

Report To:	Environment & Regeneration Committee	Date:	31 October 2013
Report By:	Acting Corporate Director Environment, Regeneration & Resources	Report No:	ERC/ENV/IM/13.173
Contact Officer:	Robert Graham	Contact No:	714827
Subject:	Flood Management Study – Findings and Funding Priorities		

1.0 PURPOSE

- 1.1 The purpose of this report is to inform Committee of the findings of the Inverclyde Flood Management Study by Kaya Consulting and the Inverclyde Flood Plan Study by Grontmij. It combines the findings of both studies into a priority list of flood alleviation schemes in order to identify the funds necessary to extend the present Flood Action Plan Programme beyond 2014.
- 1.2 Committee Report SSC/ENV/IM/11.111 of 6 March 2012 committed the Corporate Director Environment, Regeneration and Resources to report back to Committee with details of a scheme for comprehensive flood alleviation with which to approach Government for £1 million of funding to match that contributed by the Council.

2.0 SUMMARY

- 2.1 A study, commissioned in 2010 from Grontmij, identified the need for flood alleviation measures on Carts Burn and Hole Burn which have been included in the list below.
- 2.2 A subsequent study by Kaya Consulting was commissioned to undertake flood risk analysis of a number of Inverclyde's watercourses and their catchments. The Kaya study also identified a range of possible flood alleviation measures for each watercourse with the intention that further option appraisal and design work would follow to identify the most cost effective solutions.
- 2.3 At a meeting with the Scottish Government on 3 October 2013 it was made clear that *match* funding has never been available for flooding schemes and if that possibility had previously been suggested then it was suggested in error. However, it is expected that Local Authorities will be invited to bid for funding for flooding schemes in late October 2013. Bids are normally required to be submitted within 3 weeks and should only be for schemes which comply with Schedules 1 and 2 of the Flood Risk Management Act 2009. It is unlikely that there will be any further opportunities to bid for funding for the next two years. The projects listed in Table 1 below form the basis of a potential bid for this funding. In the event that a bid is ultimately unsuccessful, it is requested that the £1 million which was previously identified remains available for priority schemes.
- 2.4 Officers have drawn up a list of watercourses where further work is justified and could form the basis of a bid for funding from the Scottish Government.

Table 1

Location	Estimated Cost (£,000)
Hole Burn, Greenock	465
Lady Burn, Greenock	400
Carts Burn, Greenock	475
Bouverie Burn, Port Glasgow	250
Glenmosston Burn, Kilmacolm	160
Eastern Line of Falls	200
Coves Burn, Gourrock	385
TOTAL	2,335

- 2.5 It would be necessary to engage a consultant to support any bid for funding as the timescales to collate all the information and prepare the design solutions in sufficient detail are extremely short. It is proposed that Grontmij, as the consultant responsible for the 2009 Inverclyde Flood Plan, should be engaged for this task and a draft contract has been prepared for Professional Services under the Scotland Excel Engineering and Technical Consultancy Services Framework procurement route.
- 2.6 In the event that a bid for Scottish Government funding is unsuccessful, officers have drawn up a revised costed list of watercourses where further work could be funded by Council funds alone.

Table 2	
Location	Estimated Cost (£,000)
Hole Burn, Greenock	170
Lady Burn, Greenock	110
Carts Burn, Greenock	160
Bouverie Burn, Port Glasgow	215
Gotter Water, Quarrier's Village	195
Glenmosston Burn	150
TOTAL	1,000

- 2.7 Further required expenditure on cleaning and repairing culverts is identified in both the Grontmij and Kaya reports and reflects the need, as identified in the consultants RAMP Report, for increased maintenance funding.
- 2.8 Independent of the flooding reports, officers have identified the need for additional expenditure to CCTV survey our remaining minor water courses to better understand their condition and role in our surface water drainage network. This work involves the on-going cleaning of culverts, maintenance of grills and CCTV surveys of culverts to monitor condition as required by the Flood Risk Management Act.

3.0 RECOMMENDATIONS

It is recommended that the Committee:-

- 3.1 note the approval by the Corporate Management Team for the direct appointment of Grontmij through the Scotland Excel Framework with a maximum budget of £25,000 to support the proposed bid by the Acting Corporate Director Environment, Regeneration and Resources to Scottish Government for funding on the basis of the estimated costs for the Flood Action Plan programme beyond 2014 in Table 1. The budget for this appointment will come from the Flood Action Plan design fee estimate which has already been approved;
- 3.2 agree that if the bid to the Scottish Government for funding is unsuccessful, then the projects in Table 2 are progressed up to a limit of £1 million.
- 3.3 note that the Head of Environmental & Commercial Services will bring forward a further report identifying future years annual routine maintenance spend requirements for drainage and culvert maintenance.
- 3.4 note the approval of the £30,000 budget to undertake CCTV survey on culverts throughout Inverclyde to comply with the Flood Risk Management Act 2009. This spend will be funded from under spend within Waste Management as detailed in the Revenue Budget Report, Environment & Regeneration Committee, 31 October 2013.

Ian Moffat
Head of Environmental & Commercial Services

4.0 PROGRESS

- 4.1 Committee Report SSC/ENV/IM/11.111 agreed a proposed Flood Action Plan Programme for 2012 - 2014. Of the programmed works, the extension of the Hole Burn and Carts Burn culverts at Woodstock Road and Auchmountain Glen have been completed and the outline study of Inverclyde's major watercourses (Flood Management Study) is also complete.
- 4.2 The Kaya and Grontmij studies referred to in this report were designed to identify and quantify flooding issues to a level of detail which would allow recommendations to be made for more detailed design work and option appraisal. The Flood Action Plan programme identifies a sum of £50,500 for such work to support various flood alleviation schemes in Inverclyde.

5.0 BACKGROUND

- 5.1 In March 2009 Grontmij Consulting undertook flood assessments on the Hole Burn and Carts Burn. The report recommends a number of flood alleviation measures of differing effectiveness for different flood return periods and their associated costs.
- 5.2 The report's general recommendation was that further model development is required to more accurately evaluate the extent and frequency of flooding in the catchments. The investigations to date give a good indication of the locations of flooding based on various scenarios.
- 5.3 In August 2012 Kaya Consulting was appointed to undertake a flood risk analysis of Inverclyde's major watercourses and their catchments. The study undertook flood risk assessments on Ash Burn, Coves Burn, Lady Burn, Devol Burn, Bouverie Burn, Gotter Water and Glenmosston Burn and developed flood alleviation strategy measures in response to the results of those assessments.
- 5.4 Possible flood mitigation measures identified for each watercourse have undergone a high level assessment to outline potential solutions and their hydraulic effectiveness. A more detailed assessment will need to be carried out as part of the design option sifting before any of the prioritised options can be taken forward to construction.
- 5.5 The listed priorities have been ranked in terms of the economic consequences of local watercourses flooding and the frequency of the flood events.

Table 3	
Watercourse	Impact
Hole Burn	Affects the shops around the West Station, Greenock twice a year
Lady Burn	Affects the A8 trunk road at East Hamilton Street twice a year
Carts Burn	Affects the A8 trunk road, EE call centre and Holiday Inn at Rue End Street biennially
Bouverie Burn	Affects Bouverie Motors annually and can affect the A8 trunk road at Newark Roundabout
Gotter Water	Affects 12 residential properties on a yearly basis
Glenmosston Burn	Affects the Post Office and local roads in Kilmacolm twice a year
Eastern Line of Falls	Provides options to divert excess flows away from Hole Burn and Carts Burn
Coves Burn	Affects Steel Street, Manor Crescent and railway line, approximately once in five years
Ash Burn	Creates ponding on Kirn Drive which then discharges back into the burn

6.0 OUTLINE COSTING OF POSSIBLE FLOOD MITIGATION MEASURES

- 6.1 A number of flood mitigation schemes have been identified and prioritised across the council area in line with Table 3, above. These schemes have been ranked in Table 4 to develop solutions to the most serious areas of flooding and therefore maximise the benefits across all watercourses within the available budget. The cost estimate total adds up to more than £2 million as this is the qualifying level for a Government funding bid. Some schemes have had to be eliminated from the bidding process due to the short timescale and the requirements for consultation.

6.2 It should be noted that the following cost estimates in Table 4 are based on high level description of required measures and were derived from historical data from similar civil engineering works. Consideration has been given to other charges, such as those listed below, and an appropriate allowance of 15% (approx. £300,000) has been included within the cost estimates to account for these:-

- Professional Fees;
- Statutory charges;
- Civil/geotechnical investigations, asbestos and contamination surveys;
- Ground remediation or the removal of contaminated or deleterious materials;
- Roads and public footpath works and utility upgrades or diversions; and
- Land Acquisition.

6.3 Officers have already acted to mitigate flooding in some of the locations identified in the two consultant's reports. This work includes:-

- New trash screen and inlet arrangement at Woodstock Road on the Hole Burn;
- New trash screen and inlet arrangement adjacent to Gabriel Street on the Carts Burn; and
- Installation of 'V' notch weirs to improve reservoir attenuation.

Table 4		
Watercourse	Alleviation Measure	Cost ('000)
Hole Burn, Greenock	☒ Redesigned trash screen at Lady Alice Pond	50
Hole Burn, Greenock	☒ Redesigned trash screen at Rankine Park	50
Hole Burn, Greenock	☒ West Station, road drainage gullies and link into culvert	145
Lady Burn, Greenock	☒ Redesigned trash screen at Aberfoyle Street	50
Eastern Line of Falls (Delling Burn)	☒ Install control feature to manage spilt of flow between Eastern Line of Falls (Delling Burn) and New Eastern Line of Falls (Carts Burn)	50
Carts Burn, Greenock	☒ Improve screening at Crescent Street culvert entrance	50
Bouverie Burn, Port Glasgow	☒ Redesigned trash screen at Bouverie Motors	50
Eastern Line of Falls (Delling Burn)	☒ Repair culvert at Drumfrochar Road	150
Carts Burn, Greenock	☒ Reinstate reservoir at Kennedy's Lane	145
Glenmosston Burn, Kilmacolm	☒ Upsize culvert at Market Place and provide improved flood routing in Gowkhouse Road	160
Lady Burn, Greenock	☒ Ladyburn Street provide formalised attenuation and protection to properties.	120
Bouverie Burn, Port Glasgow	☒ Upgrade pipework from Lower Bouverie Road to A8	175
Lady Burn, Greenock	☒ Divert excess flows from the Western Tributary to Carts Burn	150
Carts Burn, Greenock	☒ Upsize twin culverts in Crescent Street	280
Hole Burn, Greenock	☒ Provide flood relief pipe at Brougham Street	220
Lady Burn, Greenock	☒ Formalise storage upstream at King's Glen / Woodhead Quarry and improve inlet conditions	80
Bouverie Burn, Port Glasgow	☒ Replace flap valve at outlet	25
Coves Burn, Gourock	☒ Install v-notch at reservoir to manage attenuation	70
Coves Burn, Gourock	☒ Improve culvert inlet upstream of Caledonia Crescent.	25
Coves Burn, Gourock	☒ Replace culvert at Steel Street	290
Estimated budget for Scottish Gov't flood schemes		2335

6.4 Should a bid to Government prove unsuccessful, an alternative strategy would be to proceed with the highest priority schemes across the watercourses with the £1 million Council funding alone.

6.5 The top priority schemes identified for such an approach are included in Table 5.

Table 5				
Watercourse Priority	Watercourse	Scheme Priority	Alleviation Measure	Cost ('000)
1	Hole Burn, Greenock	2	Formalise diversion of flow and volumes between Hole Burn and eastern Line of Falls at Overton Reservoir	5
1	Hole Burn, Greenock	3	West Station, road drainage gullies	145
1	Hole Burn, Greenock	4	Investigate mechanism of flooding at High St / West Stewart St and develop scheme in conjunction with Transport Scotland, if appropriate. Cost of scheme not included within this estimate.	20
2	Lady Burn, Greenock	5	Resolve flooding in East Hamilton Street through improved road drainage and trash screen maintenance regime in conjunction with Transport Scotland	110
3	Carts Burn, Greenock	7	Install control feature to manage spilt of flow between Eastern Line of Falls (Delling Burn) and New Eastern Line of Falls (Carts Burn)	10
3	Carts Burn, Greenock	8	Attenuate Whinhill reservoir (Potential ownership issues)	45
4	Bouverie Burn, Port Glasgow	11	Remove debris and replace manhole in section under A8	130
3	Carts Burn, Greenock	12	Reinstate reservoir at Kennedy's Lane	105
4	Bouverie Burn, Port Glasgow	13	Flood storage upstream of Dougliehill Road (Potential ownership issues)	85
5	Gotter Water, Quarriers Village	14	Flood storage upstream of Quarriers Village.	195
6	Glenmosston Burn, Kilmacolm	15	Upsize culvert at Market Place and provide improved flood routing in Gowkhouse Road	150
Estimated budget for priority schemes requiring approval				1000

7.0 MAINTENANCE AND REPAIRS

7.1 The consultants Roads Asset Management Plan (RAMP) previously presented to Committee identified an annual requirement of £230,000 for the routine maintenance of drainage assets. Further support for increased expenditure is reflected in both the Grontmij and Kaya reports.

7.2 It should be noted that no increased revenue provision has been built into the 13/16 budget for drainage and culvert maintenance as recommended in the Roads Asset Management Plan.

7.3 The Kaya report identified a number of culverts that are partially blocked by debris or collapses and grills that require to be replaced. The cost of this routine maintenance work is estimated at £30,000 per annum.

8.0 FUTURE CCTV SURVEYS

8.1 Although the Kaya and Grontmij reports cover the majority of Inverclyde's major water courses there are a number culverts whose condition remains unknown. The CCTV survey of these culverts is necessary to fill knowledge gaps and support the fulfilment of the Council's new responsibilities under the Flood Risk Management Act. The cost of this CCTV survey work is estimated at £30,000 and would be vired from an underspend elsewhere in the Revenue Budget.

9.0 CONSULTATION

- 9.1 a) Legal Services have been consulted on this report
b) Finance Services have been consulted on this report

10.0 IMPLICATIONS

10.1 Financial:

Cost Centre	Budget Heading	Proposed Spend	Virement From	Other Comments
82305	Flood Action Plan design fee estimate	£25,000		Part of £50,500 already approved to support Scottish Government funding bid.
	Priority Flood Alleviation Schemes	£1,000,000		Included in approved 2013/16 Capital Programme.
	Drainage Maintenance – CCTV Survey	£30,000	Waste Disposal	See Revenue Budget Report for details of Virement

10.2 Human Resources:

This report has no implications for human resources.

10.3 Equality and Diversity:

This report has no implications for the Council's equality and diversity policies.

10.4 Repopulation:

Steps to alleviate flooding issues within Inverclyde will have a positive impact on the area's attractiveness to individuals and businesses and as such will have a positive impact on the Council's population.

Appendix A

Flooding in Inverclyde



Photo by Rebecca McNally

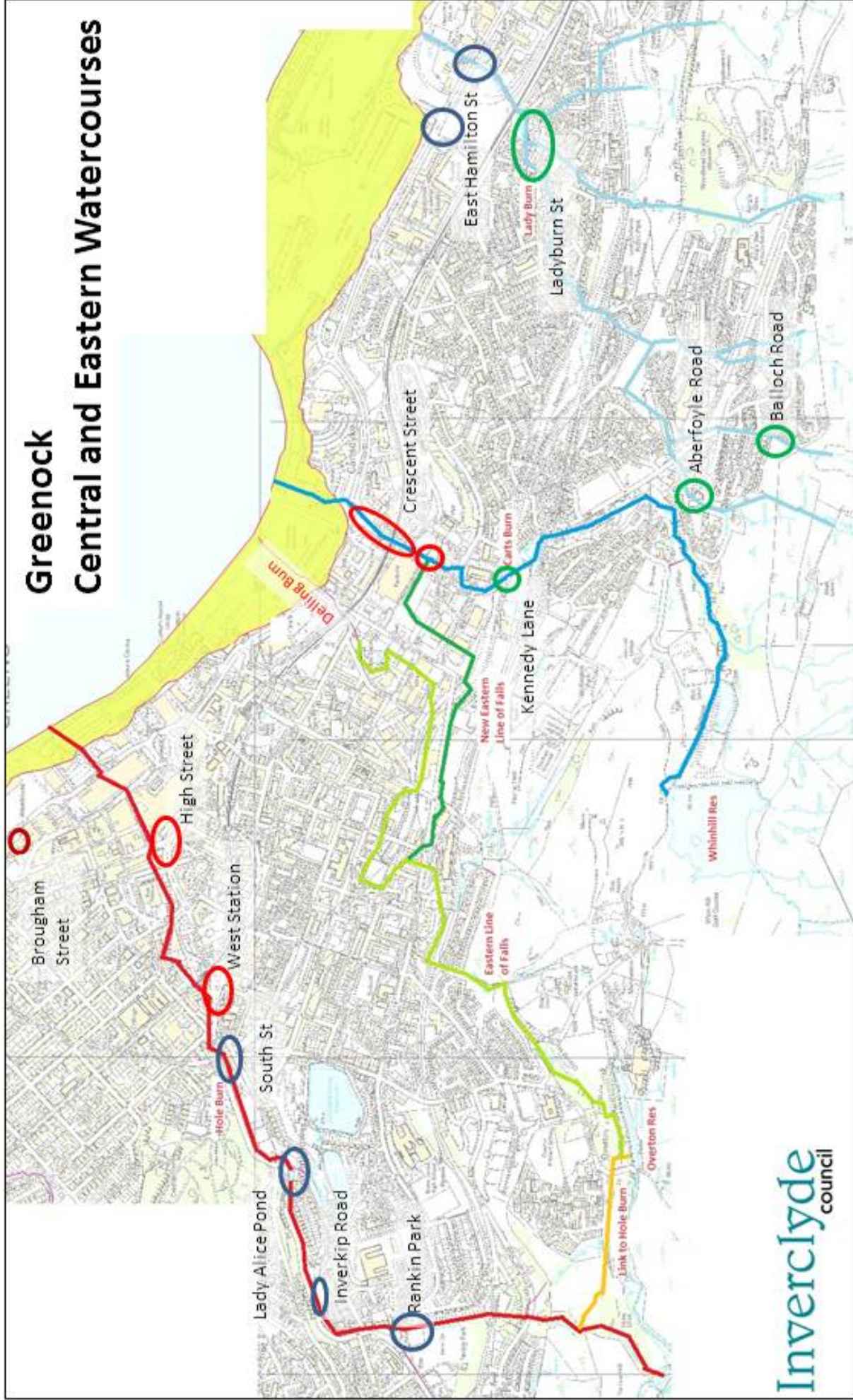


Photo by Suzanne Hair



Appendix B
Location Plans

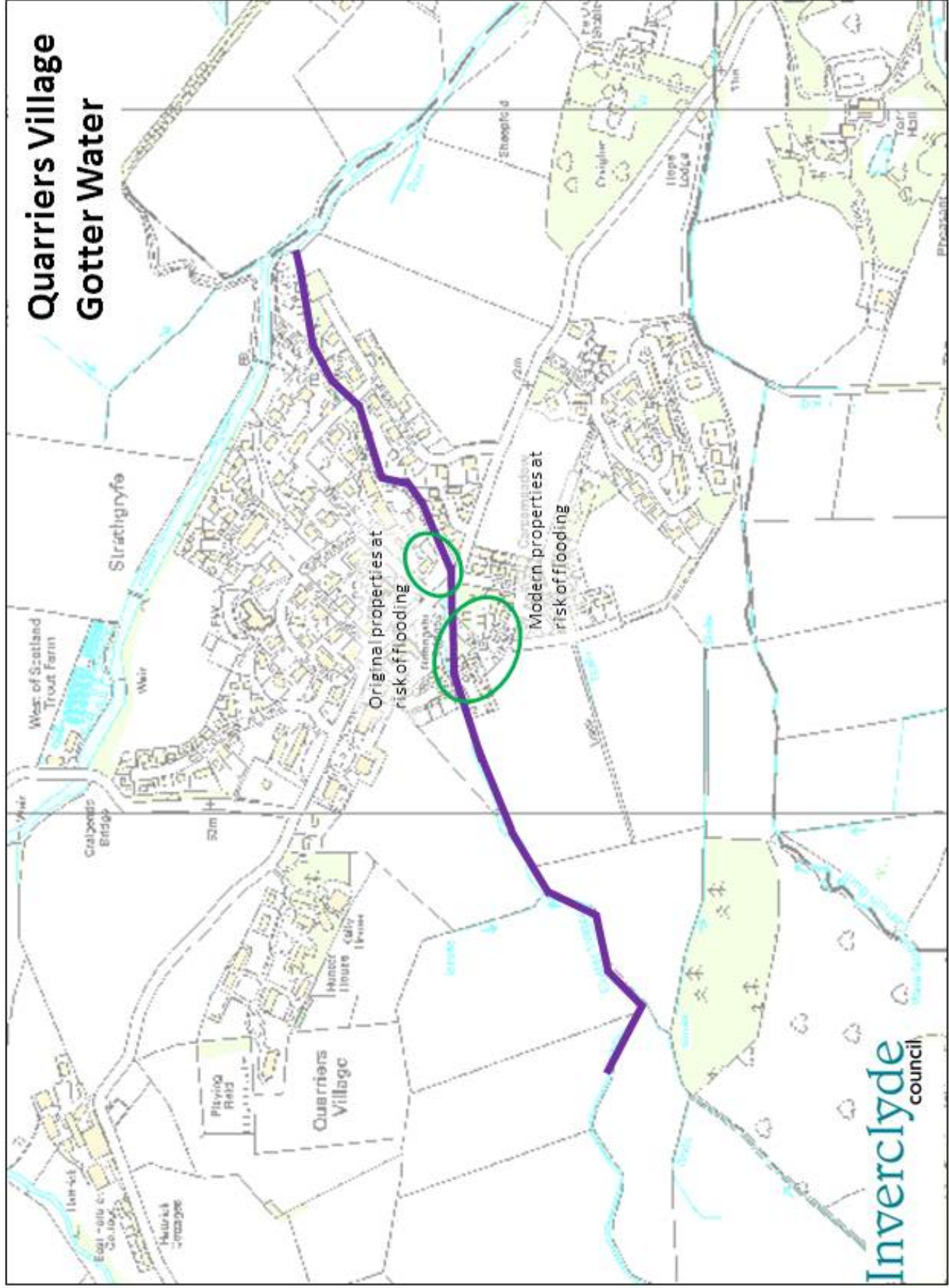
Greenock Central and Eastern Watercourses



Inverclyde
council

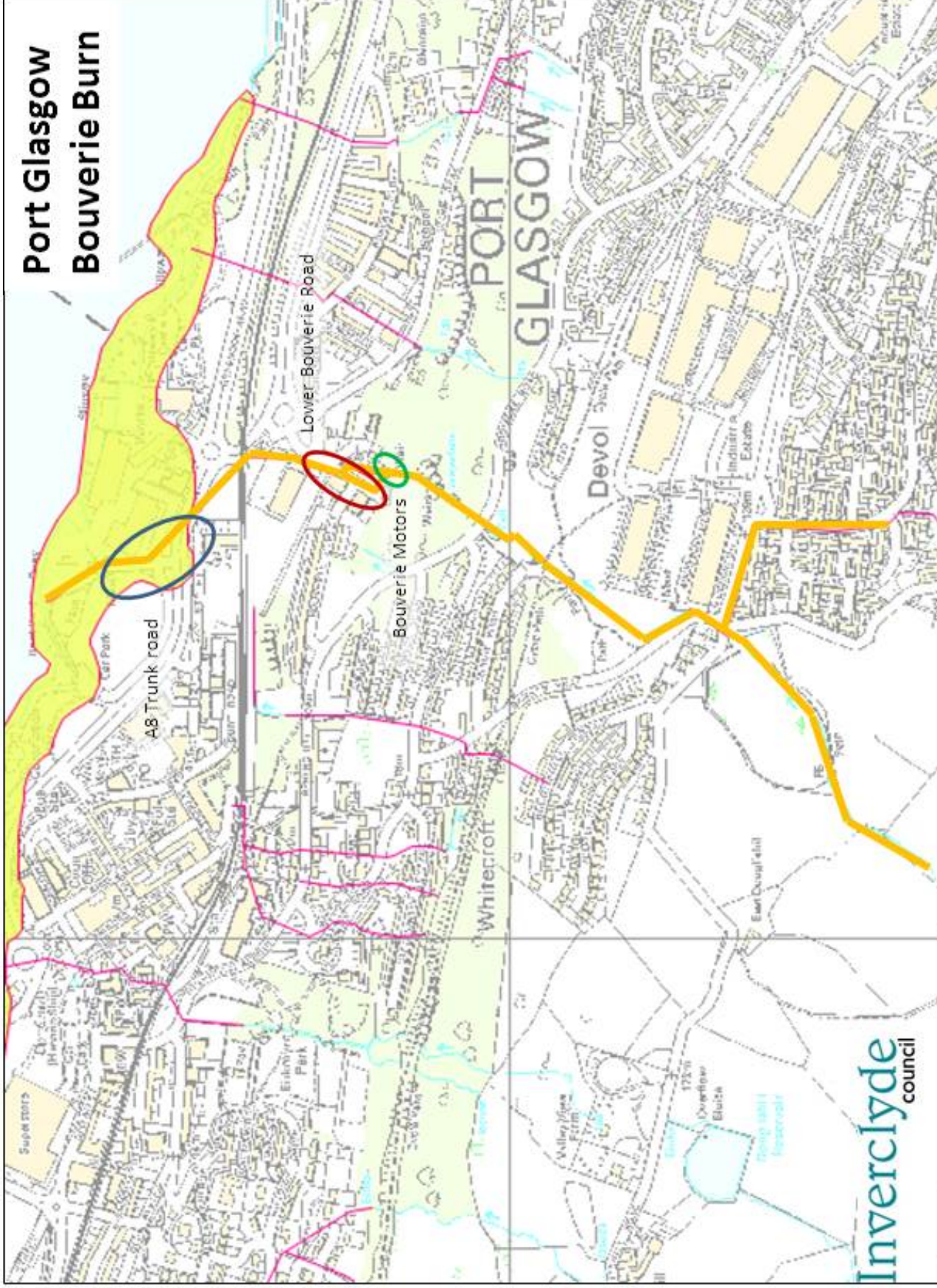
-  Trunk Road Flooding
-  Property Flooding
-  Trunk Road and Property Flooding
-  'A' Road Flooding

Quarriers Village Gotter Water



○ Property Flooding

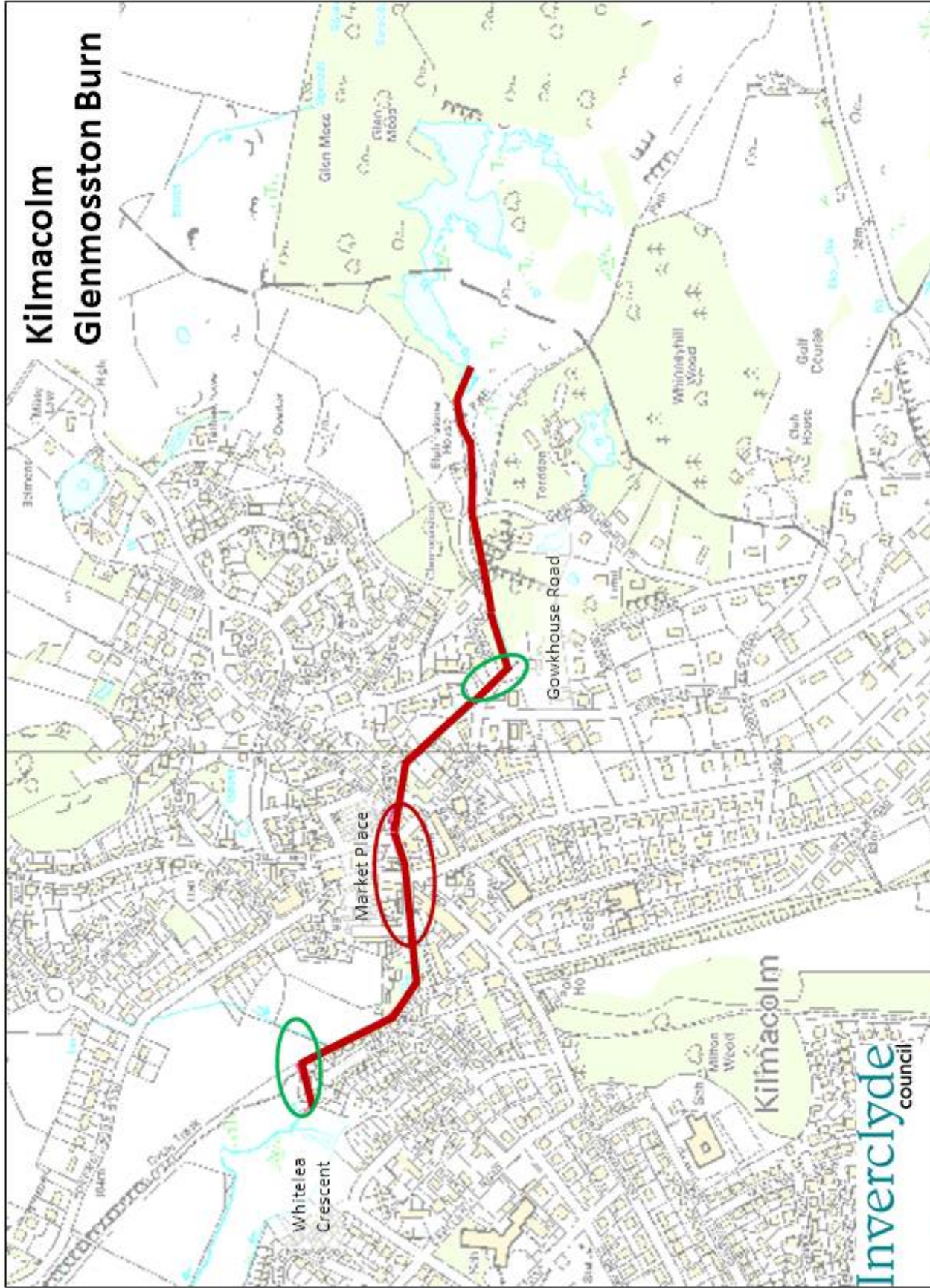
Port Glasgow Bouverie Burn



- Trunk Road Flooding
- Property Flooding
- 'A' Road Flooding



Kilmacolm Glenmosston Burn



-  'A' Road and Property Flooding
-  Property Flooding