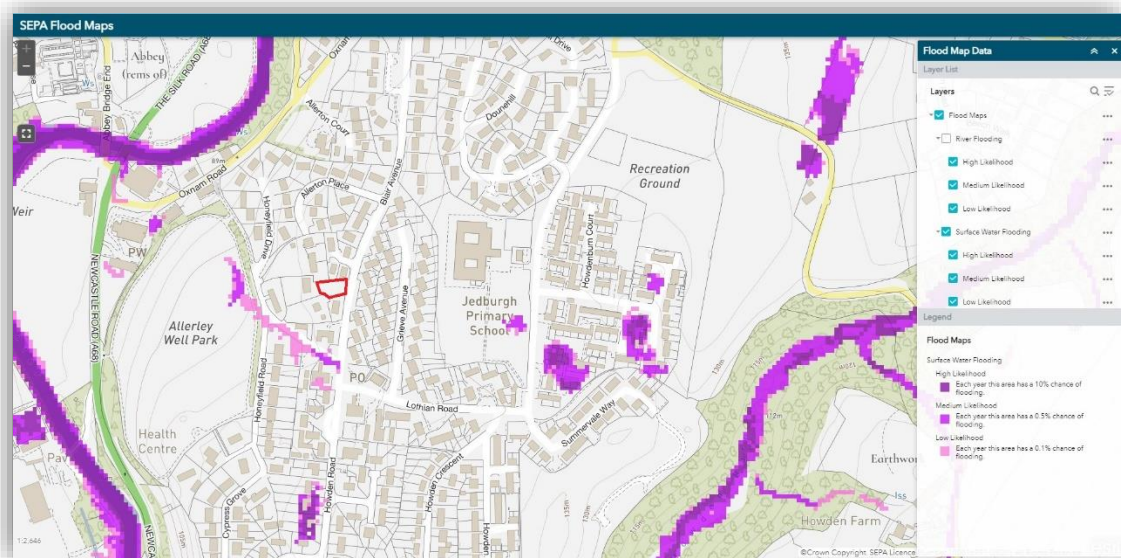


Figure 13: SEPA flood map extract

SuDS are a legal requirement for all developments except single dwellings that drain to the water environment, unless they discharge to coastal waters. SuDS aim to control surface water run off close to where the rain falls and should mimic natural drainage as closely as possible.

Scottish Water have advised that “*this would be classed as a greenfield site and therefore no surface water will be permitted to connect to the combined/foul network. All surface water should be managed on site and/or discharged to the surface water network. Surface water should be attenuated to the 1:30 year even on site, however the council may require this up to the 1:200 year event, if connecting to a surface water sewer then it should be restricted to the 1:2 year event*”.

As there is no access to a local watercourse, any site drainage will have to be diverted to the local surface water drainage network. The Jed Water to the west, and Howden Burn to the south are too distant.

At present, the site is predominantly soft landscaped and a large percentage of rainwater will soak into the ground with some surface water flow to street drainage. Once the ground is saturated and it will all run-off into the existing

surface water drainage infrastructure. The existing house roof drains to surface water drainage. The existing driveway, which is impermeable asphalt drains to adjacent garden ground and to the street drainage. The east side of the site naturally drains towards Blair Avenue, and the west side towards Honeyfield Road.

The planning site is deemed to be greenfield as it is garden ground, and the footprint of the new house will become a non-permeable surface and water will run quickly off this into a roof drainage system which will be diverted to surface water drainage systems.

In order to ensure that run-off rates are equal to or better than the existing greenfield run-off, a means of controlling flow needs to be introduced so as not to increase pressure on the drainage infrastructure.

The proposed house will have a footprint of 75m². The roof area will be 85m² and the driveway will be 112m². Calculations have been carried out for the development site and the whole site at Greenrig (8 Blair Avenue)

The greenfield run-off estimation tool as well as the Surface water storage volume estimation tool from the uksuds.com website have been used to calculate the impact and rainwater storage needs on site in order to maintain an acceptable run-off rate into the surface water drainage system.

The greenfield run-off estimation results for the whole site indicates a run-off rate of 0.86 l/s for the 1 in 100 year, and 0.98 l/s for 1 in 200 years.

The calculations indicate that in order to keep discharge rates below 2 l/s for the 1 in 100 year rate, no storage is required. If the figure is kept below 1 l/s, close to the greenfield rate, then on site attenuation storage is 2 m³.

It is therefore recommended that as the new driveways will be porous paving, the main issue is roof run-off and therefore rainwater harvesting of at least 2 m³ should be installed. If full the tanks would drain to the driveway where there would be short-term storage in the form of a small storm cell beneath the porous surface.

Figure 14 below is a generalised plan as to how this would operate. The roof being the main area of non-porous run off, draining to storage tank(s) which would then drain to the porous driveway with storage cell beneath, finally flowing into surface water drainage infrastructure in the street.

This simple drainage proposal will ensure that the proposed development will be sustainably drained and will not increase the risk of flooding locally. Connection to the surface water infrastructure will have to be agreed with Scottish Water.

To conclude, the development will comply with **LDP** policies **IS8** and **IS9**, as well as the **SPG**, Sustainable Urban Drainage Systems.

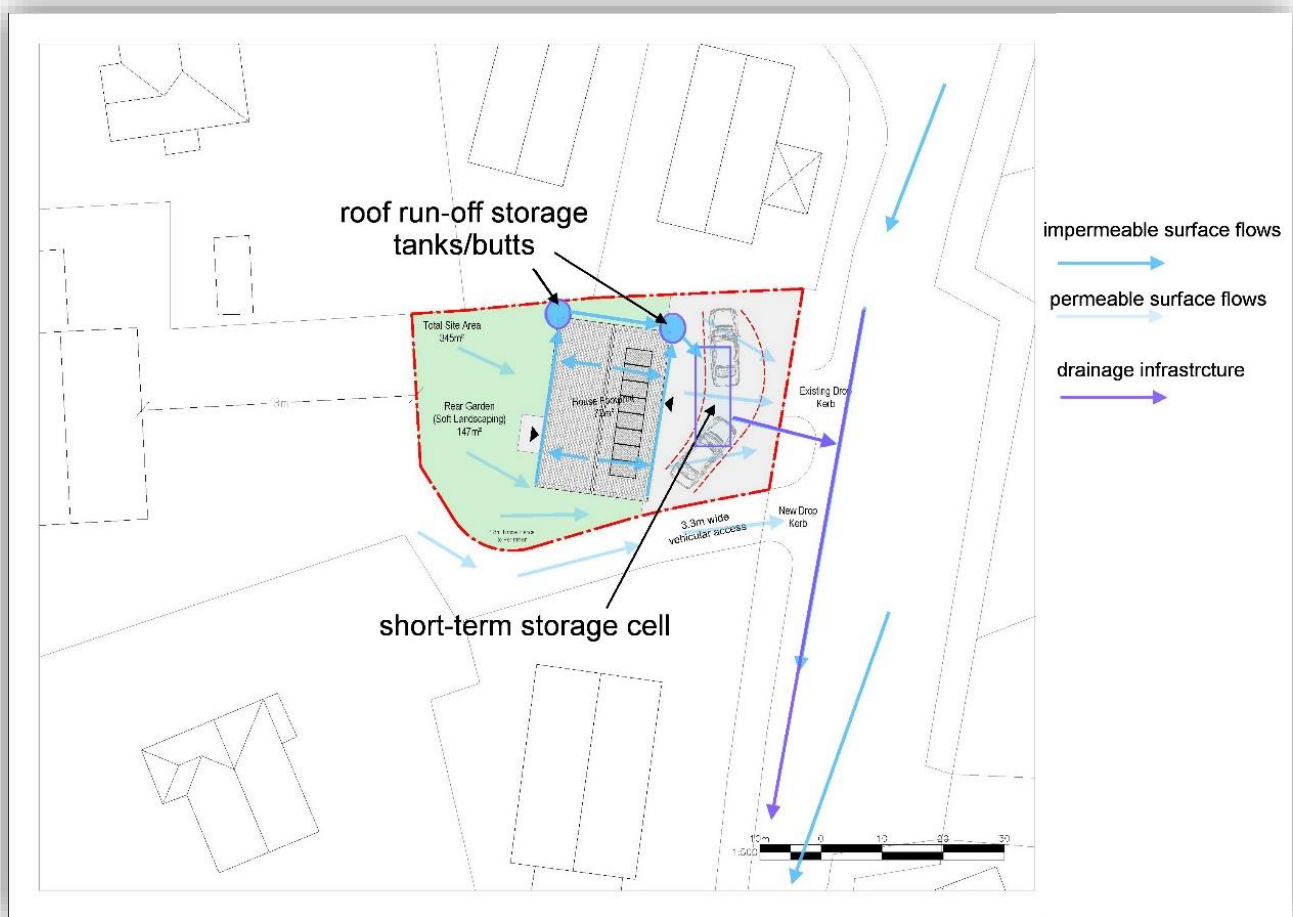


Figure 14: A generalised drainage plan, post development

Residential Amenity

The proposed development should not lead to any significant adverse impact on the amenity of neighbouring properties. This means that there should be no significant loss of privacy to private garden ground or habitable rooms, no loss of daylight to windows, and no significant loss of sunlight to private garden ground.

As the adjacent houses and the proposed house are single storey there will be no issues of privacy across the mutual boundaries. Existing and proposed boundary treatments will adequately protect privacy.

The proposal complies with LDP policy HD3: Protection of Residential Amenity.

Traffic, Parking and Access

The existing house has a long driveway to private parking adjacent to the house. Parking will not be affected, and a repositioned driveway will continue to provide good and safe access to Greenrig.

The new house will have a short drive and access to parking for two cars within the new curtilage. There will be adequate space for parking and manoeuvring. Cycle parking can be accommodate within the rear garden area.

There is a local bus service passing by the house (20/21) and this links to the wider network (service 68) in the town centre, which is within walking distance.

The site is located to the east side of Jedburgh, and local amenities are easily accessible within the town itself which is 850 metres, 10 minutes' walk, away.

The local NHS health centre is equally close, to the east of the town centre, and the Jedburgh Grammar School Campus is a relatively short walk to the north east.



Figure 15: The site in relation to local facilities

The site is well located with good access to facilities and transport, and with off street parking which will accommodate the future owner's cars and ensure that there will be no further pressure on local car parking.

5. Conclusions

The critical determining issues will be the design and fit into the existing urban character of the area.

As has hopefully been demonstrated, the house is in an appropriate and sustainable location and will add to the housing stock of the area.

It has ample curtilage to provide good amenity to future occupiers, and it has been designed, scaled and positioned to fit in seamlessly with the existing urban form and built character.

There is no risk to the property from flooding, and drainage will be carefully handled and will ensure no greater risk of flooding to nearby properties.

Parking will be available to future occupiers within the curtilage, and the existing house access will remain to the same standard as exists.

The proposal has taken account of the comments made at the pre-application stage, and it is considered that this is a good and appropriate form of development which will enhance the Area.

POLICY PMD5: INFILL DEVELOPMENT

Development on non-allocated, infill or windfall, sites, including the re-use of buildings within Development Boundaries as shown on proposal maps will be approved where the following criteria are satisfied:

- a) where relevant, it does not conflict with the established land use of the area; and
- b) it does not detract from the character and amenity of the surrounding area; and
- c) the individual and cumulative effects of the development can be sustained by the social and economic infrastructure and it does not lead to over-development or 'town and village cramming'; and
- d) it respects the scale, form, design, materials and density in context of its surroundings; and
- e) adequate access and servicing can be achieved, particularly taking account of water and drainage and schools capacity; and
- f) it does not result in any significant loss of daylight, sunlight or privacy to adjoining properties as a result of overshadowing or overlooking.

All applications will be considered against the Council's Supplementary Planning Guidance on Placemaking and Design. Developers are required to provide design statements as appropriate.

6. Appendices

A - List of all relevant Policies of the Scottish Borders Local Development Plan 2016

Policy PMD1: Sustainability

In determining planning applications and preparing development briefs, the Council will have regard to the following sustainability principles which underpin all the Plan's policies and which developers will be expected to incorporate into their developments:

- a) The long term sustainable use and management of land
- b) The preservation of air and water quality
- c) The protection of natural resources, landscapes, habitats, and species
- d) The protection of built and cultural resources
- e) The efficient use of energy and resources, particularly non-renewable resources
- f) The minimisation of waste, including waste water and encouragement to its sustainable management
- g) The encouragement of walking, cycling, and public transport in preference to the private car
- h) The minimisation of light pollution
- i) The protection of public health and safety
- j) The support to community services and facilities
- k) The provision of new jobs and support to the local economy
- l) The involvement of the local community in the design, management and improvement of their environment

Policy PMD2: Quality Standards

All new development will be expected to be of high quality in accordance with sustainability principles, designed to fit with Scottish Borders townscapes and to integrate with its landscape surroundings. The standards which will apply to all development are that:

Sustainability

- a) In terms of layout, orientation, construction and energy supply, the developer has demonstrated that appropriate measures have been taken to maximise the efficient use of energy and resources, including the use of renewable energy and resources such as District Heating Schemes and the incorporation of sustainable construction techniques in accordance with supplementary planning guidance,
 - b) it provides digital connectivity and associated infrastructure,
 - c) it provides for Sustainable Urban Drainage Systems in the context of overall provision of Green Infrastructure where appropriate and their after-care and maintenance,
 - e) it provides for appropriate internal and external provision for waste storage and presentation with, in all instances, separate provision for waste and recycling and, depending on the location, separate provision for composting facilities,
 - f) it incorporates appropriate hard and soft landscape works, including structural or screen planting where necessary, to help integration with its surroundings and the wider environment and to meet open space requirements. In some cases agreements will be required to ensure that landscape works are undertaken at an early stage of development and that appropriate arrangements are put in place for long term landscape/open space maintenance,
 - g) it considers, where appropriate, the long term adaptability of buildings and spaces.
- ##### **Place making & Design**
- h) It creates developments with a sense of place, based on a clear understanding of the context, designed in sympathy with Scottish Borders architectural styles; this need not exclude appropriate contemporary and/or innovative design,
 - i) it is of a scale, massing, height and density appropriate to its surroundings and, where an extension or alteration, appropriate to the existing building,
 - j) it is finished externally in materials, the colours and textures of which complement the highest quality of architecture in the locality and, where an extension or alteration, the existing building,
 - k) it is compatible with, and respects the character of the surrounding area, neighbouring uses, and neighbouring built form,
 - l) it can be satisfactorily accommodated within the site,
 - m) it provides appropriate boundary treatments to ensure attractive edges to the development that will help integration with its surroundings,
 - n) it incorporates, where appropriate, adequate safety and security measures, in accordance with current guidance on 'designing out crime'.

Accessibility

- o) Street layouts must be designed to properly connect and integrate with existing street patterns and be able to be easily extended in the future where appropriate in order to minimise the need for turning heads and isolated footpaths,
- p) it incorporates, where required, access for those with mobility difficulties,
- q) it ensures there is no adverse impact on road safety, including but not limited to the site access,
- r) it provides for linkages with adjoining built up areas including public transport connections and provision for buses, and new paths and cycleways, linking where possible to the existing path network; Travel Plans will be encouraged to support more sustainable travel patterns,
- s) it incorporates adequate access and turning space for vehicles including those used for waste collection purposes.

Green Space , Open Space & Biodiversity

- t) It provides meaningful open space that wherever possible, links to existing open spaces and that is in accordance with current Council standards pending preparation of an up-to-date open space strategy and local standards. In some cases a developer contribution to wider neighbourhood or settlement provision may be appropriate, supported by appropriate arrangements for maintenance,
- u) it retains physical or natural features or habitats which are important to the amenity or biodiversity of the area or makes provision for adequate mitigation or replacements. Developers are required to provide design and access statements, design briefs and landscape plans as appropriate.

Policy PMD5: Infill Development

Development on non-allocated, infill or windfall, sites, including the re-use of buildings within Development Boundaries as shown on proposal maps will be approved where the following criteria are satisfied:

- a) where relevant, it does not conflict with the established land use of the area; and
- b) it does not detract from the character and amenity of the surrounding area; and
- c) the individual and cumulative effects of the development can be sustained by the social and economic infrastructure and it does not lead to over-development or 'town and village cramming'; and
- d) it respects the scale, form, design, materials and density in context of its surroundings; and
- e) adequate access and servicing can be achieved, particularly taking account of water and drainage and schools capacity; and
- f) it does not result in any significant loss of daylight, sunlight or privacy to adjoining properties as a result of overshadowing or overlooking.

All applications will be considered against the Council's Supplementary Planning Guidance on Placemaking and Design. Developers are required to provide design statements as appropriate.

Policy HD3: Protection of Residential Amenity

Development that is judged to have an adverse impact on the amenity of existing or proposed residential areas will not be permitted. To protect the amenity and character of these areas, any developments will be assessed against:

- a) the principle of the development, including where relevant, any open space that would be lost; and
- b) the details of the development itself particularly in terms of:
 - (i) the scale, form and type of development in terms of its fit within a residential area,
 - (ii) the impact of the proposed development on the existing and surrounding properties particularly in terms of overlooking, loss of privacy and sunlighting provisions. These considerations apply especially in relation to garden ground or 'backland' development,
 - (iii) the generation of traffic or noise,
 - (iv) the level of visual impact.

Policy IS7: Parking Provision and Standards

Development proposals should provide for car and cycle parking in accordance with approved standards.

Relaxation of technical standards will be considered where appropriate due to the nature of the development and/or if positive amenity gains can be demonstrated that do not compromise road safety.

In town centres where there appear to be parking difficulties, the Council will consider the desirability of seeking additional public parking provision, in the context of policies to promote the use of sustainable travel modes.

Policy IS8: Flooding

As a general principle, new development should be located in areas free from significant flood risk. Development will not be permitted if it would be at significant risk of flooding from any source or would materially increase the probability of flooding elsewhere. The ability of floodplains to convey and store floodwater should be protected.

Within certain defined risk categories, particularly where the risk is greater than 0.5% annual flooding probability or 1 in 200 year flood risk, which will normally be the case for functional flood plains, some forms of development will generally not be acceptable. These include:

a) development comprising essential civil infrastructure such as hospitals, fire stations, emergency depots etc., schools, care homes, ground-based electrical and telecommunications equipment unless subject to an appropriate long term flood risk management strategy;

b) additional built development in undeveloped and sparsely developed areas.

Other forms of development will be subject to an assessment of the risk and mitigation measures.

Developers will be required to provide, including if necessary at planning permission in principle stage:

a) a competent flood risk assessment, including all sources of flooding; and

b) a report of the measures that are proposed to mitigate the flood risk.

The information used to assess the acceptability of development will include:

a) information and advice from consultation with the Council's Flood Team and SEPA ;

b) flood risk maps provided by SEPA including the Indicative River and Coastal Flood Map (Scotland) which will indicate the extent of the flood plain;

c) historical records and flood studies held by the Council and other agencies, including past flood risk assessment reports carried out by consultants and associated comments from SEPA , also held by the Council.

Policy IS9: Waste Water Treatment Standards and Sustainable Urban Drainage Waste Water Treatment Standards

The Council's preferred method of dealing with waste water associated with new development will be, in order of priority:

a. direct connection to the public sewerage system, including pumping if necessary, or failing that:

b. negotiating developer contributions with Scottish Water to upgrade the existing sewerage network and/or increasing capacity at the waste water treatment works, or failing that:

c. agreement with Scottish Water and SEPA where required to provide permanent or temporary alternatives to sewer connection including the possibility of stand alone treatment plants until sewer capacity becomes available, or, failing that:

d. for development in the countryside i.e. not within or immediately adjacent to publicly seweraged areas, the use of private sewerage treatment may be acceptable, providing it can be demonstrated that this can be delivered without any negative impacts to public health, the environment or the quality of watercourses or groundwater.

In settlements served by the public foul sewer, permission for an individual private sewage treatment system will normally be refused unless exceptional circumstances prevail and the conditions in criteria d above can be satisfied,

Development will be refused if:

a. it will result in a proliferation of individual septic tanks or other private water treatment infrastructure within settlements,

b. it will overload existing mains infrastructure or it is impractical for the developer to provide for new infrastructure.

Sustainable Urban Drainage

Surface water management for new development, for both greenfield and brownfield sites, must comply with current best practice on Sustainable Urban Drainage Systems to the satisfaction of the Council, Scottish Environment Protection Agency, Scottish Natural Heritage and other interested parties where required. Development will be refused unless surface water treatment is dealt with in a sustainable manner that avoids flooding, pollution, extensive canalisation and culverting of watercourses. A drainage strategy should be submitted with planning applications to include treatment and flood attenuation measures and details for the long term maintenance of any necessary features.

B - Other relevant policies and documents

Placemaking_and_Design, SBC, Jan 2010

Scottish Planning Policy December 2020

Supplementary Planning Guidance Sustainable Urban Drainage Systems, SBC, Aug 2020

C - Online drainage assessment, uksuds

C1 - Greenfield runoff rate estimation

C2 - Surface water storage volume estimation 2.0 l/s discharge rate

C3 - Surface water storage volume estimation 1.0 l/s discharge rate

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	<input type="text" value="2"/>	<input type="text" value="2"/>
HOST class:	<input type="text" value="N/A"/>	<input type="text" value="N/A"/>
SPR/SPRHOST:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>

Hydrological characteristics

	Default	Edited
SAAR (mm):	<input type="text" value="683"/>	<input type="text" value="683"/>
Hydrological region:	<input type="text" value="2"/>	<input type="text" value="2"/>
Growth curve factor 1 year:	<input type="text" value="0.87"/>	<input type="text" value="0.87"/>
Growth curve factor 30 years:	<input type="text" value="1.95"/>	<input type="text" value="1.95"/>
Growth curve factor 100 years:	<input type="text" value="2.63"/>	<input type="text" value="2.63"/>
Growth curve factor 200 years:	<input type="text" value="2.99"/>	<input type="text" value="2.99"/>

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	<input type="text" value="0.33"/>	<input type="text" value="0.33"/>
1 in 1 year (l/s):	<input type="text" value="0.29"/>	<input type="text" value="0.29"/>
1 in 30 years (l/s):	<input type="text" value="0.64"/>	<input type="text" value="0.64"/>
1 in 100 year (l/s):	<input type="text" value="0.86"/>	<input type="text" value="0.86"/>
1 in 200 years (l/s):	<input type="text" value="0.98"/>	<input type="text" value="0.98"/>

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Calculated by:

Site name:

Site location:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:

Longitude:

Reference:

Date:

Site characteristics

Total site area (ha):	<input type="text" value="0.185"/>
Significant public open space (ha):	<input type="text" value="0.1245"/>
Area positively drained (ha):	<input type="text" value="0.0605"/>
Impermeable area (ha):	<input type="text" value="0.0495"/>
Percentage of drained area that is impermeable (%):	<input type="text" value="82"/>
Impervious area drained via infiltration (ha):	<input type="text" value="0.0495"/>
Return period for infiltration system design (year):	<input type="text" value="100"/>
Impervious area drained to rainwater harvesting (ha):	<input type="text" value="0.0085"/>
Return period for rainwater harvesting system (year):	<input type="text" value="100"/>
Compliance factor for rainwater harvesting system (%):	<input type="text" value="100"/>
Net site area for storage volume design (ha):	<input type="text" value="0.02"/>
Net impermeable area for storage volume design (ha):	<input type="text" value="0.01"/>
Pervious area contribution to runoff (%):	<input type="text" value="30"/>

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:	<input type="text" value="1.4"/>
Urban creep allowance factor:	<input type="text" value="1.1"/>
Volume control approach	<input type="text" value="Flow control to max of 2 l/s/ha or"/>
Interception rainfall depth (mm):	<input type="text" value="Qbar
5"/>
Minimum flow rate (l/s):	<input type="text" value="2"/>

Methodology

esti	<input type="text" value="IH124"/>
Q_{BAR} estimation method:	<input type="text" value="Calculate from SPR and SAAR"/>
SPR estimation method:	<input type="text" value="Calculate from SOIL type"/>

Soil characteristics

	Default	Edited
SOIL type:	<input type="text" value="2"/>	<input type="text" value="2"/>
SPR:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	<input type="text" value="--"/>	<input type="text" value="61"/>
Rainfall 100 yrs 12 hrs:	<input type="text" value="--"/>	<input type="text" value="70.81"/>
FEH / FSR conversion factor:	<input type="text" value="0.97"/>	<input type="text" value="0.97"/>
SAAR (mm):	<input type="text" value="683"/>	<input type="text" value="683"/>
M5-60 Rainfall Depth (mm):	<input type="text" value="17"/>	<input type="text" value="17"/>
'r' Ratio M5-60/M5-2 day:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>
Hydrological region:	<input type="text" value="2"/>	<input type="text" value="2"/>
Growth curve factor 1 year:	<input type="text" value="0.87"/>	<input type="text" value="0.87"/>
Growth curve factor 10 year:	<input type="text" value="1.42"/>	<input type="text" value="1.42"/>
Growth curve factor 30 year:	<input type="text" value="1.95"/>	<input type="text" value="1.95"/>
Growth curve factor 100 years:	<input type="text" value="2.63"/>	<input type="text" value="2.63"/>
Q_{BAR} for total site area (l/s):	<input type="text" value="0.33"/>	<input type="text" value="0.33"/>
Q_{BAR} for net site area (l/s):	<input type="text" value="0.04"/>	<input type="text" value="0.04"/>

Site discharge rates	Default		Edited		Estimated storage volumes	Default		Edited	
1 in 1 year (l/s):	2	2	2	2	Attenuation storage 1/100 years (m ³):	0	0	0	0
1 in 30 years (l/s):	2	2	2	2	Long term storage 1/100 years (m ³):	0	0	0	0
1 in 100 year (l/s):	2	2	2	2	Total storage 1/100 years (m ³):	0	0	0	0

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Calculated by:

Site name:

Site location:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:

Longitude:

Reference:

Date:

Site characteristics

Total site area (ha):	<input type="text" value="0.185"/>
Significant public open space (ha):	<input type="text" value="0.1245"/>
Area positively drained (ha):	<input type="text" value="0.0605"/>
Impermeable area (ha):	<input type="text" value="0.0605"/>
Percentage of drained area that is impermeable (%):	<input type="text" value="100"/>
Impervious area drained via infiltration (ha):	<input type="text" value="0.0360"/>
Return period for infiltration system design (year):	<input type="text" value="100"/>
Impervious area drained to rainwater harvesting (ha):	<input type="text" value="0.0085"/>
Return period for rainwater harvesting system (year):	<input type="text" value="100"/>
Compliance factor for rainwater harvesting system (%):	<input type="text" value="100"/>
Net site area for storage volume design (ha):	<input type="text" value="0.03"/>
Net impermeable area for storage volume design (ha):	<input type="text" value="0.02"/>
Pervious area contribution to runoff (%):	<input type="text" value="30"/>

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:	<input type="text" value="1.4"/>
Urban creep allowance factor:	<input type="text" value="1.1"/>
Volume control approach	<input type="text" value="Flow control to max of 2 l/s/ha or"/>
Interception rainfall depth (mm):	<input type="text" value="Qbar
5"/>
Minimum flow rate (l/s):	<input type="text" value="1"/>

Methodology

esti	<input type="text" value="IH124"/>
Q_{BAR} estimation method:	<input type="text" value="Calculate from SPR and SAAR"/>
SPR estimation method:	<input type="text" value="Calculate from SOIL type"/>

Soil characteristics

	Default	Edited
SOIL type:	<input type="text" value="2"/>	<input type="text" value="2"/>
SPR:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	<input type="text" value="--"/>	<input type="text" value="61"/>
Rainfall 100 yrs 12 hrs:	<input type="text" value="--"/>	<input type="text" value="70.81"/>
FEH / FSR conversion factor:	<input type="text" value="0.97"/>	<input type="text" value="0.97"/>
SAAR (mm):	<input type="text" value="683"/>	<input type="text" value="683"/>
M5-60 Rainfall Depth (mm):	<input type="text" value="17"/>	<input type="text" value="17"/>
'r' Ratio M5-60/M5-2 day:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>
Hydrological region:	<input type="text" value="2"/>	<input type="text" value="2"/>
Growth curve factor 1 year:	<input type="text" value="0.87"/>	<input type="text" value="0.87"/>
Growth curve factor 10 year:	<input type="text" value="1.42"/>	<input type="text" value="1.42"/>
Growth curve factor 30 year:	<input type="text" value="1.95"/>	<input type="text" value="1.95"/>
Growth curve factor 100 years:	<input type="text" value="2.63"/>	<input type="text" value="2.63"/>
Q_{BAR} for total site area (l/s):	<input type="text" value="0.33"/>	<input type="text" value="0.33"/>
Q_{BAR} for net site area (l/s):	<input type="text" value="0.06"/>	<input type="text" value="0.06"/>

Site discharge rates	Default		Edited		Estimated storage volumes	Default		Edited	
1 in 1 year (l/s):	1	1	1	1	Attenuation storage 1/100 years (m ³):	2	2	2	2
1 in 30 years (l/s):	1	1	1	1	Long term storage 1/100 years (m ³):	0	0	0	0
1 in 100 year (l/s):	1	1	1	1	Total storage 1/100 years (m ³):	2	2	2	2

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