

Roath Flood Risk Management Scheme

Community Engagement Workshop Session

Thursday 25th January 2018



Attendees:

Dr Madeleine Havard, non-executive director on NRW Board
Gareth O'Shea, Executive Director of South Wales Operations
John Hogg, Head of South Central Wales Operations
Tim England, Operations Manager, South East Wales
Gavin Jones, Roath Project Executive
Paul Isaac, Roath Project Manager
Heilyn Williams, Roath Project Environmental Manager
Rhys Griffith, Roath Project Communications officer

Session Plan



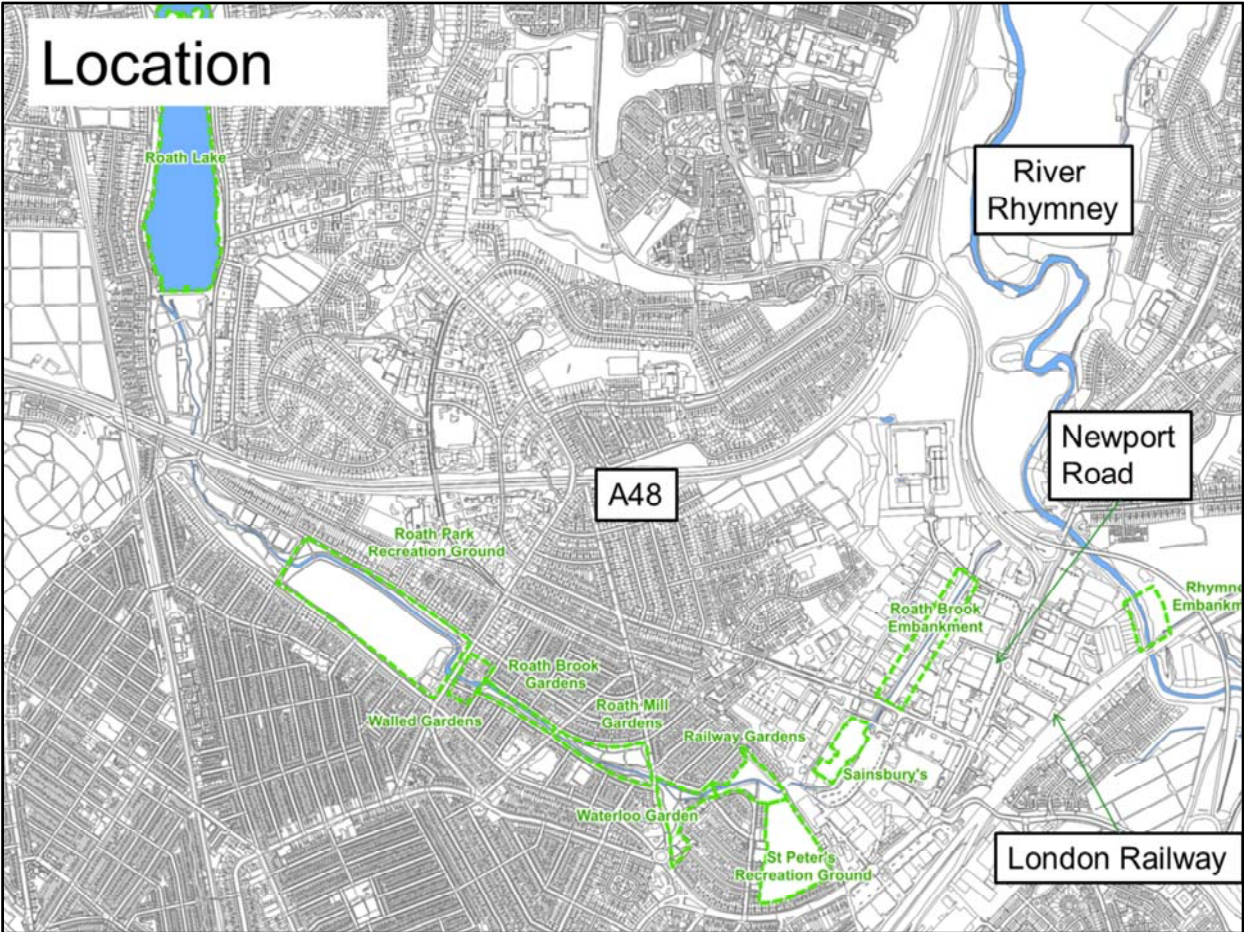
Topics:

Flood risk in Roath and Penylan

Flood risk management options and designs

Park Gardens' character and wildlife

The session is about you, hearing your comments, answering your questions and trying to find solutions to your concerns.



Catchment from Caerphilly hill.

Roath flood risk



Extract of Wales flood map (national level mapping and associated flood bandings).

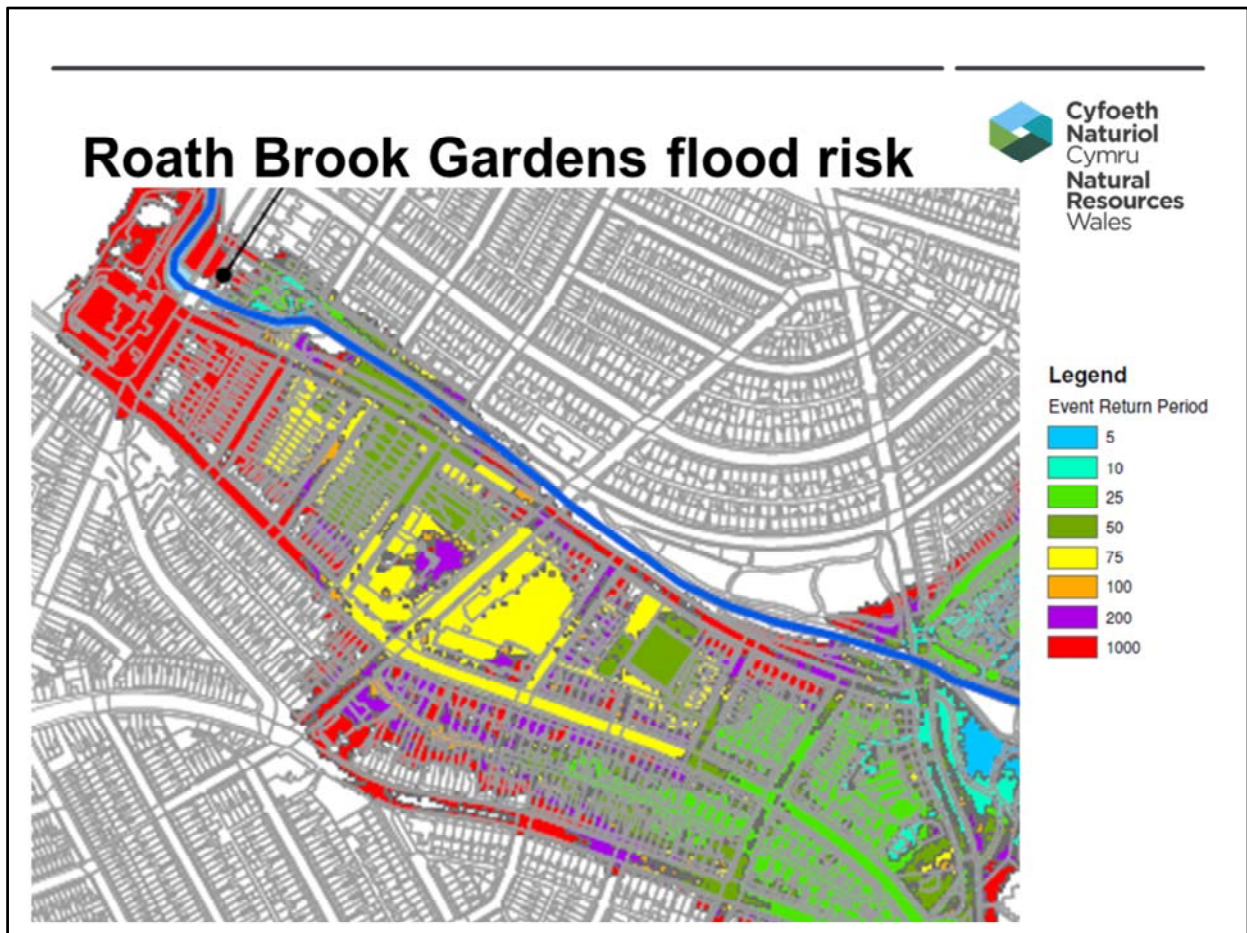
Many homes and businesses in the Roath, Penylan and Newport Road areas are at risk of flooding from the Roath Brook and the River Rhymney. There is not 'one' flood risk, it is based on probability / likelihood and consequence / impact.

High risk is greater than 1: 30 (3.33%) chance of flooding each year: 200 homes and 10 commercial properties.

Medium risk is between 1:30 (3.33%) and 1:100 (1%) chance of flooding each year: 380 residential and 50 commercial properties.

Low risk is between 1 in 100 (1%) and 1 in 1000 (0.1%) chance of flooding each year: 780 residential and 165 commercial properties.

e.g. library is in low risk flood outline, and is not being protected.



Detailed flood mapping produced by the project’s hydraulic model, focuses on this catchment (hence more detail than national mapping on previous slide). It uses the latest hydrology and best physical data of the river and catchment. We have high confidence in the model and hence the flood risk it predicts.

Three consultants have developed and used the model, so it is high quality and robust. NRW’s regulatory development control team has also quality assured the model throughout.

Roath Brook Gardens (RBG) flood risk map by probability event:

1:30 – 1:50 isolated flood area (green) around Cressy Road and Alma Road – not connected to flooding from Waterloo Gardens (WG). Does join up at 1:75.

21 properties from RBG @ 1:30 – 1:50

40 properties from RBG @ 1:50 – 1:75

The scheme will remove blue, green and yellow flood risk.

We have not modelled the areas separately as this is not needed. It would predict the same flood risk at 1:30 – 1:50, due to isolated flood occurrence.

Recent near misses – model corroboration

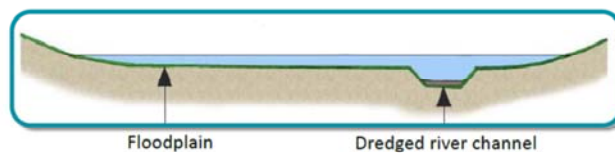


Brook fluvial flooding in 1979, 1995, 1998, 2007 and 2009.
Tidal flooding in 2010 and 2012.

There is no history of flooding at RBG, but WG predicted to flood first with high water levels in RBG, as evidenced.

These events have verified our flood modelling predictions – we predict flooding is more likely to occur at WG than RBG, and this has happened, with WG flooding first, correlating with the modelled high water levels (but still within channel) through RBG for each event.

Flood Risk Management Options



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We considered options throughout the catchment, and specific constraints and impacts of each.

The options were assessed on technical viability, environmental impact (ecological, heritage, landscape, amenity, social), operational requirements, costs and risks. Each section (i.e. Park Garden) of the Roath Brook was assessed individually and the option chosen to suitably address flood risk in that specific Park Garden.

- Flow control structures to exclude tide (does not benefit RBG).
- Flood water attenuation:
 - **Lisvane Reservoir:** too far upstream and too small.
 - **Llanishen Reservoir:** too far upstream, offline reservoir (difficult to fill) and ownership issues.
 - **Roath Park Lake:**
 - raise water level – significant dam raising and strengthening needed, impact to lake amenity use and environment.
 - lower water level – work to offtake weir and spillway needed, impact to lake amenity use and environment.
 - manage water level – work to offtake weir and spillway needed, impact to lake amenity use and environment, difficult to forecast flood accurately.
 - **Roath Recreation Ground:** >1m water depth – impact of defence around park or lowering field (capped landfill) by 1m.
 - **St Peter's Rugby Club:** downstream of RBG so no benefit.

- Diversion channel or bypass channel.
- Increase flood conveyance (passing, not storing, flood water) – widening, deepening.
- In-line defence structures.
- Demountable defences.
- Sustainable Urban Drainage Systems (SUDS).

Due to the residual flooding that occurs from most options, combinations of the above were also considered.

The preferred option is in-line defence structures, with elements of increased channel conveyance for fluvial sections, such as RBG and Roath Mill Gardens (RMG).

The increased channel conveyance, by re-grading the Brook bank, lowers water levels and reduces the height and length of flood defence structures (walls and embankments).

Design Standard of Protection: fluvial flood event with a 1:75 / 1.33% chance of occurring in any given year. 405 Pen-y-Lan properties removed from flood risk.

Originally planned for a design standard of protection of 1:100 / 1%, but reduced to lower the height of defence structures and shorten their length, thus reducing impact to Park Gardens.

Design constraints & mitigations



Design constraints

Identified a range of constraints that we needed to design around, e.g:

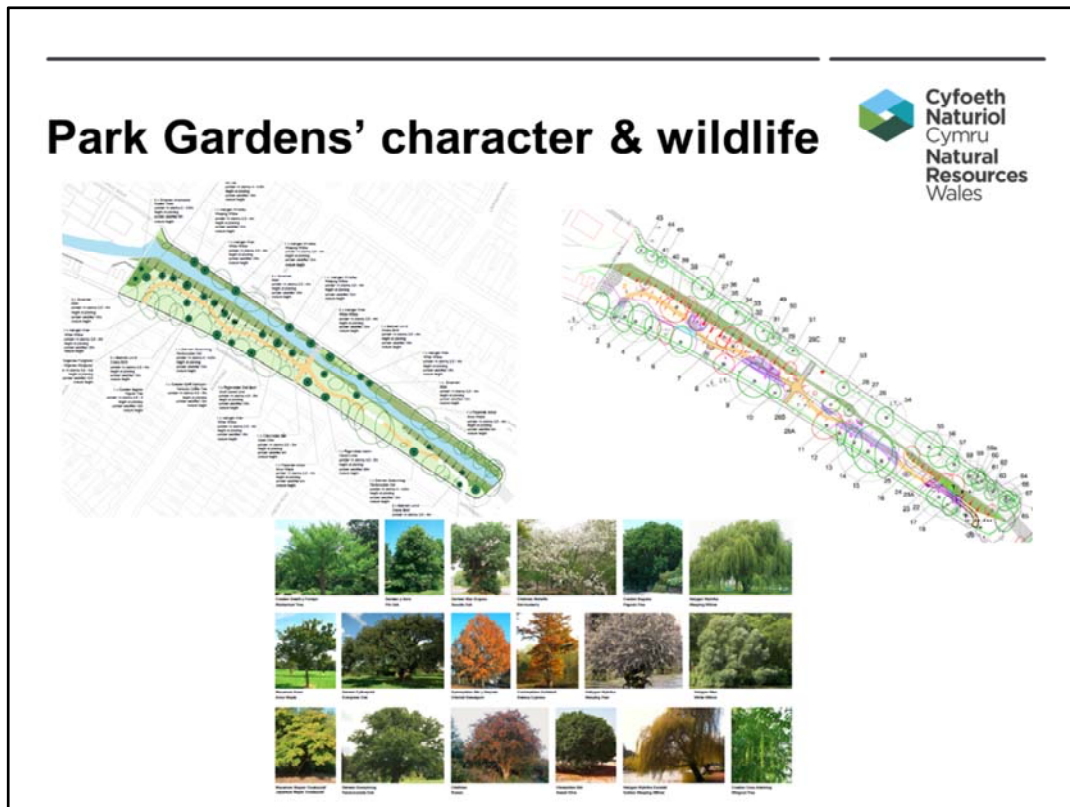
- Conservation Area + Grade II Registered Park and Garden
- Park Gardens' use
- City centre location
- Flora and fauna, including key trees and species

The design was developed to be as sympathetic as possible to the area, trying to balance the need for flood defence against preserving the area's value.

Design mitigation

- Align, design and landscape defences sensitively through the Park Gardens.
- Minimise impact upon the Conservation Area and Listed Parks to retain the character of the Edwardian gardens.
- Retain trees and railings around Park Gardens wherever possible.
- Use embankments and sloping river bank as soft, greener solutions – so no hard defence structures in RBG and RMG u/s

Numerous design iterations and changes, informed by stakeholder feedback, balancing conflicting constraints, as all designs had impacts, so trying to choose the best / least-worst option.



The Park Gardens' character and landscape value is unique and precious. We have tried to minimise impacting this as much as possible through the option appraisal and design.

The Park Gardens are well planted with a variety of trees, many of which have high landscape, heritage, amenity, ecological value. There are several high quality specimens, including some champion trees. We have tried to retain high value and rarer trees through design alignment.

Landscape, heritage, amenity, ecological impact unfortunately results from the scheme – for this and other options. This was considered in the options assessment, with all impacts of each option trying to be balanced.

We have tried to do everything possible to retain the character of the Park Gardens, through options and design and in consultation with stakeholders. We don't want to impact the Park Gardens or cut trees down, it has been a difficult choice for us and other stakeholders.

We will mitigate tree losses through a designed arboricultural planting scheme. The species selected seek to continue the Park Gardens' value as an informal arboretum.

We will replant new trees of same or similar species to those lost, plus some new species planted to enhance Park Gardens. This approach is strongly applied to the Park Gardens' perimeter – the importance of continuing landscape character of Edwardian Park Gardens and Conservation Areas is paramount.

Native species are generally preferred along the river corridor to enhance the wildlife value and strengthen natural qualities of brook. We have discussed with Cardiff Council Parks and Arboricultural Officers, and included liaison with retired Parks staff.

We have made some concessions recently on tree removal in order to retain some additional trees. We will use careful working methods, protection and supervision by an arboriculturist to achieve this. This is based on a fundamental change to our approach to risk – that of a tree surviving or not. We will monitor, care for and maintain the trees afterwards.

Arboriculturist advice fed into the original plan for tree removal and advised that many of these trees should be removed due to the long term impact from the works and mitigated by planting new specimens.

Wildlife protection

As NRW, we have the highest regard for wildlife and habitat, and expect best practice in our projects.

We identified the flora and fauna present and potentially present on site, and have managed it accordingly. Includes designated areas (Site of Importance for Nature Conservation), protected species potential (bats, birds, nesting birds, water voles, otter) and other species present.