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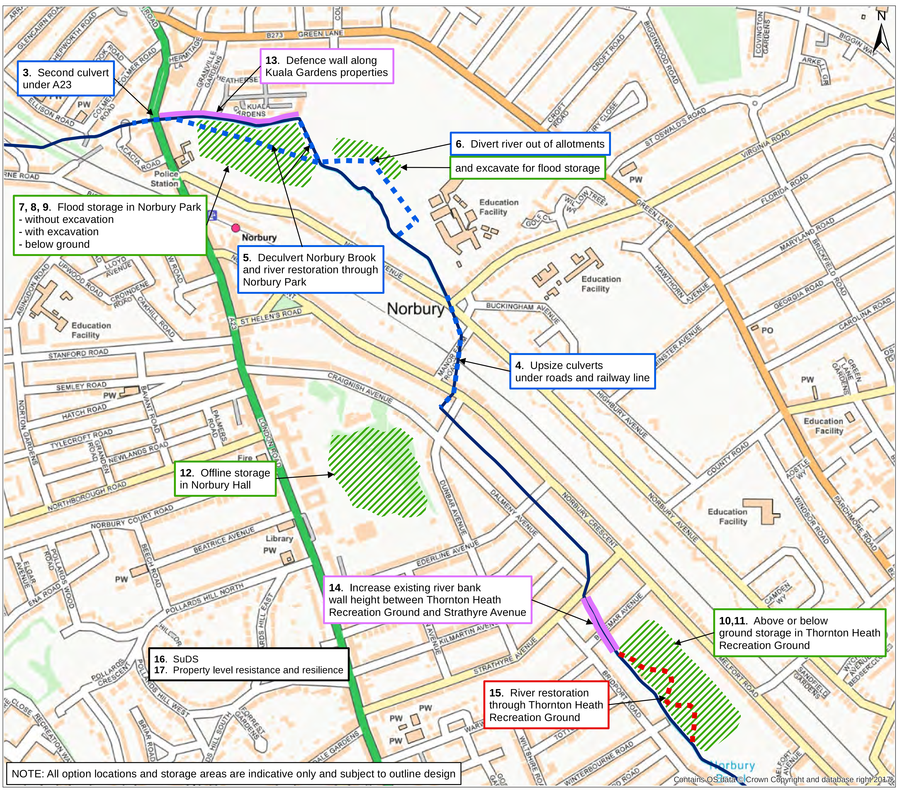
Graveney flood alleviation scheme

Flood risk modelling has identified more than 700 properties at risk of flooding in the area. This scheme aims to reduce this risk along the River Graveney and Norbury Brook in Thornton Heath and Norbury, where 340 homes are at risk.

We developed a list of options to be considered to reduce the risk. See map below. We assessed these options technically, financially and environmentally to see which ones had the potential to go ahead for further consideration.



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Graveney flood alleviation scheme

The table below shows the list of options and explains which options were not taken forward and why. The options taken forward have been given a letter reference.

Option number	Description	Taken forward	Reasons
1	Do nothing to prevent flooding.	N/A	This is our theoretical baseline for measuring other options.
2	Do the minimum - continue with existing maintenance work.	✓	This represents the current situation.
3	Second culvert under the A23.	✗	Increases flood risk to residential area downstream; Significant disruption to A23 trunk road and TfL Red Route; Impact on fish passage due to lower flow levels under normal conditions from splitting of the flow between two culverts.
4	Upsize culverts under roads and railway line.	✗	High costs associated with the works through multiple properties, including Network Rail assets; Negative impact on fish passage.
5	Deculvert Norbury Brook and river restoration through Norbury Park.	✓	Included as part of shortlist options A and B.
6	Divert river out of allotments and excavate for flood storage.	✗	Disruption to the allotments; Costly extensive earthworks required; loss of trees, deep wide channel will reduce the recreation land available.
7	Flood storage in Norbury Park without excavation.	✓	Combined with option 5 to create shortlist option A.
8	Flood storage in Norbury Park with excavation.	✓	Combined with option 5 to create shortlist option B.
9	Below ground flood storage in Norbury Park.	✗	High costs associated with below ground storage. Unnecessary as able to achieve required storage volumes above-ground in the park.
10	Above ground storage in Thornton Heath Recreation Ground.	✓	Shortlist option C.
11	Below ground storage in Thornton Heath Recreation Ground.	✓	Combined with option 10 to create shortlist option D.
12	Offline storage in Norbury Hall.	✗	Ground levels unsuitable.
13	Defence wall along Kuala Gardens.	✗	On its own, this increases flood risk downstream.
14	Increase existing river bank wall height between Thornton Heath Recreation Ground and Strathyre Avenue.	✗	Does not provide significant flood risk benefits.
15	River restoration through Thornton Heath recreation ground.	✗	Does not provide significant flood risk benefits.

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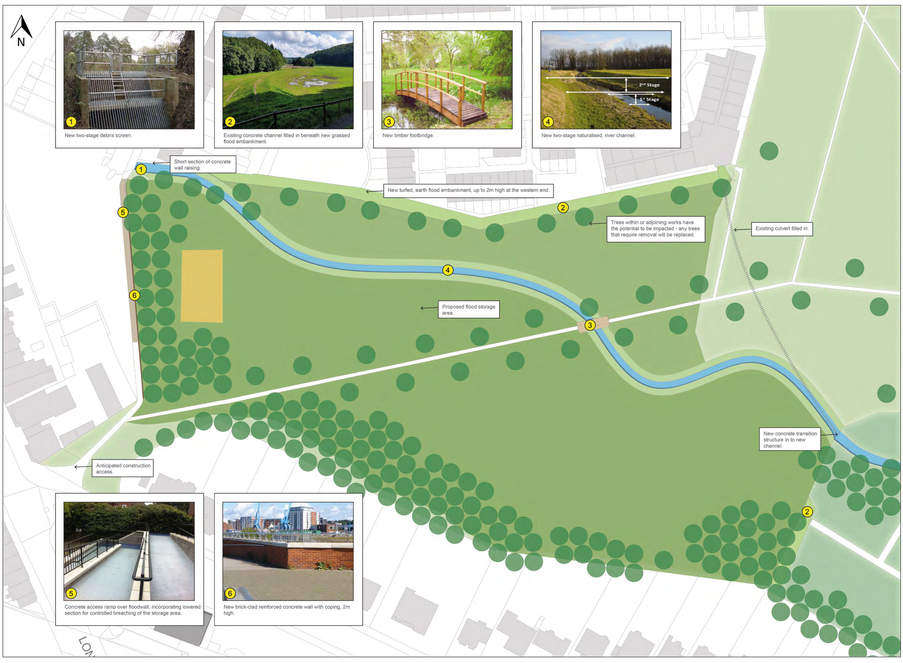
Norbury Park

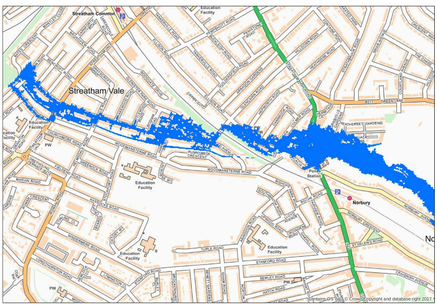
Option A - Cost: approx. £1m

Creation of a more natural looking river and storage of flood water in the park using grass embankments and walls in Norbury Park.

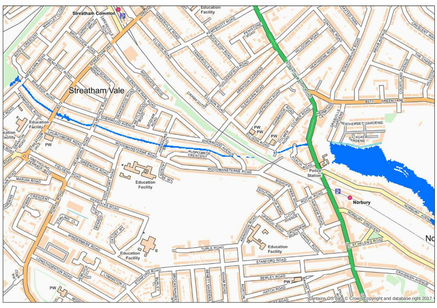
Option A will reduce the risk of flooding to approximately 180 properties downstream of Norbury Park.



The maps below show our predicted flood extents for the existing situation (Do Minimum) and with Option A. These both show a 1.3% annual chance storm. By comparing the two maps you can see the areas benefiting from this option.



Do Minimum (existing situation) flood outline for 1.3% annual chance storm.



Option A flood outline for 1.3% annual chance storm.

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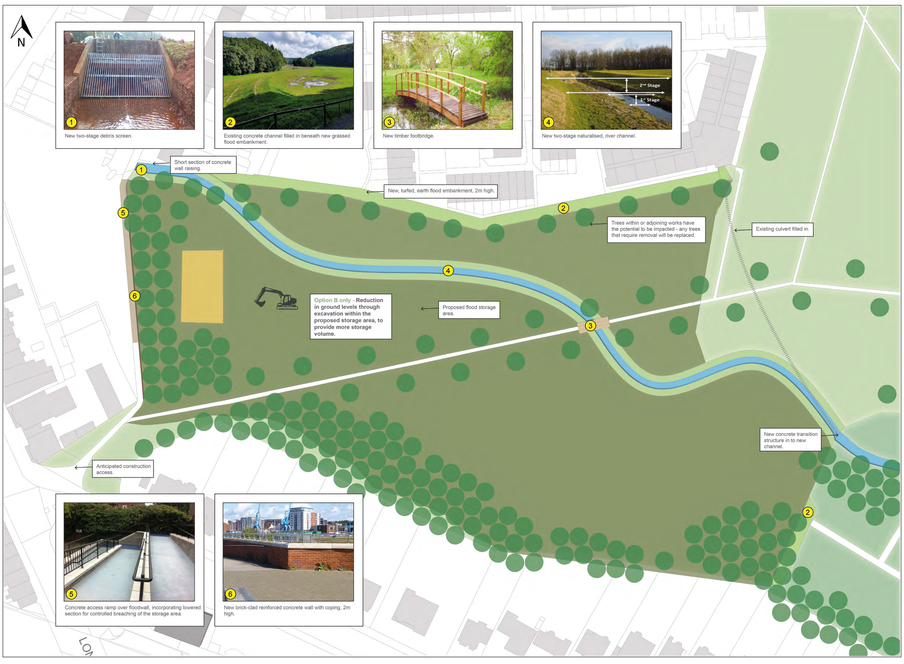
Norbury Park

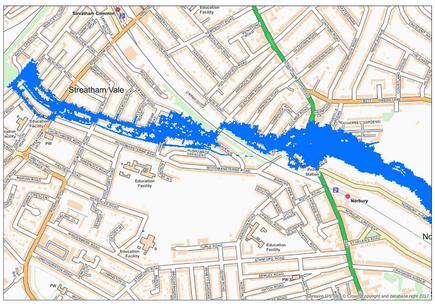
Option B - Cost: approx. £2.3m

Creation of a more natural looking river and storage of flood water in the park using grass embankments and walls in Norbury Park and lowering the land level.

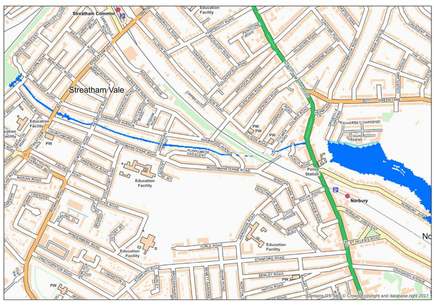
Option B will reduce the risk of flooding to approximately 250 properties downstream of Norbury Park.



The maps below show our predicted flood extents for the existing situation (Do Minimum) and with Option B. These both show a 1% annual chance storm. By comparing the two maps you can see the areas benefiting from this option.



Do Minimum (existing situation) flood outline for 1% annual chance storm.



Option B flood outline for 1% annual chance storm.

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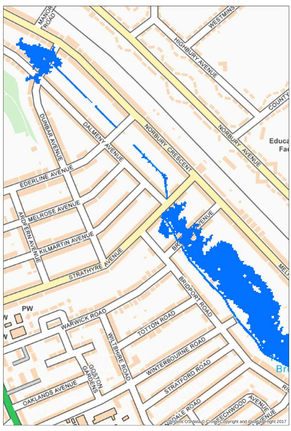
Thornton Heath Recreation Ground

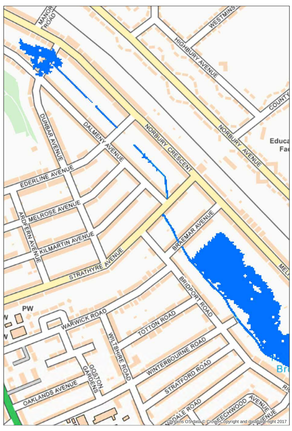
Option C - Cost: approx. £1m

Creation of above-ground temporary storage of flood water in the western end of Thornton Heath Recreation Ground.

Option C will reduce the risk of flooding to approximately 30 properties downstream of Thornton Heath Recreation Ground.

The maps below show our predicted flood extents for the existing situation (Do Minimum) and with Option C. These both show a 5% annual chance storm. By comparing the two maps you can see the areas benefiting from this option.





Left:
Do Minimum (existing situation) flood outline for 5% annual chance storm.

Right:
Option C flood outline for 5% annual chance storm.

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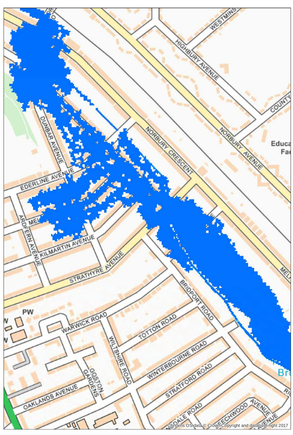
Thornton Heath Recreation Ground

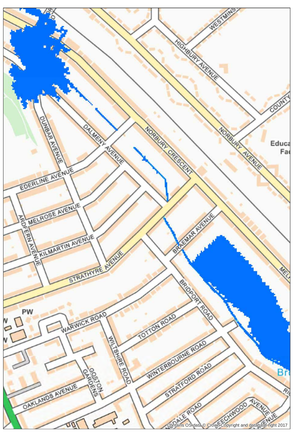
Option D - Cost: approx. £19.2m

Creation of above and below-ground temporary storage of flood water in the western end of Thornton Heath Recreation Ground.

Option D will reduce the risk of flooding to approximately 190 properties downstream of Thornton Heath Recreation Ground.

The maps below show our predicted flood extents for the existing situation (Do Minimum) and with Option D. These both show a 1% annual chance storm. By comparing the two maps you can see the areas benefiting from this option.





Left:
Do Minimum (existing situation) flood outline for 1% annual chance storm.

Right:
Option D flood outline for 1% annual chance storm.

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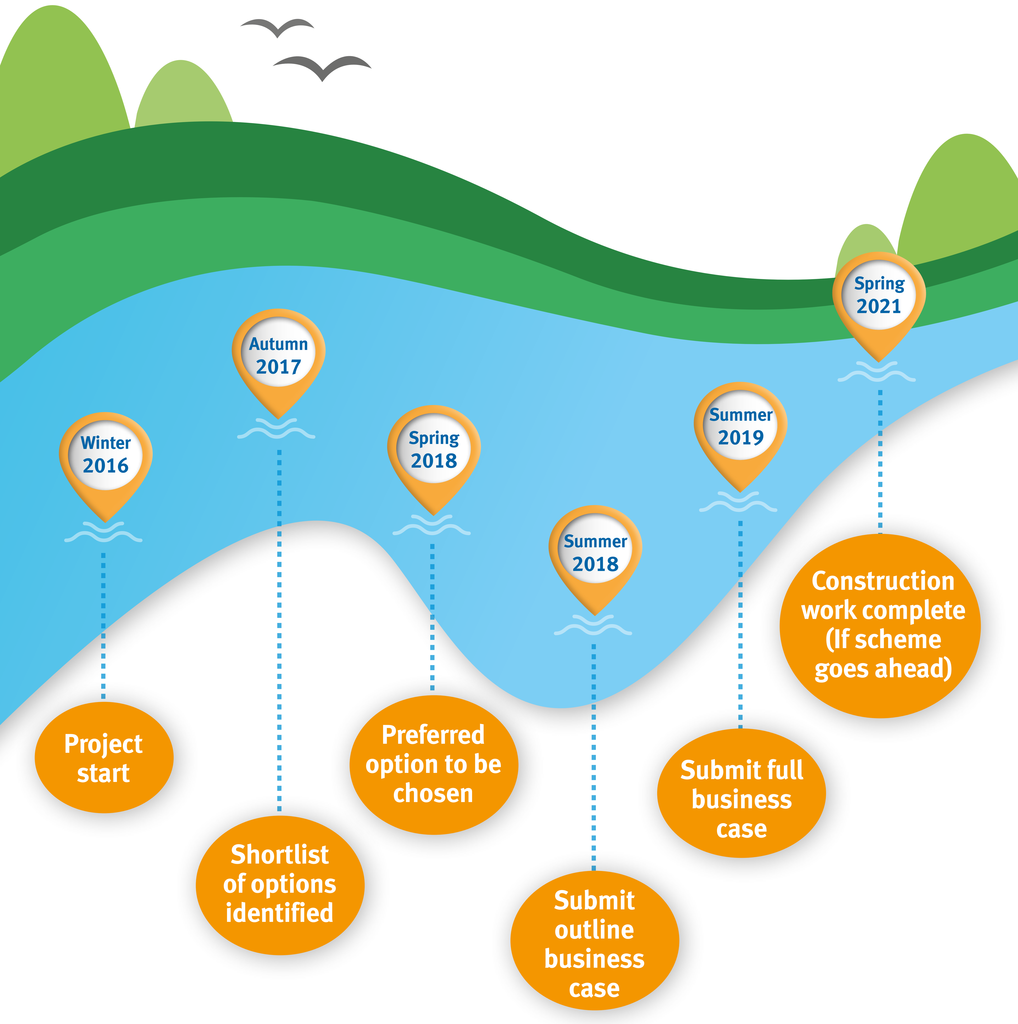
Project funding & timeline

Funding explained

In 2011, Defra published updated rules for funding flood risk management projects. The Flood and Coastal Resilience Partnership Funding guidance sets out criteria which assigns a percentage score to each project. The higher the score of the project, the more likely it is to receive a greater proportion of Government funding.

Funding is allocated on an annual basis and the score of a project is considered against other projects around the country. This process ensures that tax payer's money is spent where it can deliver most benefit for least cost. Anyone can contribute to schemes that do not qualify for 100% government funding.



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