

ELSWORTH

PARISH COUNCIL

Community Flood Plan



Adopted by the Parish Council on 17th May 2023

Useful Contacts.

Elsworth Parish Council website: <https://elsworth-pc.org.uk/>

Environment Agency: www.gov.uk/sign-up-for-flood-warnings

Environment Agency Incident Hotline: 0800 80 70 60.

Floodline (24hr service): 0345 988 1188.

South Cambridgeshire District Council: 01223 458 033

National Flood Forum: www.floodforum.org.uk

UK Power Networks Priority Services Register:

<https://www.ukpowernetworks.co.uk/power-cut/priority-services/sign-up-to-our-priority-services-register>

(Help for those in need of support in the event of a power cut).

Fire, Police and Ambulance: 101.

RSPCA. For advice on dealing with pets or animals in flood conditions:

<https://www.rspca.org.uk/adviceandwelfare/seasonal/floods>

Defibrillator: See page 19 for location and dial 999 for access code.

Plan shared with:

Members of Elsworth Parish Council. Environment Agency.

Cambridgeshire County Council. South Cambridgeshire District Council.

Plan amendment list.

Date of amendment.	Distribution List.	Changes made to plan.	Changed by:
Ver 1.4 in draft form. 20/01/2023.	Flood Group for comment	Post flood actions updated	PW
Ver 1.5. Final version for adoption.	Flood Group. Parish Council	Minor revisions.	PW
Ver 1.6	Flood Group. Parish Council.	Adopted. Equipment updated	PW
Ver 1.7	Flood Group Parish Council	Minor revisions to page 12: telemetry	PW

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Introduction.

Elsworth lies about 8 miles northwest of Cambridge and is surrounded by land of rural character consisting of open fields growing cereal crops. It is in many ways a typical English village with a central core of houses that are centuries old, with infilling and modern estate developments on the periphery. It straddles the Elsworth Brook, (sometimes known as the Conington Brook) which has cut a steep sided valley into the underlying subsoil.

Consequently, the fields to the East, West and South sides of the village are at a higher level. The land to the north flattens out down towards the Great Ouse river, into which the brook eventually discharges.

The underlying geology of the area is the Ampthill Formation, heavy blue-black clay with mudstone interleaving. The clay is impervious and consequently rainwater cannot penetrate far into the ground. As a result, there can be considerable surface run-off from the surrounding fields.

In Brook Street the brook has been partially culverted and bridged but the culverts are too small to manage flood water. Furthermore, some of these structures constrict the flow of the brook. The result is that the brook overtops its banks, flooding the road above the Smith Street bridge following periods of heavy rain.

Beyond Smith Street the lower parts of the brook are open cut and receive discharge from various drains and from drainage in Fardell's Lane. The junction of the two drainage streams is a pinch point at which the general flow is slowed, causing backups. The overflow then finds a way down Paddock Row flooding the general area.

The combination of substantial amounts of surface run-off with constrictions and a lack of maintenance to the drainage system has in the past led to water backing up the culverts and drains in other parts of the village. This caused them to overflow and flood the surrounding areas. The area around Broad End with its schools is particularly vulnerable to this risk.

The duration of these floods is usually no more than several hours although during that time water levels can rise quickly, flooding properties in vulnerable areas. In addition, there have been three or four instances of cars being severely damaged.

In October 2001, a major flood event occurred, and flood water entered about twenty houses in the village. Cambridge County Council commissioned a study of the problem and a report by consultant WS Atkins was submitted in May 2002. A report by Flynn & Rothwell followed and discussions were undertaken with the Environment Agency, resulting in minor flood relief works being undertaken. Flynn & Rothwell also produced working drawings of a flood relief channel to the Northwest side of the village. The scheme was approved by the Environment Agency.

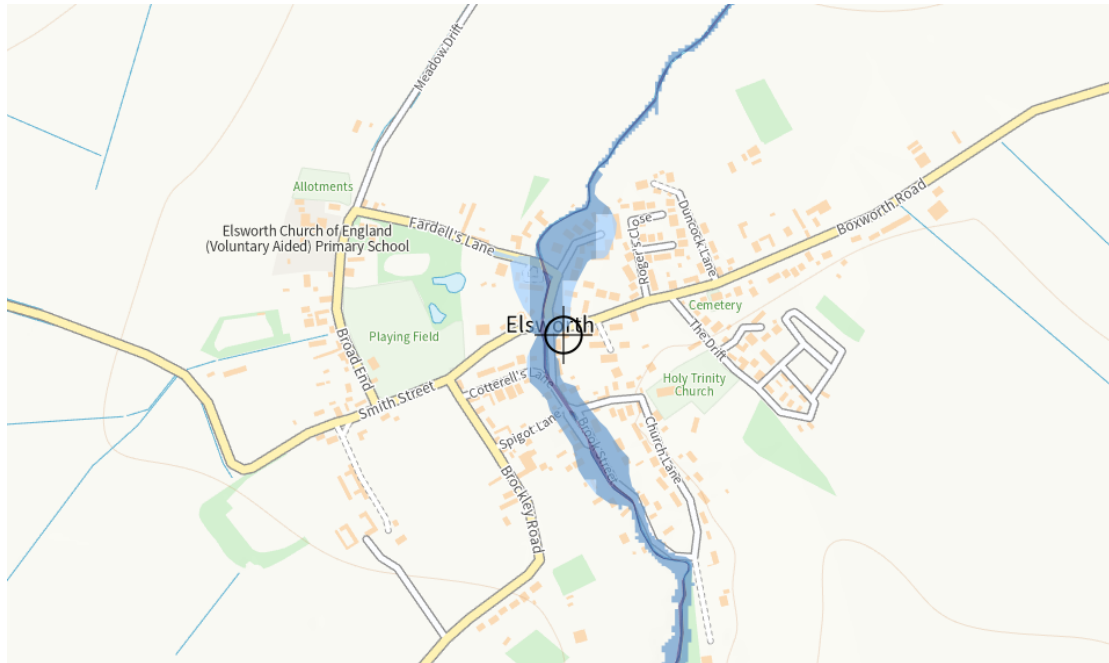
The Parish Council has commissioned this flood plan to draw together the various recommendations using the latest flood resistance methods and to implement those measures considered most relevant and practical in the light of anticipated climate change. The document (in a condensed format) is also planned to be used to inform the community in general and then used as a reference during emergencies.

It will be subject to review following incidents and updated on an annual basis.

Flood Risks.

The Environment Agency produces flood risk maps, the relevant areas of which are reproduced below. In each map light blue represents low risk, mid blue represents medium risk and dark blue represents a high risk.

Flood risk from river water.



Flood risk from surface water.



The maps are reproduced from the Environment Agency website:
<https://flood-warning-information.service.gov.uk/long-term-flood-risk>

High Risk means that each year there is a chance of flooding greater than 3.3% each year. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to

forecast. In addition, local features can affect the chance and severity of flooding. In the case of Elsworth village, the catchment area is extensive and rainfall may be variable across the area.

Medium Risk means that each year there is a chance of flooding of between 1% and 3.3%, considering any flood defences in the area.

Low Risk means that the area has a chance of flooding of between 0.1% and 1% each year.

It can be seen from the maps that surface water run-off is the main contributor to flooding in the village. Much of the area (light blue on the surface water map) is designated as low risk, however the main drainage paths through the village can be traced as the dark blue areas on the maps. These are summarised as follows but are dealt with in detail further on in the plan:

Land to the East of the village.

Much of this area is free draining and run-off passes down The Drift, Duncock Lane or Rogers Close and thence to the lower parts of the Elsworth Brook outside the village.

Land to the South of the village.

The Elsworth Brook carries most of the run-off from land to the South. Land to the north of Brockley Road is beyond the watershed for this region and the run-off drains down towards the Avenue Business Park and thence into the village drains and on to the roads.

Land to the West of the village.

The land on each side of Rogues Lane drains eastwards towards the village. Land to the South side of Rogues Lane drains directly into Water Lane and thence to Broad End, whilst land to the north of Rogues Lane drains into ditches behind the Pre School and Primary School and thence either to Water Lane or down Fardell's Lane.

General Considerations.

Due to the contours of the land, it is difficult to avoid surface water run-off from entering the village. Consequently, consideration should be given to lowering the amount of water entering the village by slowing down the flow and diverting part of the floodwater around the periphery. Aiding the discharge of flood water to the north by speeding flow in the village and avoiding constrictions in the drainage would also help alleviate the problem. Smoothing the entrances and exits of culverts speeds the discharge of water and increases the capacity of the culverts in question. Small improvements here can increase the flow of water.

Maintenance of the brook is of utmost importance. Silting of the stream bed and vegetation growing on the banks of the brook all slow the flow of floodwater at the point where the speed needs to be increased.

Detailed Considerations.

Looking at these areas in greater detail, **the land to the east of the village** falls outside the scope of this document as the general risk of flooding is low. Consideration may need to be given to isolated areas in the light of added information.

In respect of the land to the south, slowing down the influx of flood water into the village might be possible by means of the construction of a catchment pond above the Low Farm area in which to store excess water and by building leaky dams in the upper sections of the brook. Additional refinements to the culverts in Brook Street are detailed in Appendix G and a suggested design for a leaky dam is shown in Appendix F.



Flooding to Brook Street at the upper culvert entrance of the Elsworth Brook.

The land to the north of Brockley Road drains down towards the Avenue Business Park. At present the outfall from this area runs down the access road from Avenue Farm into Smith Street. From there it either drains into Broad End or passes down the main road to the bridge where it joins the brook. Either path for the water causes problems downstream. Difficulties have also been experienced in the fields to the west of Brockley Road and in the road itself.

Water entering Broad End increases the discharge down that road (more of which later). Water passing down Smith Street joins the discharge from Brockley Road and causes local flooding around The Poacher public house. The raised 'tabletop' speed restriction at the junction of Brockley Road and Smith Street forms a barrier to the water at this point and the provision of gutter drains would improve the flow. Keeping the road gullies clear would also greatly assist the water flow.



Local flooding outside The Poacher due to excessive run-off from Smith Street.

A catchment pond has recently been constructed at the business park but to date details of its capacity and the outfall are unclear. It is possible that the pond could alleviate the local problems by reducing the outfall during periods of flooding.

The land to the west of the village has more complex drainage but splits into two distinct parts.

To the south of Rogues Lane there is a major ditch which drains the land on Davisons farm up towards Elsworth Lodge. This in turn connects with the culvert in Water Lane. The culvert is inadequate to deal with flood water and frequently overflows. Delaying the flood water entering this area would ease the load on the culvert and in turn on the culvert in Broad End. To this end the possibility of constructing a catchment pond at the bend in Rogues Lane could be investigated. In addition, the provision of leaky dams further up the ditch would help to slow the flow of water.

To the north of Rogues Lane, the land owned by Agriserve drains down towards the village and discharges into a ditch to the rear of the Pre School and Primary School. At present most of the water adds to the water already in Water Lane although the Pre School and Primary School flooded twice in 2020/2021 and remain at risk. Realignment and extending the ditch around the back of the allotments to discharge into the ditch in Meadow Drift would help to reduce the flow of water into Broad End

whilst improving the flood defences for the schools. Details of the scheme are set out in Appendix H.

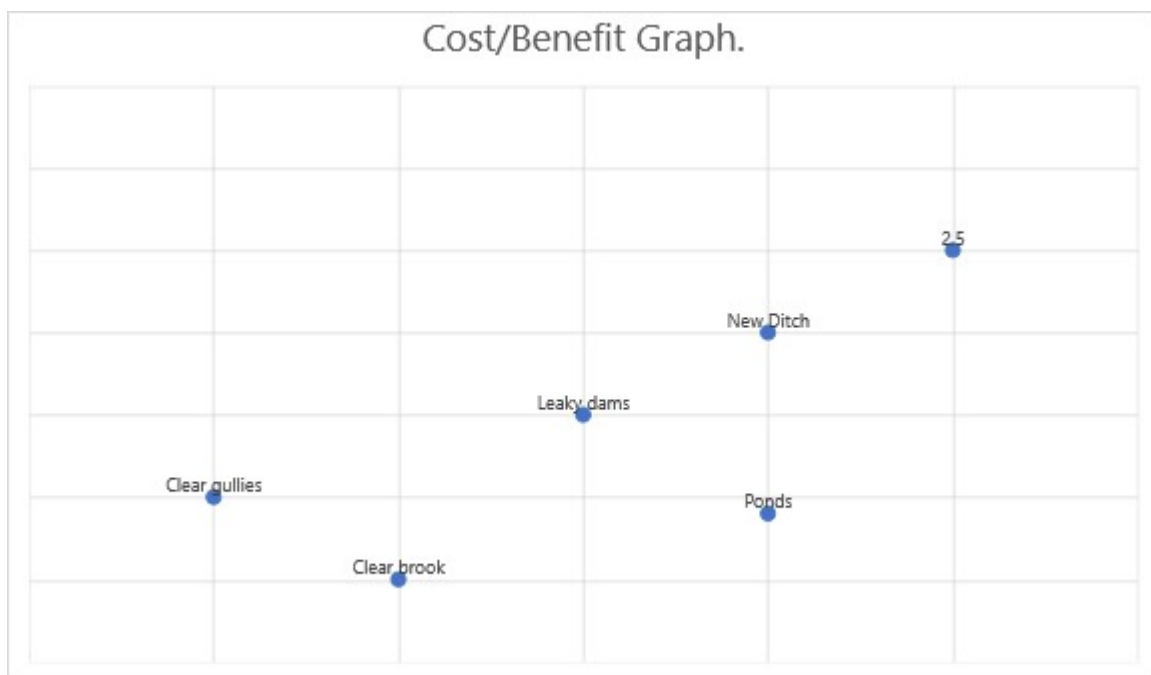
Flood water from Water Lane joins the water in Broad End. Regrettably, the culvert in Broad End is too small to deal with flood water from Smith Street, Water Lane and run-off from Broad End. Consequently, it overflows and the excess water runs down Broad End.

Flood water in Broad End is slow to drain away after the event.

All the floodwater from Broad End flows into Fardell's Lane. The ditch alongside the road is inadequate and the road floods. Further down, the ditch connects to the Elsworth Brook at the Fardell's Lane bridge. Flood water backs up at this point as the cut for the brook below the bridge is too small to take the excess volume of water. The overflow spills into Paddock Row and ponds there, eventually draining away at the far end towards the pumping station.

This pinch point is the most serious obstruction to water flow in the village. Since the physical constrictions of the cut cannot be improved, it is essential that the banks and bed of the brook are kept clear of debris and scrub. It has been estimated that at this point 70% of the flow during a flood comes from the brook and 30% from Fardell's Lane culvert. The proposed relief ditch would remove most of the flood water from the Fardell's Lane culvert, reducing the flow in the brook by 30% at this point.

Downstream from the village, the Elsworth Brook flows through open land. However, the flow of water is obstructed in places by fallen trees and collected debris. Consideration should be given to removing the tree trunks from the stream bed.



Properties Vulnerable to either Flooding or being Isolated by Floods.

Road or Street	Number of properties vulnerable to flooding. (Total properties within the high, medium and low flood risk categories).	
	Flooded by the brook or by surface water.	Isolated by surface water.
Broad End.	2 (both schools)	25 (incl sheltered housing)
Meadow Drift.	0	2
Fardell's Lane.	2	5
Paddock Row.	6	4
Franklin's Close	0	All
Roger's Close.	1	0
Duncock Lane.	0	0
Smith Street.	1	0
Boxworth Road.	1	0
The Drift.	0	0
Orchard Close.	0	
The Causeway.	1	7
Church Lane.	0	0
Brook Street.	12	0
Cottrell's Lane.	0	0
Brockley Road.	2	0
Avenue Business Park	TBC	TBC

The Co-ordinator and other Flood Group members have signed up to receive flood alerts and warnings from the Environment Agency. When a flood alert is issued, the Co-ordinator will activate this flood plan by texting those members of the Flood Action Group signed up to the Flood Action WhatsApp Group.



Flood Alert

Stage 1. Flood Alert. Flooding is possible, be prepared. A 24-hour amber warning triggered by the Environment Agency.

Alert circulated to Flood Action Group members and other volunteers, including neighbourhood support and all put on standby.

Members to monitor the brook (including checking the electronic trigger at the sluice), local main drains and ditches to check water levels. See page 12 for details.

Members to regularly check the Environment Agency website, Floodline and the Met Office information. Co-ordinator to feed information to the Environment Agency on an ongoing basis.

Parish Clerk to be requested to issue Yellow Alert pro-forma email to those on the Elsworth email circulation list.

Co-ordinator to ensure that property protection equipment and signage are ready or easily available. Batteries for signs, lights, head torches and torches to be charged up.

If water levels are rising significantly, prepare for a Flood Warning.



Locations at Risk: Flood Alert Actions.

For all areas: Receipt of the Environment Agency Yellow Alert activates Flood Co-ordinators. Actions: Circulate the 24-hour warning to vulnerable areas using the Elsworth village email list. Notify volunteers to contact those in need of support.

Area number	Location of risk	Trigger level	Actions
Area 1	Brook Street.	When the electronic level detectors at the Brook Street sluice and elsewhere on the brook are triggered.	Remove cars from Brook Street. Notify at-risk households in the area via text or door knocking. Put up flood signage at the end of Brook Street.
Area 2	Fardell's Lane Bridge/ Paddock Row.	When the electronic level detector at the Fardell's Lane bridge is triggered. Or when the water level reaches half capacity on the circular culvert at Fardell's Row.	Remove cars from Paddock Row. Notify at-risk households in the risk areas via text or door knocking. Put up flood signage in Brook Street/Fardell's Lane.
Area 3	Broad End / Fardell's Lane. Pre School and Primary School.	When the culvert in Broad End overtops.	Remove cars from known potential flood areas. Notify at-risk households in the risk areas via text or door knocking. Put up flood signage in Broad End.
Area 4	Outside The Poacher Public House, Brockley Road.	When the road gullies in Smith Street overtop.	Notify landlord.



Flood Warning

Stage 2. Red Warning. Flooding is expected. Immediate Action is Required.

The Co-ordinator is to ensure that Flood Action Group members are aware of the warning. Flood Action Group members and other volunteers, including neighbourhood support volunteers shall contact local property occupiers on a street-by-street basis to ensure that they are aware of the warning; check that they are in residence. Create an Incident Log.

Monitor weather and river/ditch water levels.

Check The Environment Agency website.

Check Floodline and Met Office information.

The Flood kit and signage to be made available from store with distribution of equipment to vulnerable locations.

Volunteers to be instructed by the Co-ordinator to ensure that occupiers in the flood warning areas are informed of the risk.

Neighbourhood Support to distribute advisory information to at-risk properties. (See separate leaflet on turning off power and water supplies, protection of valuables, furniture and vehicles).

Co-ordinator to consult with Cambs County Council, South Cambs District Council, Police and Fire Service and the flood volunteers about support and evacuation.

Open and prepare the Sports Hall as the co-ordination centre and evacuation and rest point. Prepare the Church as an evacuation and rest centre.

When necessary, the Elsworth Flood Action Group and flood volunteers will be called to the Sports Hall for briefing by the Co-ordinator and/or District Council representative. A decision as to appropriate action will then be made.

Co-ordinator to be in regular contact with Environment Agency as appropriate:

- ❖ For updated information.
- ❖ To provide feedback about initial response and progress.

Co-ordinator to alert SCDC if there are specific issues.

Co-ordinator to alert Sports Hall and the Church as a local evacuation points.

Update the incident log.

Things to Consider.

- ❖ When to advise all other additional volunteers.
- ❖ When to advise movement of those residents needing support to safe locations.

Support and Evacuation Procedures.

The floods in Elsworth have historically been of a transitory nature caused by periods of heavy rain. Because of this the need to evacuate residents is less likely than the need to provide support during a flood.

Support should be considered for those residents directly affected by flooding of their homes and to those whose properties are cut off by flood water but not actually flooded. Those most in need of support are the elderly, the infirm, those with medical conditions or disabilities together with those in need of visiting day care or medical supply and food deliveries. If possible, they should be identified before the event and contact details sought by an article in the Elsworth Times or on the village Facebook page requesting those in need of support to come forward.

Create a log of those in need of support for use on the day.

The loss of electricity to a property is particularly onerous and residents should be urged to register with the UK Power Networks Priority Services Register:

<https://www.ukpowernetworks.co.uk/power-cut/priority-services/sign-up-to-our-priority-services-register>

The emergency evacuation procedures should be undertaken:

- Open the Sports Hall and the Church as a rest and evacuation centres. Keyholders are listed in Appendix D.
- Help police/local authority by door knocking.
- Tell emergency services who might need extra help to leave their home.

Evacuation will normally be managed by the Emergency Services, who have procedures in place and who may decide to evacuate at any time. Nevertheless, the Flood Co-ordinator should inform the following of the emergency and the location of the Reception and Evacuation Centres located at the Sports Hall and the Church:

The Emergency Services.

South Cambridgeshire District Council.

Cambridge County Council.

All volunteers likely to be involved in the evacuation process.

Post Flood Recovery Period.

Check the log of residents who need support and update as required. Seek further information from Cambridgeshire County Council and the Cambridgeshire Community Emergency Response Team and provide information on the severity of the flood and its effects for their databases.

Provide ongoing support in the interim period to those in need as the effects of flooding and consequential repairs can take many months to correct. Ensure that the Authorities are aware of those in need of support.

The National Flood Forum is a registered charity which can provide advice to help those suffering from anxiety, trauma or PTSD resulting from flooding. Go to <https://nationalfloodforum.org.uk>

Those who have been flooded can find it difficult to obtain insurance afterwards. FloodRe works with Government and Insurers to offer more affordable insurance to those who may be affected by flooding. Residents should talk to their insurers to make sure that they are aware of the Flood Re Scheme. Alternatively go to www.floodre.co.uk

Survey the areas that were flooded and note the condition of the stream banks and culverts for necessary repair. Gather information on the following for future use.

- Characteristics of the flood event (depth, velocity, duration, timing etc.)
- Type of property e.g., Single storey, two storeys etc.
- The amount and type of property damage and losses
- Whether flood warnings were received and acted upon
- Any coping strategies developed following previous flooding
- A loss in the level of confidence in the authorities perceived to be responsible for providing flood protection and warnings

Convene a post flood event meeting of the Flood Group to review findings from the flood. Update the Plan.

Stock-take the equipment.

Review, Update Actions and Frequency.

Review the Plan immediately after each flood and alter as appropriate in the light of experience gained from the event. Input should be sought from individuals within the village, the District Council and from the Emergency Services if necessary. Record and date any amendments to the Plan.

Stock-take the equipment and re-stock as necessary. Check that the electronic trigger at the Brook Street sluice is operational.

In addition, review the Plan annually with particular attention to changes in personnel within the Flood Group, the Parish Council and Local Government. Check contact telephone numbers to see if they have changed.

Review Government publications for policy changes to make sure that the procedures instigated by the Flood Group still comply.

Record and date alterations to the Plan. Circulate a synopsis of the amended document as a leaflet to be distributed with the Elsworth Times. Provide an electronic copy to the Parish Clerk for attachment to the Elsworth emailing list.

Strengthen links with other communities and their flood groups through the National Flood Forum.

Appendix A. Top Level Contact Details.

Flood Action Group Members	Telephone.	Email.
Philip Sleightholme Co-ordinator.	01954 267255 07734739762	philip@sleightholme.net
Peter Ward	01954 267924 07738833310	peteward@globalnet.co.uk
Ian Maddison	01954 267347	i.maddison@btinternet.com
James Witherow	01954 267979 07889058326	james @boxworthfarming.co.uk

Cont.

Organisation.	Telephone (Weekday daytime)	Telephone. (Out of hours)	Email/online.
Floodline.	0345 988 1188		
Environment Agency Incident Hotline. Call to report: Brook blocked by a fallen tree or vehicle causing risk of flooding. Flooding from the brook or main drain within the parish	0800 80 70 60		
Environment Agency Incident Room Duty Officer.	Restricted to the Flood Co-ordinator.	Restricted to the Flood Co-ordinator.	
South Cambs District Council Duty Emergency Plan Officer.	01223 458033	01223 458033	
Cambs County Council Highways. Surface Water.	0345 045 5212		
Elsworth Sports Hall. Rob Hector	07860 188 928		
Holy Trinity Church. James Howell.	07974 424 011		
Primary School Office.	01954 267 272 Extn 2.		
Fire & Rescue Service.	999 (emergency).	999 (emergency)	
Police.	999 (emergency) 101 (reporting)	999 (emergency)	
Ambulance.	999 (emergency)	999 (emergency)	
Anglia Water. (sewers)	03457 145 145	03457 145 145	
Cambridge Water. (water supply)	01223 706050	01223 706050	
UK Power Networks. (mains and distribution)	0800 31 63 105	0800 31 63 105	

Appendix B. Parish Council Contact Details.

Peter Deer (Chair). 01954 267161

Liz Sims, (Parish Clerk). 01954 267664

A complete list of Parish Councillors can be found on the Elsworth Parish Council website.

Appendix C. Flood Information.

Environment Agency Flood Warnings Summary:

There is no specific page for the Elsworth Brook at Elsworth. When a flood warning is issued for this area, it is displayed on the current flood warning information website for the River Ouse:

<https://flood-warning-information.service.gov.uk/warnings>

For warning information on Elsworth add a relevant postcode.

Elsworth Parish Council Website:

A permanent page is to be added to the website giving helpful advice and contacts.

<https://elsworth-pc.org.uk>

Appendix D. Equipment Details.

Flood equipment is stored in the wooden hut to the rear of the Sports Hall. There is a limited supply of filled sandbags for emergency use but it is the responsibility of individual householders to supply their own flood defences, including sandbags.

Alternative sandbags such as AquaSacs, Floodsax or similar are available on the open market. They function by using a gel-like substance that swells up when wetted, expanding the bag. They are more easily stored, more manageable and are an efficient alternative to sandbags. Information about these items can be found on:

<https://bluepages.org.uk/>

<https://thefloodhub.co.uk/wp-content/uploads/2018/09/Alternative-Sandbags.pdf>

Flood Store Keyholders.

Peter Ward 07738 833 310

James Witherow. 07789 058 326

Flood Store Contents.

Item.	Qty.
Square Mouth Shovels.	4.
Large Broom.	2.
Wrecking Bar Large.	1.
Long Manhole Keys.	2.
Bucket 20 litre.	4.
Bucket 40 litre.	2.
Yellow Builder's Trugs.	3.
Heavy Duty Barrow.	1.
Flood Sign.	2.
Flood Sign temp triangle.	2.
Metal Flood Sign triangle.	3.
Marking Crayon.	1.
Vehicle Barrier Tape.	1 roll.
LED Head Torch.	1.
Rubber Torch.	1.
Filled sandbags.	60.
Empty sandbags.	100.
Hydrosacks.	19.
Hydrosnakes.	20.
First Aid kit and sanitiser foam.	3 of each.
High Viz Vests (Flood Warden logo).	6.
Foil Blankets.	6.

A small submersible pump and a set of drain rods are available from James Witherow.

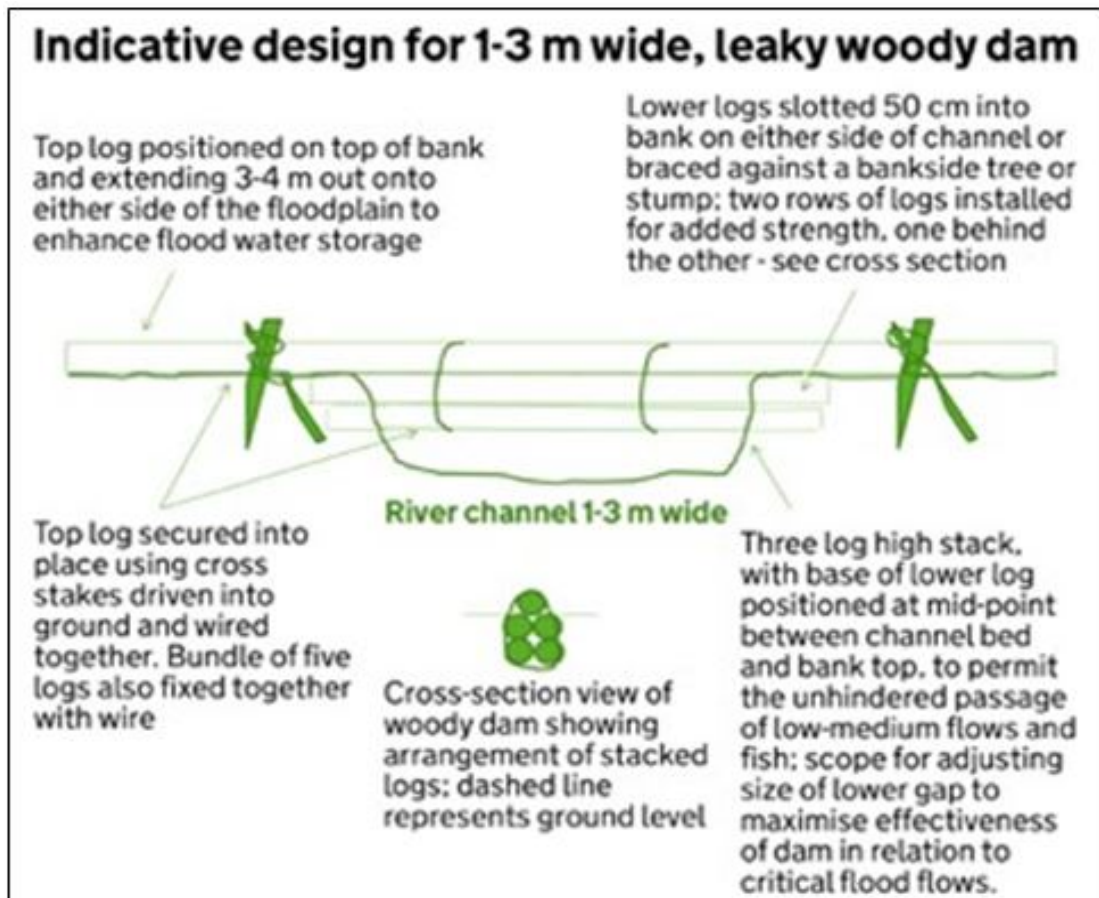
The village defibrillator is on the wall of The Poacher public house at the corner of Cottrell's Lane and Brockley Road. For the access code dial 999.

Appendix E. Personnel Risk Assessment.

1	Aggressive and confrontational Homeowners and/or Pets.	Violence or abusive behaviour or if their pets become aggressive and uncontrollable.	MED	Raise awareness of the team through newsletters, and door knocking informing residents about the limits of the group's remit. Assess house for signs of pets and only enter if safe to do so. Leave the premises and call the police if homeowners become aggressive.	LOW
2	Door knocking in times of potential or actual flooding.	Exposure to low ambient temperatures, wind and rain. Wet clothing and footwear. Night working. Traffic - moving vehicles.	MED	Adequate coat and Hi Viz. Adequate protective footwear. Wellies. Warm Clothing and Gloves. Torches & Light sticks. Mobile phone – inform the Co-ordinator what you are doing and make sure you inform them when you have finished.	LOW
3	Field Visits – checking main drains and ditches for blockages	Remote working. Possible injury or ill health while working alone, Risk of drowning. Severe weather conditions.	DANGER OF DEATH	Attend in pairs where possible. Take a mobile phone and tell the Co-ordinator where you are going. Ideally only carry out field visits in daylight and avoid extreme weather when possible. Do NOT enter flood water under any circumstances. Do not take any action to remove severe blockages. Take photographs and report to the Co-ordinator.	LOW

4	Assistance by volunteers moving furniture.	Injury from heavy lifting. Over exertion. Severe weather conditions leading to Exposure or Hypothermia.	MED	Do not lift heavy or bulky items alone, undertake training for manual handling, do not attend if unsafe to do so. Wear warm and waterproof clothing.	LOW
5	Entering flood water to reach a property or for other reasons.	Unknown depth and velocity of water. Hidden debris (trip hazard), hidden ditches and blown manhole covers. Risk of drowning.	DANGER OF DEATH.	Do NOT enter flood water under any circumstances, even to assist residents. Leave it to the emergency services who are trained to do so.	HIGH
6	Assisting the vulnerable.	Severe weather conditions leading to Exposure or Hypothermia.	MED	Do not go out if the weather conditions are severe; make phone calls to check on welfare. Emergency services are equipped to assist in severe circumstances.	LOW
7	Personal Health.	Injuries or infections.	MED	Seek medical assistance for injuries. Report occurrences to the Co-ordinator. If exposed to floodwater wash thoroughly to remove contamination and monitor health for skin infections, sore throats, colds, coughs, diarrhoea or sickness.	LOW

Appendix F. Typical Leaky Dam.



(Reproduced from the Countryside Stewardship Higher Tier Manual)

1. The cross section of a 3 log high woody dam shows the arrangement of the stacked logs: 2 logs at the base with another 2 logs directly on top of them. The final log is at the top of the log stack, positioned in the dip between the 2 logs below it. The ground level is shown as being between the second row of logs from the bottom and the top log.
2. The base of the lower logs is positioned at mid-point between the channel bed and bank top, to permit the unhindered passage of low-medium flows and any fish. There is scope for adjusting the size of the lower gap to maximise the effectiveness of the dam in relation to critical flood flows.
3. The lower logs are slotted 50cm into the bank on either side of the channel or braced against a bankside tree or stump. There are 2 rows of logs installed for added strength, one behind the other.
4. The top log is positioned on top of bank and extends 3 to 4 metres out onto either side of the floodplain to enhance flood water storage
5. The top log is secured into place using cross stakes driven into the ground and wired together. The bundle of 5 logs is also fixed together with wire.

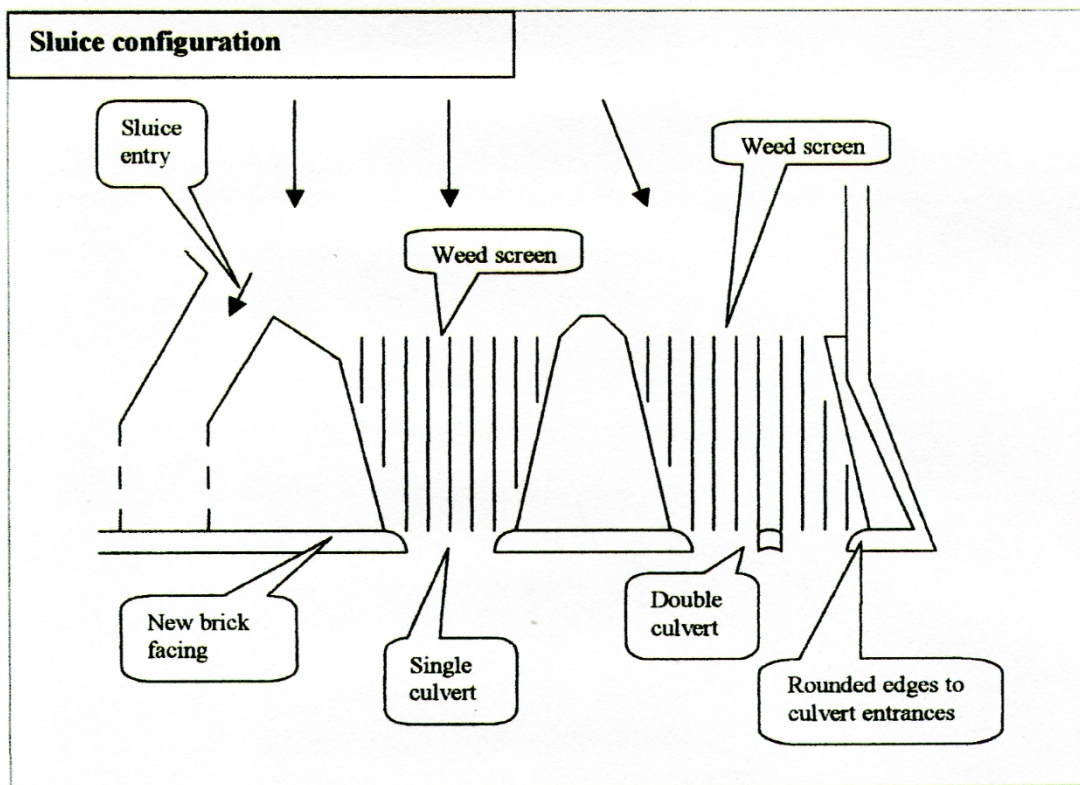
Appendix G.

a) Works to the Brook Street Culvert.

Following the flood of 2001, a considerable amount of work was carried out to improve the flow of flood water into and out of the culverts in Brook Street.

However, some small improvements could still be made to smooth the flow of water into the culverts, as the smoothing the flow increases the speed and the hence the volume of water.

In 2003 the Environment Agency recommend that the inlets to the Brook Street culverts be smoothed (in conjunction with the provision of the debris screen) and a drawing was produced to illustrate the matter. This is reproduced below.

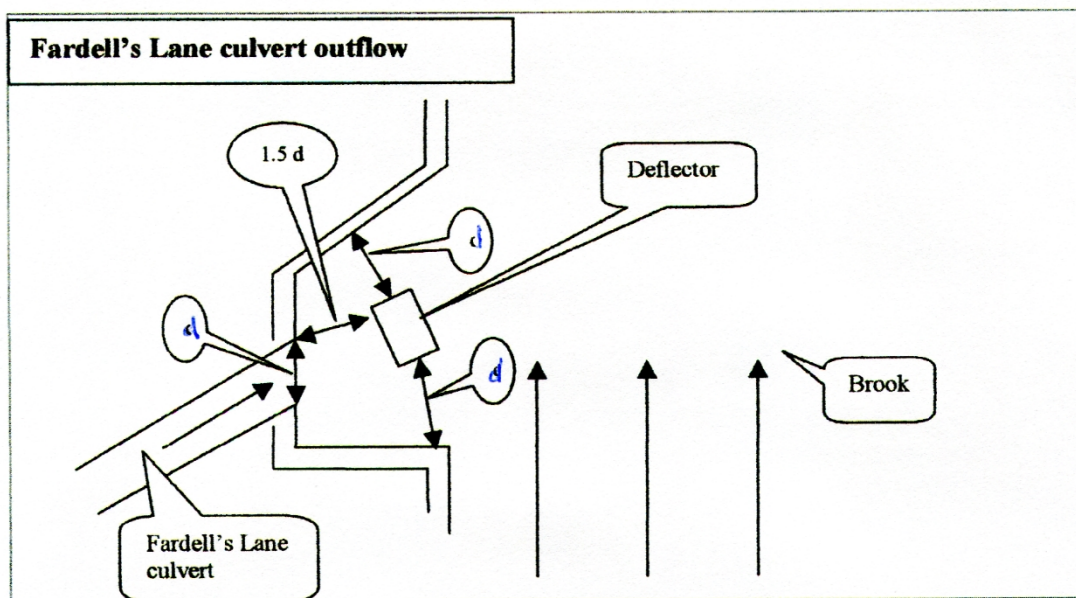


The brick facing works and rounded edges to the pipes were not constructed at the time and could be implemented at low cost.

b) Works to Fardell's Lane Culvert.

Below the Fardell's Lane bridge, discharge from the culvert under Fardell's Lane joins the flow in the main brook. In 2001 the flow from the culvert joined at right angles to the main stream, the effect of which was to interrupt the main flow and slow it down. Works were carried out to angle the flow from the culvert more in line with the brook but not all the recommended works were implemented.

A drawing was produced in 2003 and this is reproduced below.



Works to the deflector shown in the drawing remain outstanding and would benefit the outfall from the culvert by dispersing the flow into the main stream.

It should be borne in mind that the above drawings represent suggestions without detailed design considerations and the advice of a qualified Hydraulics

Engineer should be sought prior to execution of the works.

Appendix H. Works to the Ditches at the rear of the Primary School. (Northwest Flood Relief Channel).

Flynn and Rothwell Consulting Engineers were commissioned in 2004 to design a flood relief scheme for the west side of the village. This comprised the re-alignment of the southern part of the existing ditch to reverse the flow into a new ditch along the edge of the village behind the school. The ditch was to discharge into an existing drain below Meadow Drift. The works were designed to catch all the surface run-off from the farmland uphill of this area, which currently flows down Water Lane. The scheme was approved by the Environment Agency at the time.

The provision of a relief ditch to this side of the village is essential in both reducing the flow of flood water in Broad End and Fardell's Lane and safeguarding the infants in the Pre School and Primary School in Broad End.

Working drawings of the proposals were as follows:

Drawing 076/1A Site Plan

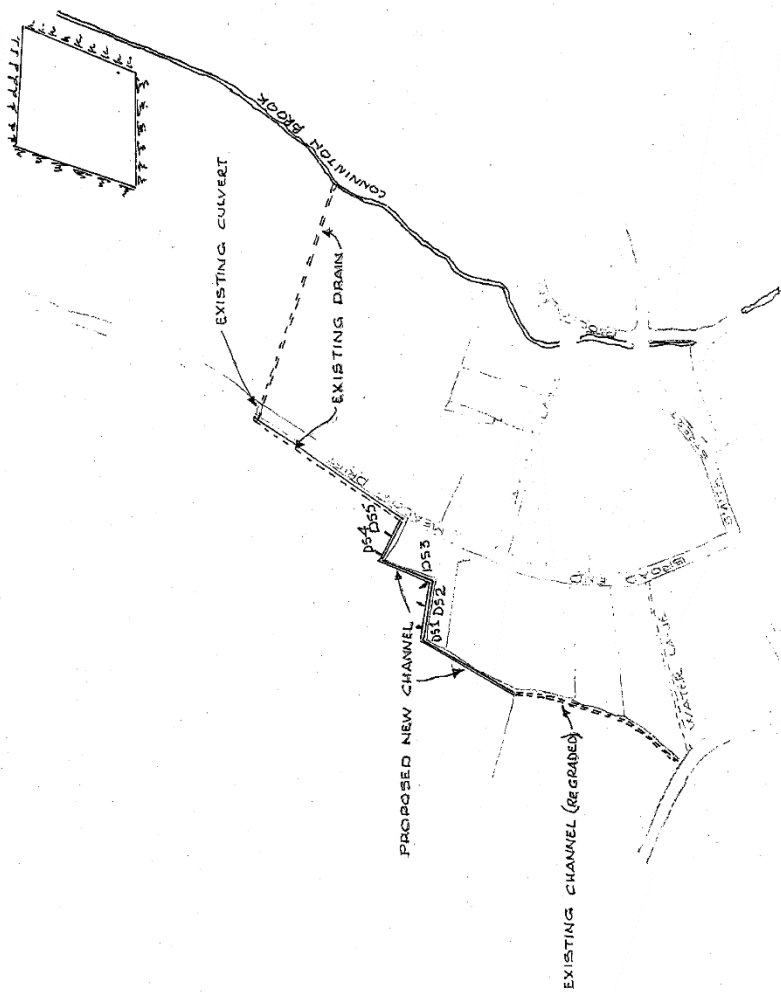
Drawing 076/2 Longitudinal Section, Water Lane to Meadow Drift.

Drawing 076/3A Longitudinal Section, Meadow Drift to Conington Brook.

Drawing 076/4 Drop structures and positions. (Required due to the increased drop in the lower end of the ditch).

Indicative copies of the drawings are appended on pages 26 to 29 inclusive. The scale drawings are held on file.

PLAN VIEW OF DRAINAGE SYSTEM



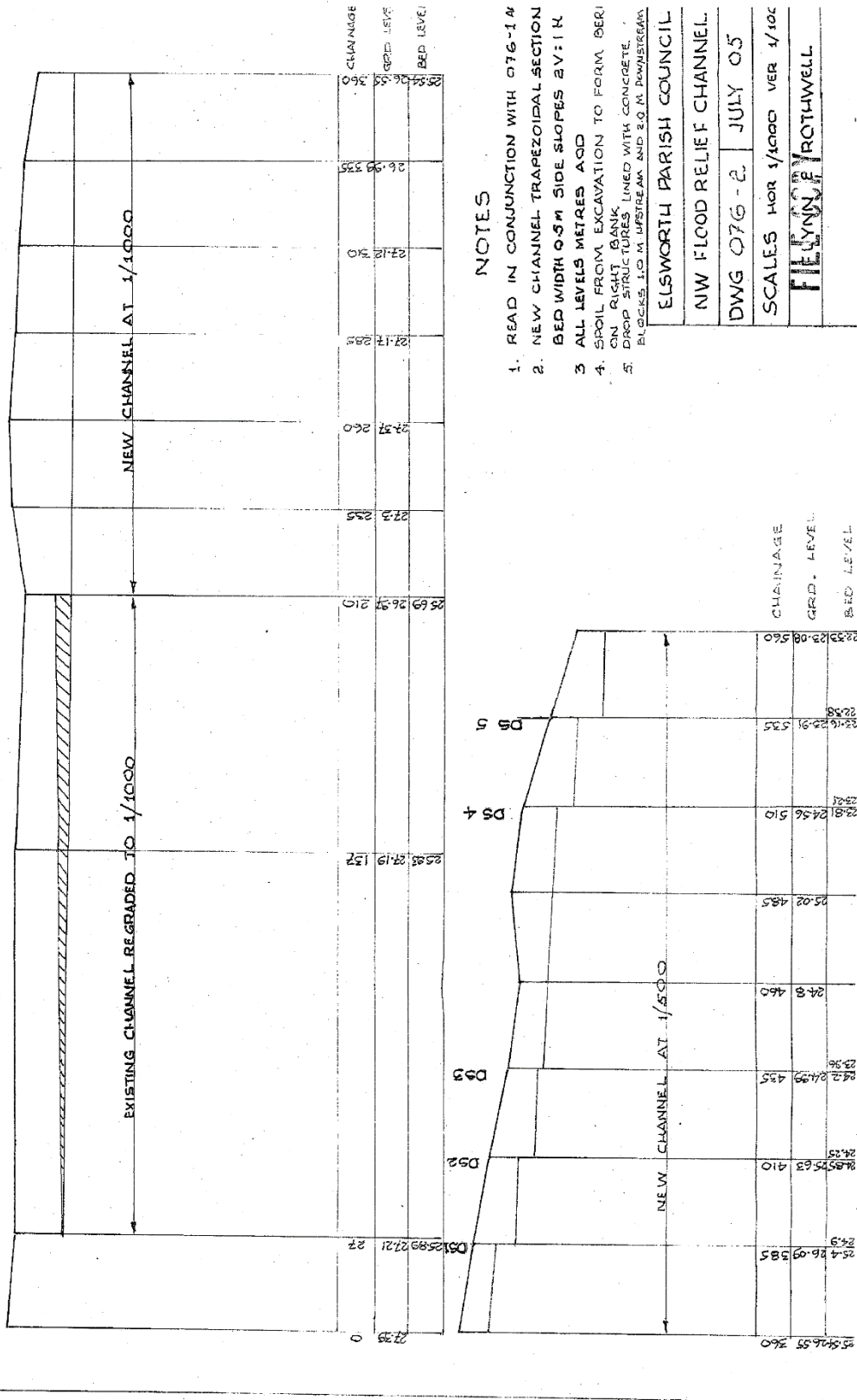
NOTE
 THIS DRAWING IS FOR INFORMATION ONLY
 WITH 076-01A

FILE COPY

ELSWORTH PARISH COUNCIL	
NW FLOOD RELIEF CHANNEL	
DWG 076-1A	JULY 05
SCALE 1/5000	
FLYNN & ROTHWELL	
REV A DROPS SHOWN 04/06	

Drawing 076/01A

LONGITUDINAL SECTIONS WATER LANE TO MEADOW DRIFT



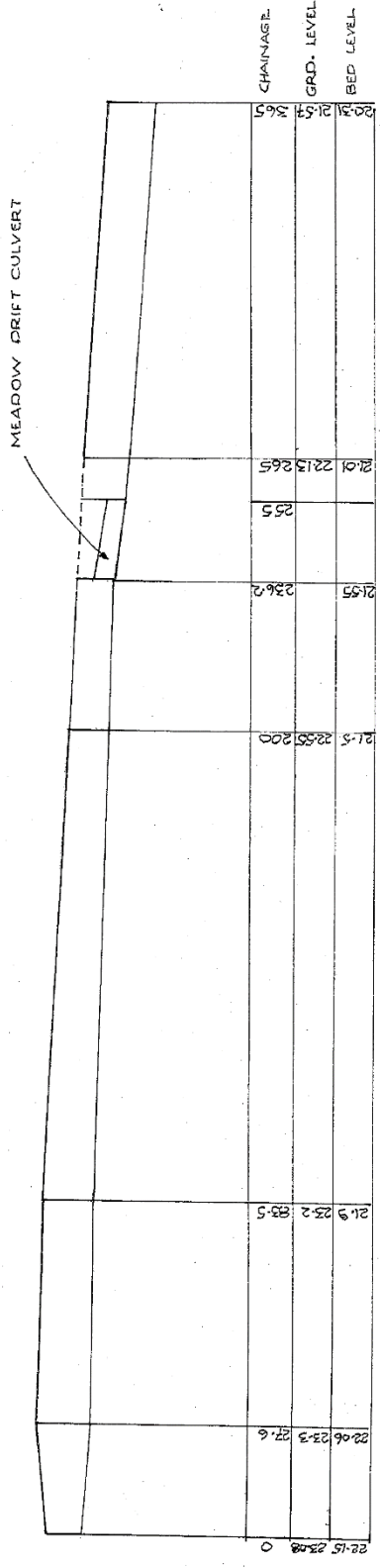
NOTES

1. READ IN CONJUNCTION WITH 076-1A
2. NEW CHANNEL TRAPEZOIDAL SECTION
BED WIDTH 0.5M SIDE SLOPES 2V:1H
3. ALL LEVELS METRES AOD
4. SPOIL FROM EXCAVATION TO FORM (BER) ON RIGHT BANK
DROP STRUCTURES LINED WITH CONCRETE
PIECES 1.0 M UPSTREAM AND 2.0 M DOWNSTREAM

ELSWORTH PARISH COUNCIL
 NW FLOOD RELIEF CHANNEL
 DWG 076 - 2 JULY 05
 SCALES HOR 1/1000 VER 1/100
FELLYNCE ROTHWELL

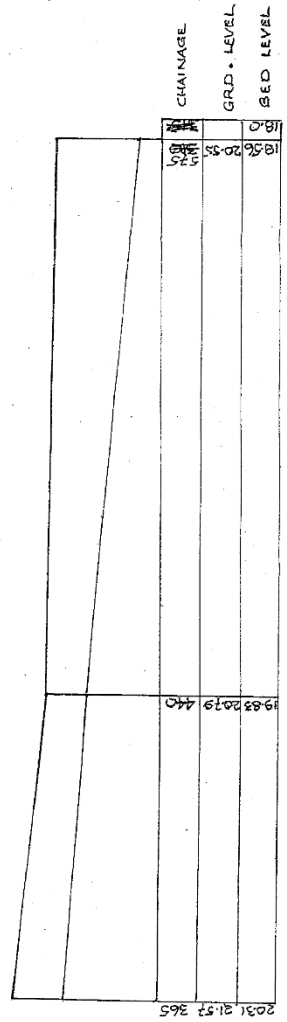
Drawing 076/02

LONGITUDINAL SECTIONS MEADOW DRIFT TO CONNINGTON BROOK



NOTES

1. TO BE READ IN CONJUNCTION WITH 076-1 AND 076-2
2. ALL LEVELS IN METRES AOD
3. AT JUNCTION WITH CONNINGTON BROOK BED AND SIDE SLOPES OF MAIN CHANNEL TO BE LINED WITH ENKAMAT 7010 FOR 1 M UPSTREAM AND 2 M DOWNSTREAM OF JUNCTION. ENKAMIA TO BE SOIL FILLED AND SEDED



FILE COPY

ELSWORTH PARISH COUNCIL

NW FLOOD RELIEF CHANNEL

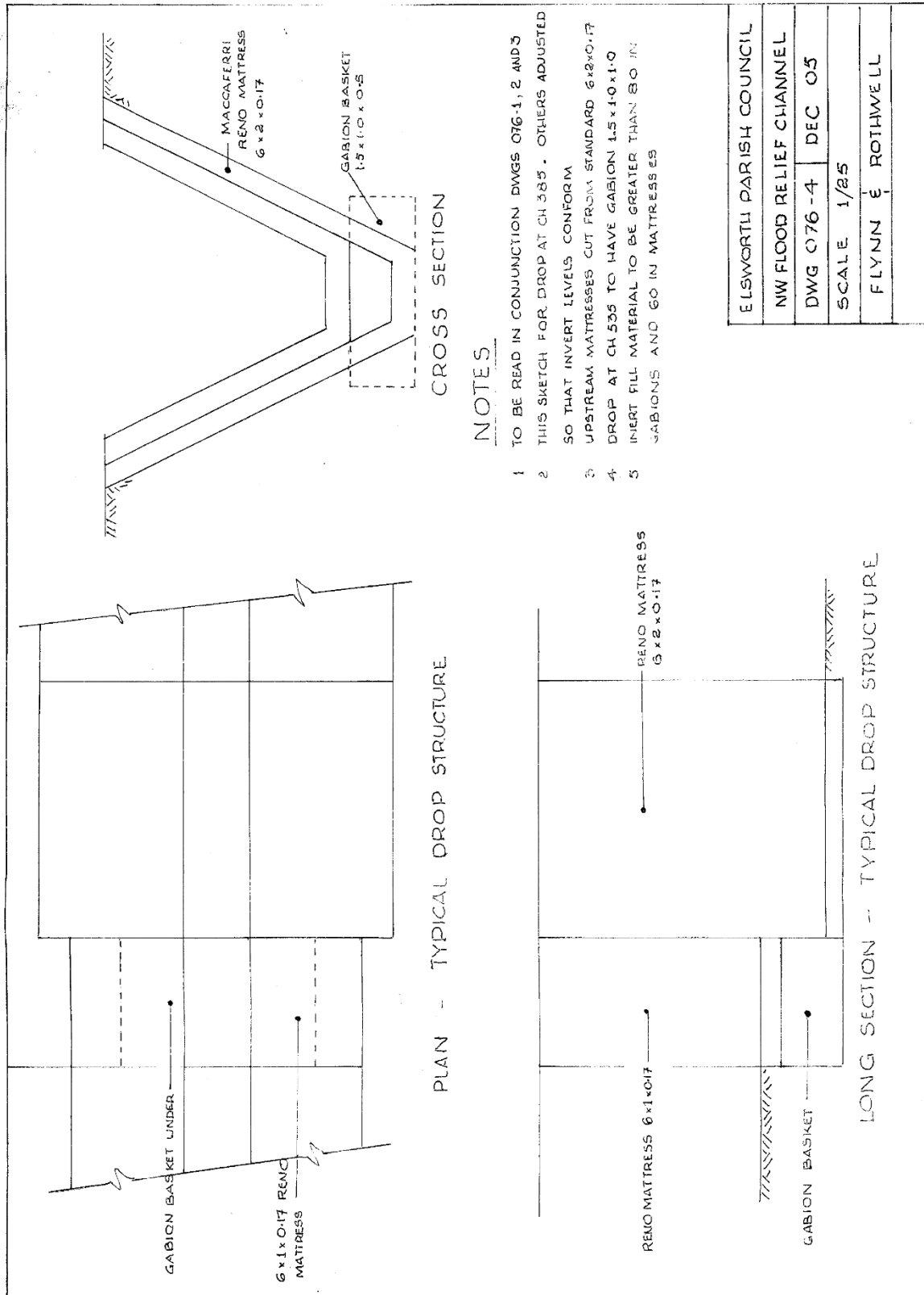
DWG 076-3A JULY 05

SCALES HOR 1/1000 VER 1/100

FLYNN & ROTHWELL

REV A - NOTE 3 ADDED DEC 05


Drawing 076/03A



Drawing 076/04


Appendix I Maintenance.

The issue of riparian ownership can be confusing leading to difficulties over who is responsible for which specific areas of maintenance. The County Council have produced a leaflet on the subject and this is reproduced below.





Watercourse Guidance


NON-TECHNICAL SUMMARY

 There are approximately **8000 MILES** of watercourses in Cambridgeshire.

This is equivalent to one third of the circumference of Earth which equals the distance from London to Tokyo. 17 square miles of land is used by water bodies...


...that's an area equivalent to **6300 football pitches!**






 Watercourses may be open ditches, streams, dykes, or they may be culverted, which means piped.


They can be dry or wet but usually carry some water after significant rainfall.


Waterbodies include ponds, basins, lakes and reservoirs.





 **Watercourse maintenance is first and foremost a riparian responsibility**


 Riparian rights and responsibilities exist for those who own or tenant land on or next to a watercourse, with riparian rights being to receive the flow of water from upstream and riparian responsibilities being to maintain the free flow of water for those downstream.

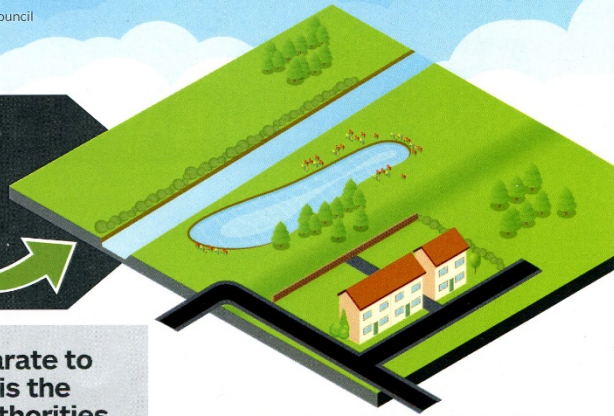
 Watercourse management is separate to watercourse maintenance and is the responsibility of a variety of authorities. Managing authorities have powers that mean they can undertake some maintenance works, but this is not possible for every single watercourse in the county.


 A risk management authority only has a duty to maintain a watercourse if it is on land that they own or tenant, and then their duties are a riparian responsibility, as is the case for any other person or organisation who owns or tenants land on or next to a watercourse.

 Those with riparian responsibilities may need a consent or permit from a managing authority for construction works that may affect the flow of water, such as piping a watercourse, reprofiling banks, or temporary damming.





 **Priority should be given to flood risk and biodiversity in the water environment. This means keeping watercourses open (not culverted) as much as possible.**




 **Flood risk management is separate to watercourse maintenance and is the responsibility of a variety of authorities.**

 **It is a common law presumption for a watercourse centreline to mark a land boundary.**
Each landowner or tenant adjoining the watercourse normally has riparian responsibility up to the centreline of the watercourse.


 **This means if there is a watercourse at the edge of your land, you have a riparian responsibility to maintain that watercourse, unless there is any evidence to indicate otherwise.**

 **If a watercourse is next to a highway, the presumption is for the adjacent landowner or tenant on the non-highway side, to have riparian responsibilities to maintain the whole watercourse, irrespective of whether highway water discharges to it, unless there is any contrary evidence.**

 **If a watercourse is next to a hedge, the presumption is for the adjacent landowner or tenant on the hedge side, to have riparian responsibilities to maintain the whole watercourse, unless there is any contrary evidence.**



Even if there is a watercourse behind your fence, you have riparian responsibility to maintain the watercourse up to its centreline, unless there is any contrary evidence.

 **If the land is tenanted, it is up to the tenant and the landowner to agree between them who is to take on the riparian rights and responsibilities.**

 **Contact us**

If you require assistance accessing any data or information discussed above, have a query, or would like more information about a topic or relating to your site, please do not hesitate to contact us at:

floodandwater@cambridgeshire.gov.uk or Call 0345 045 5200 between 9am-5pm Monday to Friday, ask for a member of the Flood Risk team.

 **Flood Risk team**

New Shire Hall
Box ALC2619
Emery Crescent
Enterprise Campus
Alconbury Weald
PE28 4YE

Appendix I Maintenance.

It is important that the water paths in the village are kept clear for flood water to flow through as quickly as possible.

Several items are critical to this approach and these are listed below. The list is by no means exhaustive and further items will be added in the light of additional information and experience.

In addition to the general maintenance items, owners should be encouraged to keep ditches on their land clear of obstructions.

Schedule of Maintenance.

Item.	Maintenance.	Frequency.
11 No. road gullies to the west end of Smith Street. Become blocked by straw droppings from lorries following harvest and by fallen leaves in Autumn.	Keep gullies clear of obstructions. Encourage householders to clear away fallen leaves outside their properties.	Following harvest time and mid to late Autumn.
Road gullies in the access road to Avenue Business Park.	Keep the gullies clear of silt and obstructions.	Mid to late Autumn.

	The brook in Brook Street and beyond.	
The brook between Low Farm and the culvert. Natural growth on the banks affects the flow during floods.	Clear away all new growth on the banks. Clear the bed of the brook from all new growth except for reeds as these bend in flood conditions and form a smooth bed to the brook, enhancing water flow. Mow the verges.	Annually during the dry season.
The debris grating at the culvert entrance in upper Brook Street.	Clear away the debris	Periodically.
The upper culvert.	Check the entrance and exit for damage and repair as necessary. Carry out a CCTV survey of the interior of the culvert. Notify the County Council of any defects.	Annually. Once initially then every 5 years.
The brook between the culvert and Smith Street bridge. Natural growth on the banks affects the flow during floods.	Clear away all new growth on the banks. Clear the bed of the brook from all new growth except for reeds as these bend in flood conditions and form a smooth bed to the brook, enhancing water flow. Mow the verges.	Annually during the dry season.
Smith Street bridge.	Inspect the exit and entrances to the pipes under the road. Visually inspect the condition of the pipes. Report any defects to the County Council.	Annually during the dry season.

<p>The brook between Smith Street bridge and Fardell's Lane bridge. Natural growth on the banks affects the flow during floods.</p>	<p>Clear away all new growth on the banks. Clear the bed of the brook from all new growth except for reeds as these bend in flood conditions and form a smooth bed to the brook, enhancing water flow. In particular the growth of brambles etc north of the Smith Street bridge culverts need clearing for a distance of two and a half times the width of the culverts to ensure that the bridge culverts operate at maximum efficiency. Mow the verges.</p>	<p>Annually during the dry season.</p>
<p>Fardell's Lane bridge.</p>	<p>Inspect the exit and entrances to the pipes under the road. Visually inspect the condition of the pipes. Report any defects to the County Council.</p>	<p>Annually during the dry season.</p>
<p>The brook below Fardell's Lane. Natural growth on the banks affects the flow of water during floods. Periodically, a sand bar forms in the bed of the brook below Fardell's Lane bridge.</p>	<p>Clear away all new growth on the banks. In particular the growth of brambles etc at the Fardells Lane bridge culvert need clearing for a distance of two and a half times the width of the culvert to ensure that the bridge culvert operates at maximum efficiency Clear the bed of the brook from all new growth except for reeds as these bend in flood conditions and form a smooth bed to the brook, enhancing water flow. Level the sand bar.</p>	<p>Annually during the dry season.</p>
	<p>Broad End.</p>	
<p>The culvert at Water Lane.</p>	<p>CCTV the culvert and establish its condition. Unblock and repair as necessary.</p>	<p>Once initially, then every 5 years</p>

	Fardell's Lane.	
Fardell's Lane culverts.	Inspect the exit and entrances to the pipes under the road. Visually inspect the condition of the pipes. Carry out a CCTV survey of the longer culverts. Report any defects to the County Council.	Annually during the dry season. Once initially and thence every 5 years.
Fardell's Lane ditch.	Deepen the ditch to approx. 300mm below the culvert Inverts.	Once and then maintain at this depth. Review following flooding.
Generally.	Keep the road gullies in the village clear of silt and debris.	Periodic.