

Exeter, Northbrook Upper Flood Improvement Scheme

Report of the Head of Planning, Transportation and Environment

Please note that the following recommendations are subject to consideration and determination by the Cabinet (and confirmation under the provisions of the Council's Constitution) before taking effect.

Recommendation: That Cabinet:

- (a) approves the Exeter, Northbrook Upper Flood Improvement Scheme at an estimated cost of £450,000, which will not proceed until all funding is secured;**
- (b) gives authority to acquire title and/or rights over the necessary land as required in order to deliver the scheme.**

1. Summary and Purpose of Report

As a result of high intensity rainfall, parts of Exeter are at risk of surface water flooding. Devon County Council (DCC) has been leading an investigation between partners Exeter City Council (ECC), South West Water (SWW), the Environment Agency (EA) and Network Rail (NR) to better understand the risk and prioritise areas within the city for flood improvement works, based on the number of properties at risk, the potential depths of flooding and the vulnerability of those living there.

This report highlights the history of flooding in the upper Northbrook area of Exeter and the ongoing high risk of future flood events. It also details the proposed scheme options that aim to significantly reduce this ongoing risk of flooding and recommends that DCC supports the delivery of these essential flood improvements through its capital programme, as set out in the recommendations above.

2. Background

The DCC Preliminary Flood Risk Assessment, produced in 2011, established that Exeter had the largest number of properties at risk of surface water flooding, within the county. As a result of this further detailed investigations and hydraulic modelling has been undertaken for Exeter.

These proactive investigations, coupled with evidence gained from a localised rainfall event that fell in Exeter in October 2014 where approximately 60 residential properties flooded internally, have meant that works in Exeter can be fully justified and evidenced.

Surface water flooding within the catchment is exacerbated during high intensity rainfall events as urban drainage systems are overwhelmed by the volume of flow entering the network, which causes manholes in low lying areas to surcharge and also increases the volume of overland flow.

Given the complex nature of the surface water flooding mechanisms and the numerous locations of works required across the city, a phased delivery of flood improvement works over forthcoming years will be required. This will also allow time to build the evidence base required to draw down national Flood Defence Grant in Aid (FDGiA) funding to take schemes through to full design and construction. This document will therefore only cover

phase one of the proposed works which will cover the Upper Northbrook catchment, mainly in Beacon Lane and the Georges Close area of Whipton and Old Tiverton Road, as shown in Annex 1.

These locations have a history of surface water flooding going back over the last 50 years with the most recent event being in October 2014.

3. Scheme Proposals

DCC is proposing a number of improvements at various locations upstream of the residential areas to reduce runoff, attenuate flows and restrict the residual flows through the built-up area. The main elements of the scheme are:

At Beacon Lane – See Annex 2

1. Alterations of kerbing and parking to create a barrier to flood waters to better protect the Beacon Heath Children's Centre
2. Installation of a 300m long low-level wall along the cycle path/footway from Beacon Lane to Bettys Mead playing fields to intercept an overland flow path.
3. Highway drainage improvements to divert water into the Northbrook watercourse where there is spare capacity.

At Georges Close, Whipton – See Annex 3

- Construction of a low earth bund to create an above ground water storage area in the public open space, in order to reduce the risk of flooding from surface water flows. This will then drain down into the Northbrook watercourse, where there is sufficient capacity.

At Old Tiverton Road – See Annex 4

- Provision of Property Level Resilience measures including flood doors, non-return valves and downpipe disconnections into the basement flats.

Attached are three plans which illustrate these proposed flood improvement works.

4. Consultations/Representations/Technical Data

Throughout the investigation and design process there has been a close working relationship between DCC's Flood Risk Management team, Jacobs Civil Engineering, Exeter City Council, Network Rail, South West Water and other relevant landowners.

A planning application will likely be required for the works at Georges Close, as part of this a community wide consultation will be undertaken.

5. Financial Considerations

A business case promoting the scheme to the Environment Agency will be submitted, imminently, to request funding support from Defra's Flood Defence Grant in Aid and Local Levy (collected from Lead Local Flood Authorities in Devon, Cornwall and the Isles of Scilly). The remaining funding will be provided by contributions sought from South West Water, and Exeter City Council, as well as by DCC's own dedicated flood risk budgets. This will be in addition to the significant investment made by DCC, to date, through the required investigation and scheme design / preparation work. Relevant revenue allocations will be capitalised and monitored through DCC's capital programme.

The proposed implementation of the scheme and allocation of funding through DCC's capital programme is subject to formal confirmation of the external grants and contributions. Current estimates are in the region of up to £450,000 to complete the works which is expected to be made up of £50,000 from the DCC PT&E Flood Risk Management revenue budget, £50,000 from the DCC Environment capital flood prevention works programme and up to £350,000 from external grants and third-party contributions.

6. Sustainability, Equality and Public Health Considerations

All of the flood improvements mentioned in this report will be developed in accordance with the Equality and Environmental Assessments produced in support of the Devon Local Flood Risk Management Strategy. All elements of the scheme have been assessed at the appropriate stage using the corporate, integrated assessment tool, with relevant equality and environmental impacts identified and acted on as necessary.

The works outlined in this report are all designed to improve the protection afforded to the community and individual properties currently at particular risk of flooding and, thereby, support health and wellbeing. More than just protecting the properties alone, it should be noted that flood water has the potential for transporting contaminants, such as sewage; so, reducing flood risk has clear health benefits.

An environmental appraisal of the proposals indicates that, with appropriate mitigation, there will be limited impact upon landscape, historic and ecological interests. The scheme will also look to maximise any ecological opportunities. These issues and any implications will be taken into account, in line with relevant policy considerations, through the planning process.

7. Legal Considerations

All works will be carried out in accordance with the powers and duties assigned to DCC under the Flood and Water Management Act 2010, the Land Drainage Act 1991 and any other relevant legislation. The lawful implications and consequences of the proposals and relevant actions have been considered through the design process and will be addressed, as necessary, through the implementation of the scheme. This may involve a legal easement or purchase of land to enable construction and future maintenance of key elements within the proposed scheme.

8. Risk Management Considerations

The risks associated with flooding are set out in the Devon Local Risk Management Strategy and addressed through DCC, Local Resilience Forum and local community emergency plans. In addition, the corporate risk register identifies the risks linked to the implementation of DCC's role as Lead Local Flood Authority. The proposed works are designed to reduce these risks and align with these strategies and plans.

The current standard of protection to some properties is estimated to be as low as from the 1 in 1-year event and this scheme aims to improve the standard up to the 1 in 75-year, as a minimum, and, for many properties, up to the 1 in 100-year scenario.

9. Discussion

The delivery of these important flood improvements will provide a significantly greater standard of protection and reduce the frequent risk of flooding to over 60 properties in residential areas of Exeter, including private and ECC tenanted properties and the children's centre. The business case to be submitted to the Environment Agency justifies the intended

level of investment in the proposed scheme in accordance with national objectives. It also has a high priority when considered against the criteria set out in the Devon Flood Risk Management Strategy.

10. Options/Alternatives

A number of other options that could improve the flood resilience of this part of the city were considered, including natural flood risk management, large flood relief culverts and watercourse diversions. These were considered against a range of factors such as environmental impact, flood risk benefit, social impact, health and safety implications and economic affordability.

The assessment has indicated that the preferred option, and hence the proposed scheme, is deemed to provide the most advantageous and cost beneficial scheme that will give immediate benefit upon completion of the works. This will be fully scrutinised by the Environment Agency's National Project Assurance Service, as part of the business case approval process for Defra funding.

11. Reason for Recommendation/Conclusion

The proactive investigations and extensive modelling of the surface water flood risk in Exeter has identified the potential vulnerability and extent of risk to the affected properties. This has highlighted the urgent need for the proposed flood alleviation works. It is, therefore, recommended that the proposed scheme is approved for delivery through the DCC capital programme to secure these essential flood improvements.

Dave Black
Head of Planning, Transportation and Environment

Electoral Divisions: Heavitree & Whipton Barton, Pinhoe & Mincinglake, and St Sidwells & St James

Cabinet Member for Community, Public Health, Transportation and Environmental Services:
Councillor Roger Croad

Chief Officer for Communities, Public Health, Environment and Prosperity: Dr Virginia Pearson

Local Government Act 1972: List of Background Papers

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Background Paper	Date	File Reference
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Nil

EXETER SURFACE WATER
FLOOD ALLEVIATION SCHEME
NORTHBROOK UPPER
SCHEME LOCATIONS

ANNEX 1



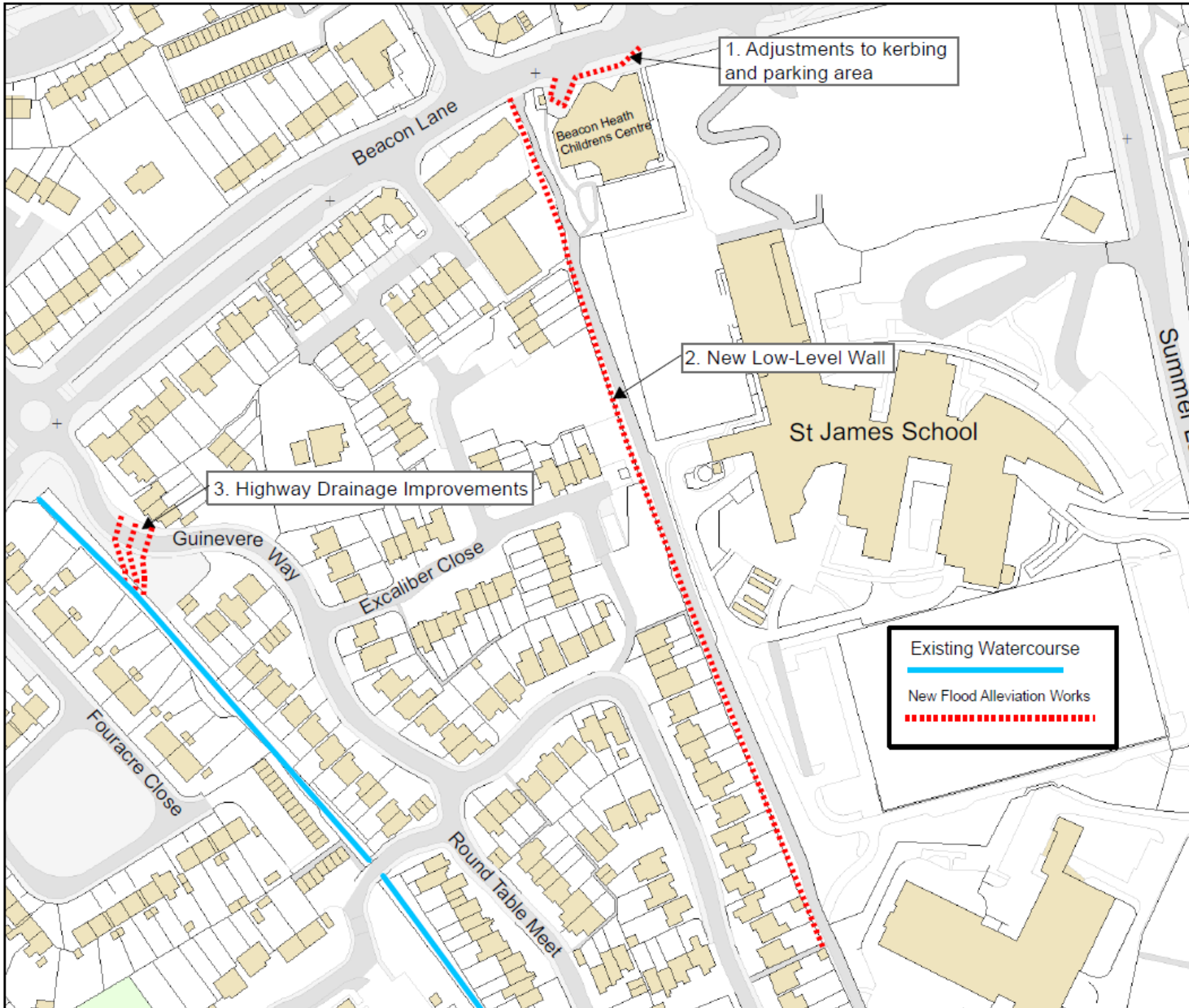
Date: JULY 2018

Scale: 0 40 80 160 Meters



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EXETER SURFACE WATER
FLOOD ALLEVIATION SCHEME
NORTHBROOK UPPER
BEACON LANE

ANNEX 2
Beacon Lane

Date: JULY 2018

Scale:
0 5 10 20 Meters



Existing Watercourse	
New Flood Alleviation Works	

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EXETER SURFACE WATER
FLOOD ALLEVIATION SCHEME
NORTHBROOK UPPER
GEORGES CLOSE

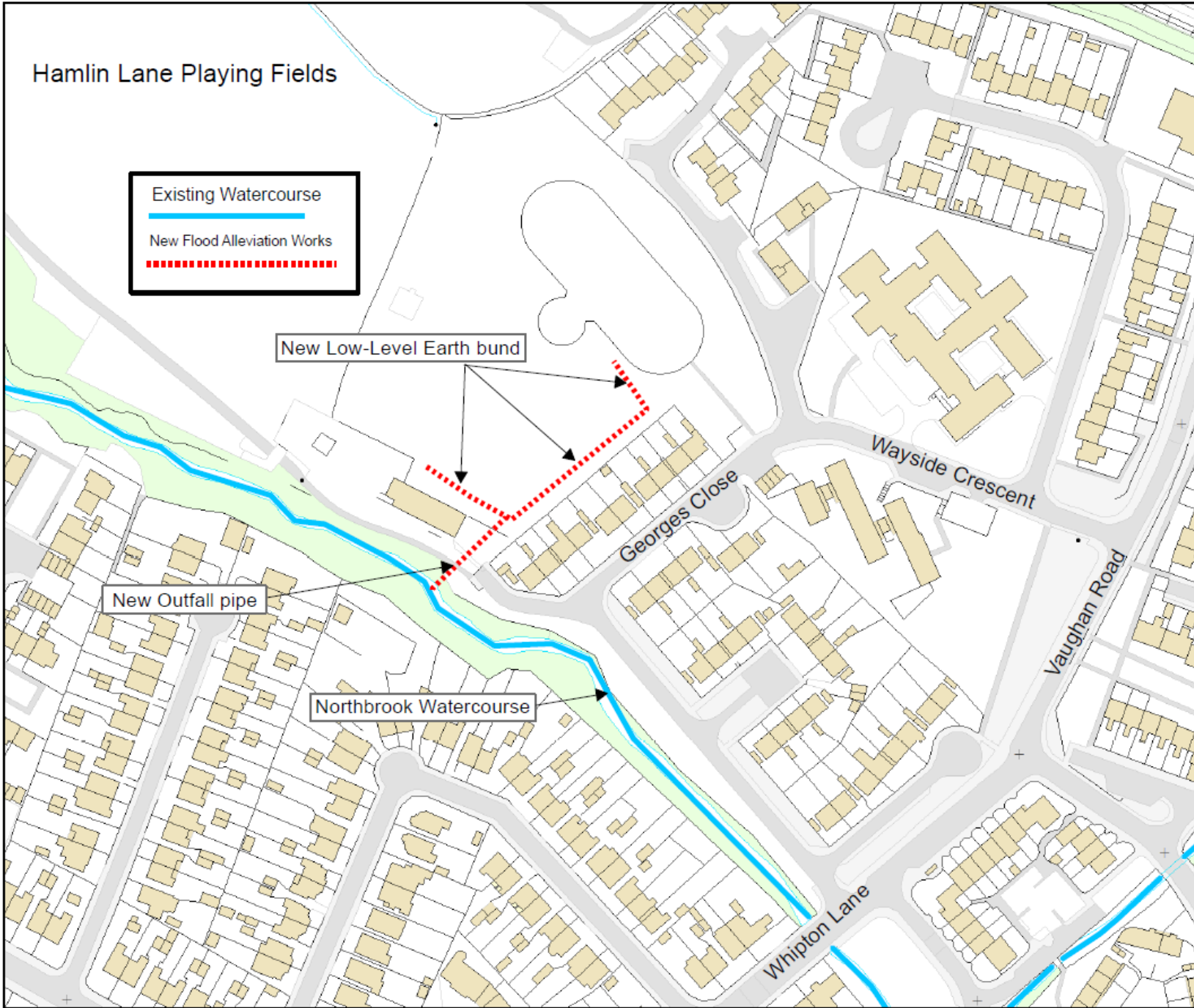
ANNEX 3
St Georges Close
Whipton

Date: JULY 2018
Scale: 0 5 10 20 Meters



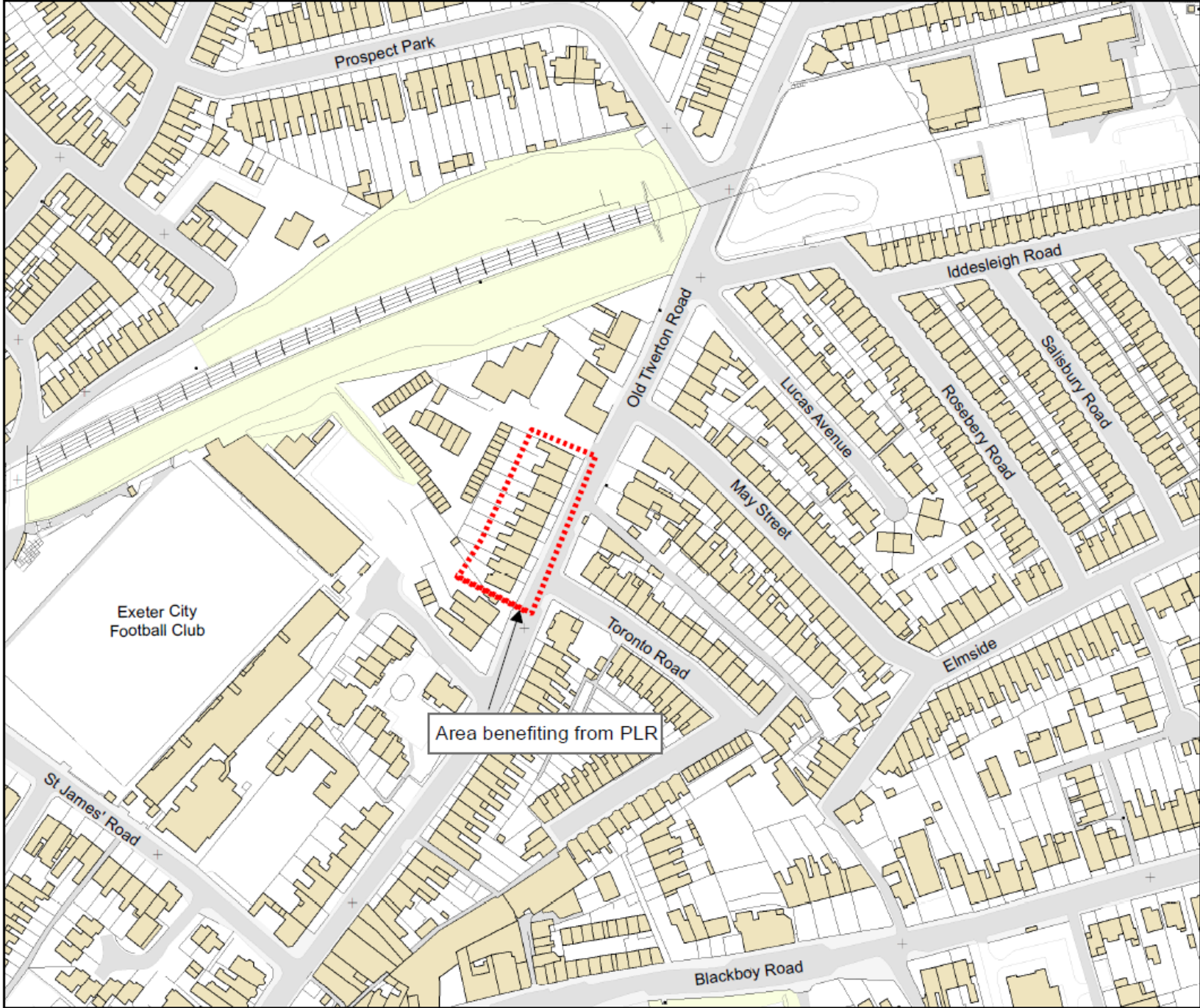
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EXETER SURFACE WATER
FLOOD ALLEVIATION SCHEME
NORTHBROOK UPPER
PROPERTY LEVEL RESILIENCE

ANNEX 4
Old Tiverton Road



Date: JULY 2018

Scale: 0 5 10 20 Meters



Area benefiting from PLR



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