
Technical Note

Project: **Campbeltown Flood Protection Scheme & Surface Water Management Plan**
Project No: 60541587
Subject: **Additional Design Information on Meadows SuDS Proposals**
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1. Introduction

As part of the notification process for Campbeltown Flood Protection Scheme, local residents have raised an objection regarding the SuDS element of the scheme proposed for The Meadows area. The points raised include the following:

- Concern that the basin should be placed on lower ground
- Concern regarding the safety of children around the proposed area
- Potential loss of amenity for children and dog walkers.
- Potential loss of privacy for garden areas where levels are to be raised
- The health implications of stagnant water associated infestations of insects and associated smell.

The purpose of this technical note is to provide further information around these points as well as how the points are being addressed, or will be taken into account during the scheme detail design.

2. Basin Positioning

A detention basin is a landscaped depression that is normally dry except during extreme rainfall events. It is constructed to store water temporarily, to slow flows and provide water treatment.

The purpose of the basin is not to capture overland flows from the flat area at the Meadows but to capture road drainage and remove it from the current combined drainage network. This will be done by capturing road gullies from Smith Drive through underground pipes and diverting them to the basins. This is to manage future exceedance of the overloaded underground combined drainage network due to intense rainfall throughout Campbeltown.

During the optioneering phase the basin in question was sited in the lower area highlighted in the objection. However a Scottish Water sewer pipe serving Meadowpark was identified and in order to avoid a clash between the basin's outlet and this sewer the basin was moved to an area where sewer pipe was deeper. Following further assessment of levels, it is possible to move this basin and still achieve suitable pipe gradients for the proposal to work hydraulically. Based on the concerns raised regarding privacy, the basin may moved further into the Meadows (**Figure 2-1**). The conveyance of storm water to the basin will be via an underground system therefore for the design to work hydraulically underground pipes will need to tie into the basin. On this basis, the basin will be excavated below current ground level. It is proposed to landscape the top of basin level

into existing ground levels as shown in **Figure 2-2** below where no significant raising of levels will be required. It should be noted that as with any construction project the final details of the basin may need to be modified during the detail design process in response to more detailed information on site conditions. However, significant bunding around the depression is not anticipated.

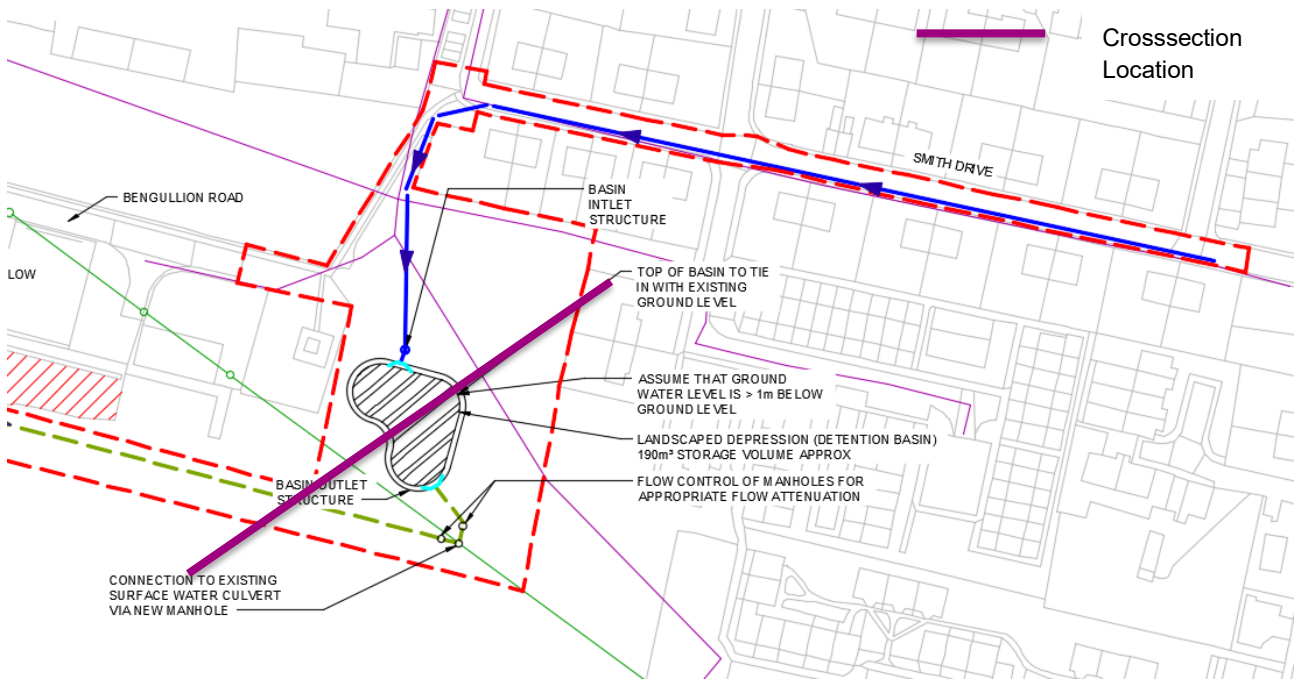


Figure 2-1 Updated basin position

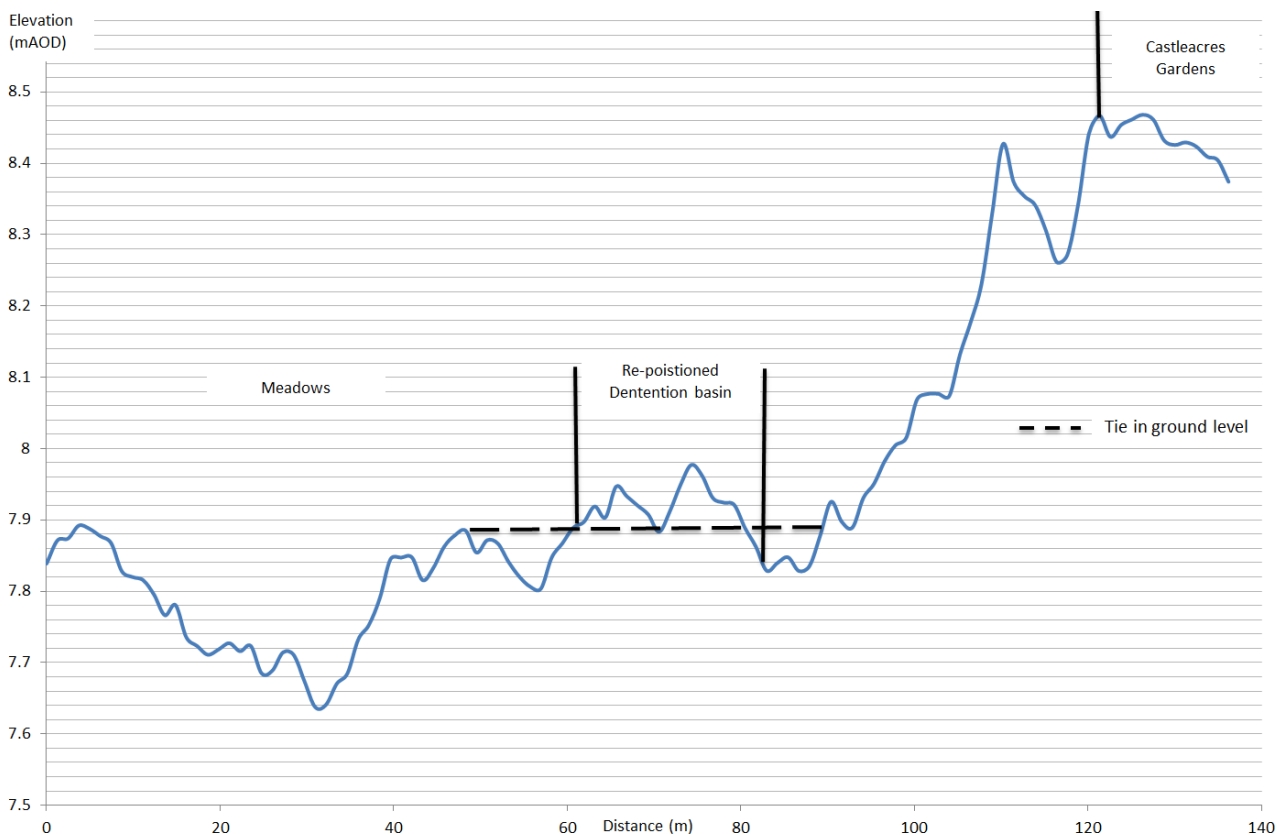


Figure 2-2 Section through repositioned detention basin

This section also demonstrates that any overtopping of the basin in an event greater than an extreme 1 in 200 year plus climate change event would flow overland away from properties to lower lying land at The Meadows area, where there will be little negative impact. This is based on existing ground data which shows properties sit approximately 0.5m above the proposed basin. Topographic survey is planned to understand

levels in more detail in order to carry out detail design of the scheme. Where necessary this overland flow path will be reinforced with subtle landscaping to grade levels towards the Meadows, away from property in an exceedance event. These overland flow paths are illustrated in **Figure 2-3** below.

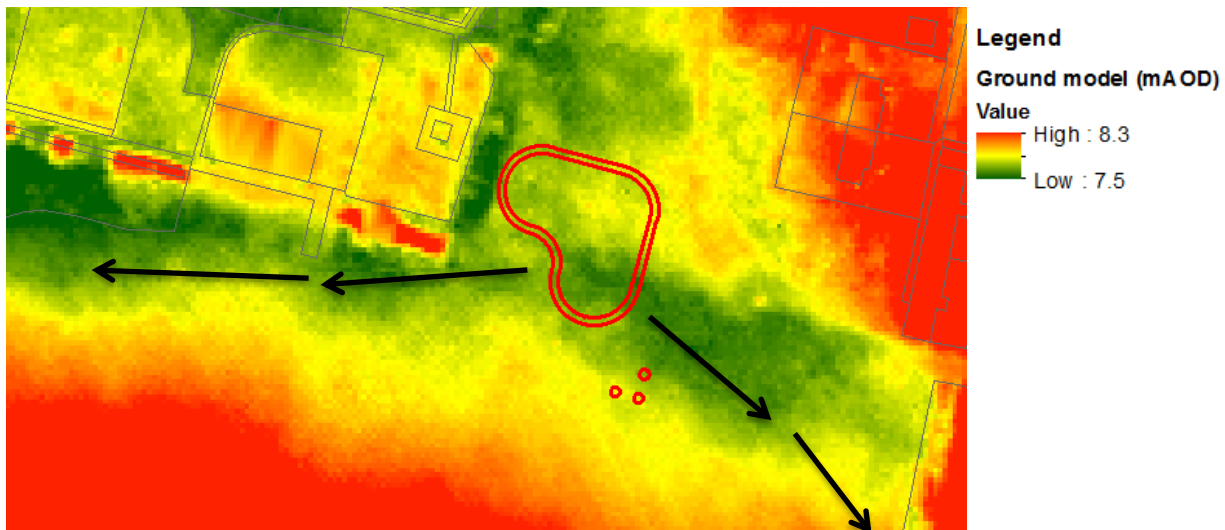


Figure 2-4 Exceedance flow path from basin

Based on these proposed levels, the proposals are not expected to negatively impact property privacy and it is likely that there will be no significant change to the current impacts from the park.

3. General Design Concerns

The following concerns were also highlighted:

- The safety of children, and others, around this proposed area
- The loss of amenity for children, dog walkers and others.
- The health implications of stagnant water, including potential associated infestations of vermin/insects and smell.
- Property prices and impacts on saleability of the properties adjacent to a SuDS basin.

Amenity

The concerns raised are generally covered by best practise design of detention basins as outlined in CIRIA C753 SuDS Manual¹. This Manual sets out the standard to which the basins will be designed. SuDS components such as detention basins adhere to four key pillars of deigns including; water quantity management, water quality management, amenity and biodiversity and the SuDS proposals will be designed with these philosophies in mind.

The detention basin will be designed as a landscape feature and AECOM's landscape architects will be engaged to ensure the basin has positive natural and aesthetic characteristics which should complement the existing amenity in the area. The basin will be typically dry except for storm events. The images below represent similar arrangements that enhance the land area. We would plan to design the basins taking account of similar principles.

¹ CIRIA C753 SuDS Manual, CIRIA, 2015

Figure 3-1 Typical detention basin



Figure 3-2 Typical detention basin

Safety

With regard to safety this will be inherent in the design as part of the requirements within CIRIA² guidance. The basin will be designed in line with The Royal Society for the Prevention of Accidents (RoSPA)³ guidelines with the following identified as key requirements:

- The maximum depth of water in the basin is not expected to exceed 0.85 m in the most extreme design event which is well below the 2m safety requirement for RoSPA.
- All slopes will not greater than 1 in 3 (both above and below the water line) to allow unaided movement in either direction for able bodied visitors or maintenance personnel to mow and clear vegetation.
- Signage to explain how the basin works at key points along its boundary will be provided as appropriate.
- Fencing can be implemented though this will detract from amenity value and is unlikely to be necessary for such shallow depressions.
- As stated previously, the detention basin will be dry the majority of the time and only expected to be wet during storm conditions.

Health implications

² Health and safety principles for SuDS: framework and checklists, CIRIA RP992 The SuDS Manual Update, November 2013

³ <https://www.rospa.com/>

The risk of contaminated, stagnant water occurring in well-designed SuDS components/schemes is very low, and the subsequent risk of a resultant adverse health issue then occurring is even lower. The proposed basins are well below the typical recommended depth trigger for recirculation requirements (>1.5m) and stagnant water occurring is unlikely.

Rainwater runoff in SuDS features is no different from the water that runs across roads and car parks and stands as puddles for lengthy periods after rainfall. Many existing water features in parks and public open spaces already take highway runoff. Indeed, with good SuDS design and effective source control, accessible SuDS components should contain 'treated' runoff, and therefore any pollution levels should be very low. The following measures will be implemented to offset any health risks:

- Routine inspection, operation and maintenance practices should deal with the low risks associated with these hazards. Those most likely to be at risk will be maintenance staff, and safe systems of work should be observed to mitigate any remaining risk.
- Continued good maintenance practices to be implemented through provision of litter bins and routine site litter picks. This will reduce the risks of rats frequenting the area looking for food.
- It is inherent in the detention basin design that positive drainage be achieved. In other words, the basin will be designed so that it empties as quickly as possible following a storm event so that the basin volume is available for storage as soon as possible for the next event. On this basis, stagnant water is not expected to be an issue.

Property Values

There is no anticipated negative impact to house prices as part of the scheme. The purpose of the flood protection scheme is to provide economic, social and environmental benefit to Campbelltown and measures have been designed with this in mind. Landscape strategy for the basins will be to produce a depression with good aesthetic qualities.

Numerous studies into the wider benefits of SuDS have been carried out/supported by professional bodies including CIRIA. CIRIA is the Construction Industry Research and Information Association. CIRIA acts a neutral not for profit body which carries out a range of collaborative studies to facilitate improvements in the industry. Examples of such studies include "*Overview of SuDS performance* (CIRIA, October 2009)" and "*An Assessment of the social impacts of Sustainable Drainage Systems in the UK* (HR Wallingford, 2003)".

SuDS help to manage flood risk and water quality and also improve amenity as well as a host of other benefits create great places to live, work and play. On this basis, these studies have found that land values and house prices located next to high quality SuDS components, incorporating well maintained open space such as basins typically received a net positive benefit and make the area a more attractive place to live.