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<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON AUGUST 22, 2012</b>
<b>FROM:</b>	<b>JOHN BRAAM, P. Eng. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEER</b>
<b>SUBJECT:</b>	<b>FOUNDATION DRAIN DISCONNECTION TO MITIGATE BASEMENT FLOODING</b>

### RECOMMENDATION

That, on the recommendation of the Acting Executive Director, Planning, Environmental & Engineering Services & City Engineer, this report **BE RECEIVED** for information.

### PREVIOUS REPORTS PERTINENT TO THIS MATTER

["Foundation Drain Disconnection to Mitigate Basement Flooding", BNEC, November 14, 2011, Agenda #10](#)

["Measures to Reduce Inflow and Infiltration into Sanitary Sewers", ETC, June 21, 2010, Agenda #8.](#)

["Voluntary Downspout Extension Pilot Study: Sherwood Forest", ETC, June 7, 2010, Agenda #10.](#)

["Sherwood Forest Flooding Assessment and Mitigation Works Study – Scope Change – ES2680", ETC, December 7, 2009, Agenda #6.](#)

["Basement Flooding Report: Follow-up to Flooding Events in February 2009 and May 2009", ETC, November 16, 2009, Agenda #3.](#)

["Appointment of Consultant for Sherwood Forest Flooding Assessment and Mitigation Works Study", ETC, August 24, 2009, Agenda #8.](#)

["Grants for Sump Pump, Sewer Ejector and Storm Private Drain Connection By-law", ETC, August 24, 2009, Agenda #18a.](#)

["Smoke Testing Sanitary Sewers", ETC, July 20, 2009, Agenda #20.](#)

### BACKGROUND

**Purpose:**

The purpose of this report is to present Council with an update of the basement flooding reduction strategy in the Sherwood Forest neighbourhood, which includes targeted foundation drain disconnections for homes located on Blanchard Road and Blanchard Crescent.

It is noted that in November, 2011, a report was brought to Council which contained the following recommendation:

*"Civic Administration **BE DIRECTED** to prepare a by-law, for consideration at a future committee meeting, including public participation, requiring foundation drain disconnections in basement flooding prone areas."*

Rather than bringing back to committee a draft foundation disconnection by-law at this time, staff is working with the targeted areas in the Sherwood Forest neighbourhood to pilot a

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voluntary private side solution as described in the November 14, 2011 BNEC report. The piloted foundation drain disconnection approach will be undertaken only where sufficient homeowner buy-in is achieved. This approach will be monitored following implementation on Blanchard Road and Blanchard Crescent to ensure that the disconnection initiative has provided the desired effect of storm water infiltration removal to prevent basement flooding.

### **Context**

The Sherwood Forest area (defined here as the area located west of Wonderland Rd., between Gainsborough Road and Sarnia Road) is an area in London which has experienced repeated occurrences of basement flooding. In recent years, the City has targeted this area to inform and educate homeowners on ways to protect them from basement flooding. In addition, an engineering consultant was hired to undertake a detailed analysis of flooding causes, which included computer modeling of the sanitary sewer system for the entire Sherwood Forest area. From that, the City developed a focused foundation drain disconnection initiative to reduce the risk of future basement flooding. This approach represents a significant cost savings over traditional pipe upsizing/storage solutions, and is considered a more effective solution as storm water infiltration flows are removed at the source.

### **Discussion:**

The completed analysis of area characteristics, survey results, sewer flow monitoring data, and computer modeling of the Sherwood Forest subdivision revealed the following:

- Most of the homes were constructed before 1985; therefore, foundation drains were connected directly to the sanitary sewer (providing a direct path for storm water flows into the sanitary sewer).
- Soil type in this area is clay, which does not readily absorb water.
- Zero lot lines and poor lot grading, which has settled or has been altered over the years, allowing water to flow toward home foundations, rather than away.
- Many eaves trough downspouts have been noted to outlet at the base of the home, rather than being extended some distance way from the foundation.

The above characteristics combine to produce a high volume of storm water inflow and infiltration (I&I) into the sanitary sewers. During a heavy rainfall event, the sanitary sewers can become overwhelmed with storm water and surcharge, or back up, into basements. Through detailed study and analysis, a preferred solution has been developed which involves the disconnection of home foundation drains to remove I&I at the source. Details are discussed more extensively in the November 14, 2011 BNEC report. Implementation of this initiative will be undertaken only where sufficient homeowner buy-in is achieved in order to ensure the implemented solution will be cost effective in reducing the risk future basement flooding.

Houses targeted for foundation drain disconnection were generally concentrated within four areas in the subdivision (see Appendix C). These four areas are most prone to basement flooding.

Foundation drain disconnection also involves the installation of a backwater valve, sump pit and sump pump in the homeowner's basement. To alleviate concerns associated with sump pump discharge creating surface flooding or winter icing issues, a storm private drain connection (PDC) will also be constructed to allow sump pump discharge to be directed to the storm sewer.

### **Determining Target Homes to Disconnect**

Computer modelling simulations were utilized to identify areas most prone to basement flooding. Through many iterations and model runs, a necessary disconnection volume was arrived at for each of the four identified flooding areas. This determined the 'target' number of homes required to disconnect in each area. Lots without fronting storm sewer were exempted, because it has been determined that sump pump discharge would have to be directed to the storm sewer to avoid creating winter icing problems, commonly seen in other areas of the City where sump pump discharge is to surface only. Model simulation runs with targeted lots

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disconnected estimates that flooding risk for all homes in the Sherwood Forest subdivision may be reduced up to and beyond the 25 year design storm event.

It is important to note that the target number represents the number of homes that are deemed necessary to justify moving forward with the disconnection initiative. Disconnecting an area below the target number will not effectively protect the vulnerable homes in significant rain events. It is therefore not considered cost effective or prudent for the City to disconnect homes in areas which do not meet the target criteria. It is felt that it would create a false sense of resolution for vulnerable homeowners. Homeowners who reside in the 'below' target areas still have the option to take advantage of the existing Sump Pump Grant Program to help protect their home. (See Appendix B)

The following chart identifies the four target areas along with homeowner response acquired through letter mail-outs and public meeting participation. Of the four areas, only Blanchard Road/ Blanchard Crescent met the target Therefore, we are currently proposing to move ahead with Blanchard only. We anticipate this to involve the disconnection of between 35-60 homes.

Area	Number of Homes	Buy In (YES) Response	% Buy In	Met Target?
Olympic/Constable	63	25	40%	No (75% needed)
Ardasley	52	22	42%	No (75% needed)
<b>Blanchard</b>	<b>61</b>	<b>34</b>	<b>56%</b>	<b>Yes (50% needed)</b>
Sherbourne	39	13	33%	No (75% needed)
Total	215	94	44%	

The costs to proceed in the Blanchard area are estimated to be in the range of \$450,000-\$700,000. It is proposed that the City would construct and fund 100% of the costs for the installation of those items mentioned above, and also provide an allotment of \$1,000 to each homeowner to cover future operating and maintenance costs for the sump pump. This alternative also includes costs to resurface Blanchard Crescent and Blanchard Road due to multiple pavement cuts which will have to be made for storm PDC connections.

#### **Public Meetings and Communication with Residents:**

Two public meetings were held to introduce this initiative to residents; one on March 6<sup>th</sup> for the Blanchard/Sherbourne area, and one on March 7<sup>th</sup> for Ardsley/Olympic/Constable area. These meetings were of an open house format, with numerous display boards with maps, pictures and descriptions of the sources of flooding as well as the proposed solution. A total of 63 properties were represented at the meetings. Both meeting were also attended by Ward 7 Councillor, Matt Brown. We generally received positive feedback from the homeowners in attendance.

In addition to the public meetings, the City sent two mail-outs asking for feedback indicating homeowner interest in the foundation drain disconnection initiative. This feedback form could be mailed back to the City in a provided postage paid envelope or alternatively could be filled out online. The results are shown in the above table.

#### **Conclusions:**

Disconnection of foundation drains will allow the City to remove extraneous inflow and infiltration at the source, thereby redirecting storm water flow to where it is supposed to be – in the storm sewer, rather than attempting to upsize the sanitary sewer to convey and treat both sanitary and storm water flows. This method is far more cost effective, especially in the long term, than alternative sewer storage/upsizing. It is also much more effective at reducing basement flooding risk.

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It is Civic Administration's firm belief that it is much more advantageous in both the short term and the long term to remove flow at the source, rather than accept and attempt to convey and treat it.

Currently, of the four identified foundation drain disconnection target areas, only Blanchard Road/Blanchard Crescent met the homeowner buy-in target. Staff are moving forward with foundation drain disconnections on Blanchard Road and Blanchard Crescent.

**Acknowledgements:**

This report was prepared within the Wastewater and Drainage Engineering Division by Kyle Chambers, P.Eng, Environmental Services Engineer.

<b>SUBMITTED BY:</b>	<b>RECOMMENDED BY:</b>
<b>TOM COPELAND, P. ENG. DIVISION MANAGER WASTEWATER AND DRAINAGE ENGINEERING</b>	<b>JOHN BRAAM, P.ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEER</b>

August 14, 2012

Attach: Appendix A – Target Areas  
Appendix B – Existing Sump Pump Grant Program Details

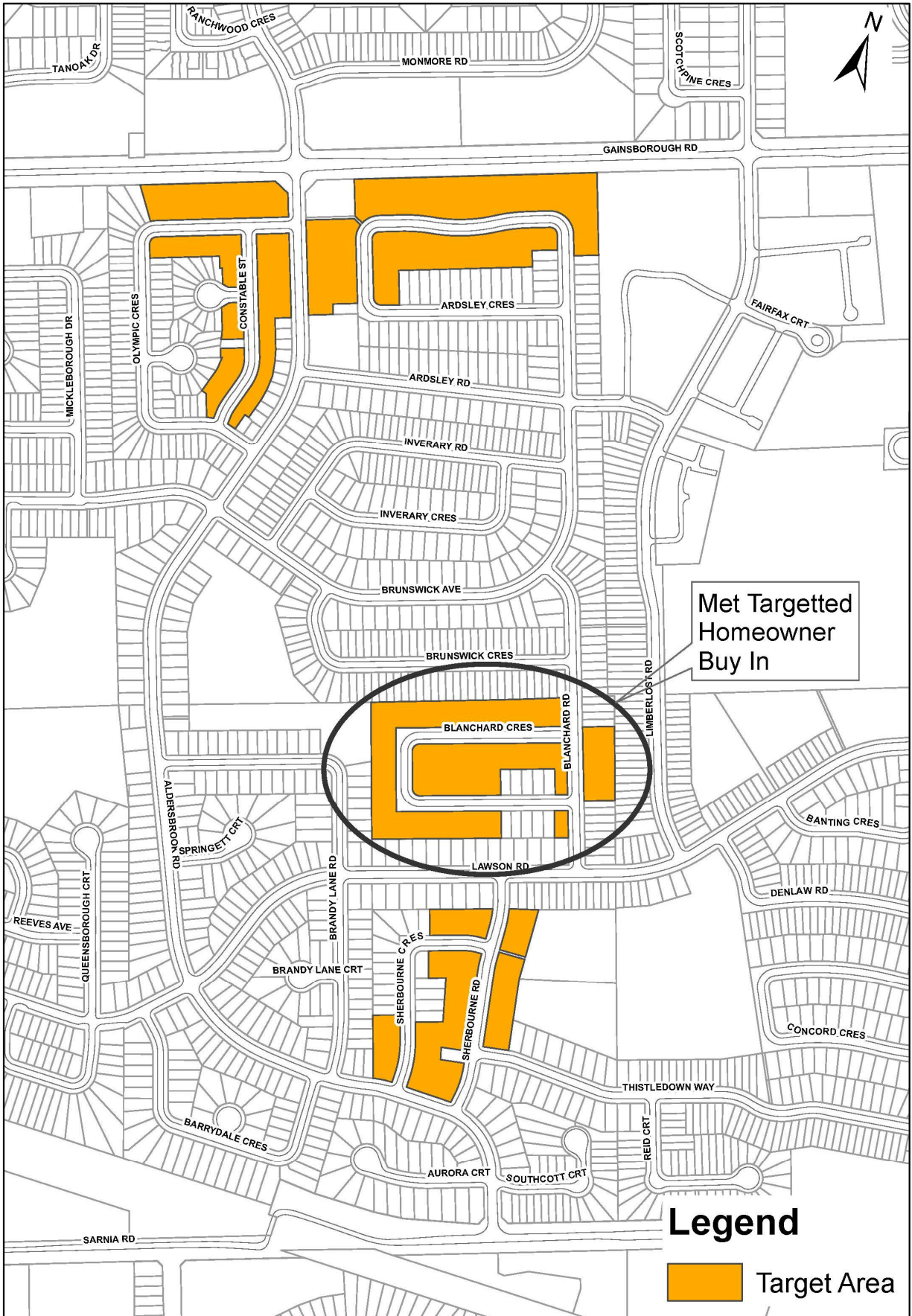
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c.c. Councillor Matt Brown

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### APPENDIX A - Target Areas

#### Sherwood Forest Basement Flooding: Weeping Tile Disconnection Initiative



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## Appendix B – Existing Sump Pump Grant Program Details

### The Application Process

1. **Contact a licensed plumber** to assess the appropriate remedial measure(s) for your property and obtain a cost estimate.
2. **Obtain an information package.** Contact the Environmental Programs & Customer Relations Division at 519 661-2500 ext. 8413, or visit the 8th floor of City Hall.
3. **Fill out the application.**
4. **Allow two to four weeks for the City to review your application** and approve the amount of your grant in writing. The amount of grant will depend on assessment of the work completed.
5. **When approved, hire a plumber** to do the work and obtain a Plumbing Permit from Building Control, City Hall, 7th floor.
6. **Contact Building Control to inspect the work** and sign off on the installation (as per the Plumbing Permit requirements). Also notify the Environmental Programs & Customer Relations Division (ext. 8413) to verify if further inspection is required.
7. **Provide** both the inspection form signed by the City's plumbing inspector and a paid, itemized invoice detailing all the work that was completed to:
 

Environmental Programs &  
Customer Relations Division  
8th Floor, 300 Dufferin Avenue  
P.O. Box 5035  
London Ontario  
N6A 4L9  
Attention: Basement Flooding Grant Program
8. Subject to approval of the submission, **the City will issue a cheque for the grant** within four to six weeks.

Environmental & Engineering  
Services Department



### Protect Your Basement



### Basement Flooding Grant Program

to help homeowners  
reduce the likelihood  
of basement flooding



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## Basement Flooding Grant Programs

### Eligibility Criteria

You may be eligible for the City's grant program if basement flooding is happening due to:

- Weeping (footing) tiles directly connected to the sanitary or storm sewer
- Sanitary or storm sewer surcharging in your basement
- Your property being in an area identified by the City as prone to basement flooding
- Evident erosion or icing problems

### The Program – An Overview

**Residential homes** (Single detached, semi-detached, duplex dwellings):

Remedial measure	Grant: 75% of total cost to a maximum of
Full port-type backwater valve <sup>1</sup>	\$575
Sewage ejector installed with a sump pump <sup>2</sup>	\$1,525
Sump pumps: with weeping tiles disconnected <i>inside</i> the basement	\$1,875
Sump pumps: with weeping tiles disconnected <i>outside</i> the basement	\$2,650
Storm private drain connection (PDC) for work within the City Road Allowance or City Easement <sup>3</sup>	\$3,775

<sup>1</sup>Where a sump pump already exists. <sup>2</sup>Instead of a full port-type backwater valve. <sup>3</sup>The homeowner pays for the work on private property.

**Condominium Corporations, Non-profit Housing Co-operatives :**

Remedial measure	Grant: 75% of total cost to a maximum of
Engineering report	\$2,000
Lot grading, sump pump systems, backflow prevention systems, and certification	\$900 per unit

For more information about the remedial measures, or to obtain a copy of the City's **Basement Flooding Guide**:

- Phone 519 661-2500 ext. 8413;
- Visit City Hall, 8th Floor, 300 Dufferin Avenue, London; or
- View our website, [www.london.ca](http://www.london.ca) and enter "Basement Flooding Grant Program" into the *Search* field.