Department of **Biodiversity, Conservation and Attractions**

SWAN CANNING RIVERPARK

Swan and Canning Rivers Management Act 2006

PART 5

DETERMINATION OF DEVELOPMENT APPLICATION

FILE NUMBER	:	2018/6014
APPLICANT	:	Harold Schoolland and Deborah Ellen Schoolland
APPLICANT'S ADDRESS	:	152 Joel Terrace, Mount Lawley
LANDOWNER	:	Management Order City of Vincent
LAND DESCRIPTION	:	Parks and recreation
DEVELOPMENT	:	Installation of private stormwater pipe and bubble-up pit
VALID FORM 1 RECEIVED	:	29 March 2019
DETERMINATION	:	**APPROVAL WITH CONDITIONS**

The application to commence development in accordance with the information received on 29 March 2019 is APPROVED subject to the following conditions:

1. Approval to implement this decision is valid for two (2) years from the date of the approval. If substantial on-site works have not commenced within this period, a new approval will be required before commencing or completing the development.

Prior to the commencement of works

2. The applicant shall notify the Department of Biodiversity, Conservation and Attractions in writing not less than seven (7) days prior to the commencement of works (see **Advice Note 1**).

3. At least 30 days prior to the commencement of works, a Construction Environmental Management Plan shall be submitted to and approved by the Department of Biodiversity, Conservation and Attractions (see **Advice Note 2**).

4. At least 30 days prior to the commencement of works, the landowners shall enter into a licence with the City of Vincent to govern the encroachment of drainage infrastructure from Lot 900 (152) Joel Terrace, Mount Lawley, into Crown Reserve 43459. All costs associated with the preparation of the licence and registration of the caveat are payable by the applicant (see **Advice Note 3**).

During works

5. The applicant shall ensure that no damage to the foreshore, riverbank, or waterway (including vegetation and infrastructure) occurs beyond the scope of the approved works.

If any inadvertent damage occurs, the applicant is required to notify the Department of Biodiversity, Conservation and Attractions and the City of Vincent within 48 hours of the damage occurring. Any damage shall be rectified at the applicant's expense.

On completion of works

6. Within seven (7) days following the completion of the works, all waste materials, equipment and machinery shall be removed, and the reserve reinstated to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent.

7. Within two (2) winters following the completion of the works, if the stormwater system or groundwater outlet is not performing as intended to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent, then the structures are required to be modified and the reserve remediated (including removal of the pipe and bubble-up pit if required) to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent, at the applicant's expense.

ADVICE TO APPLICANT

1. Notification of commencement of works and submission of documents can be emailed to rivers.planning@dbca.wa.gov.au.

2. Regarding **Condition 3**, the Construction Environmental Management Plan shall describe how the authorised works will be managed to minimise potential environmental impacts and shall include, at a minimum:
   a. a detailed work method statement outlining how the pipe and bubble-up pit will be installed;
   b. site access and management, including any temporary fencing requirements;
   c. management of machinery and equipment;
   d. details of dewatering, if required (the applicant is advised to refer to the Department of Biodiversity, Conservation and Attractions' Corporate Policy Statement No. 50 – *Planning for Dewatering Affecting the Swan Canning Development Control Area* in regard to management of dewatering tailwater);
   e. any on-site storage and bunding of materials and equipment;
   f. methods of foreshore protection (including vegetation protection if required) and protection of the river from inputs of debris, soil or other deleterious material;
   g. management of public access and safety;
   h. hours of operation and schedule of works; and
   i. management of complaints and incidents.

3. Regarding **Condition 4**, the applicant is advised to refer to item 18.1 of the City of Vincent Council Meeting Minutes of the 29 May 2018 meeting, which are available from the City's website.

4. The applicant is advised to refer to the *Aboriginal Heritage Due Diligence Guidelines* (Department of Aboriginal Affairs and the Department of the Premier and Cabinet 2013) for any future works or maintenance requirements.

Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT

Date: 12/10/19

FILE No. : 2018/6014

DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS REPORT

PROPOSAL	:	Installation of private stormwater pipe and bubble-up pit
COST	:	Approximately between $5,000 and $10,000
LOCATION	:	Crown Reserve 43459 – Lot 703 Joel Terrace and Lot 101 Mitchell Street, Mount Lawley
APPLICANT	:	360 Environmental
LANDOWNER	:	Management Order City of Vincent
LOCAL GOVERNMENT	:	City of Vincent
MRS CLASSIFICATION	:	Parks and recreation
DECISION TYPE	:	Part 5, *Swan and Canning Rivers Management Act 2006* – Ministerial Determination
ATTACHMENTS	:	1. Aerial photo of site (1 page) 2. Excerpt from City of Vincent Council Meeting 29 May 2018 Minutes (2 pages) 3. Stormwater and groundwater plans (3 pages)
RECOMMENDATION	:	**APPROVAL WITH CONDITIONS**

REPORT

1.0 INTRODUCTION

1.1 The Department of Biodiversity, Conservation and Attractions (DBCA) has received an application from 360 Environmental on behalf of the owners of Lot 900 (152) Joel Terrace, Mount Lawley, proposing to install a stormwater pipe that will convey stormwater run-off from the driveway and rooftops of the private lot into the river via an existing vegetated swale within foreshore Reserve 43459 - Lot 703 Joel Terrace and Lot 101 Mitchell Street, Mount Lawley (see **Attachment 1**). The site of development is reserved for 'Parks and Recreation' under the *Metropolitan Region Scheme*.

1.2 The site is Crown land under the Management Order of the City of Vincent.

1.3 This proposal is for a private stormwater pipe and bubble-up pit to be installed within Lot 703 Joel Terrace and Lot 101 Mitchell Street, Mount Lawley (the reserve), which are wholly within the Swan Canning Development Control Area (DCA) and therefore requires a development approval from the Minister for Environment in accordance with Part 5 of the *Swan and Canning Rivers Management Act 2006* (SCRM Act).

1.4 The Director General of DBCA has prepared this report in accordance with section 76 of the SCRM Act.

2.0 CONSULTATION

City of Vincent

2.1 The City of Vincent (the City) advised that it has no objections to the proposal, subject to the following condition:

- The landowners shall enter into a licence to the City's satisfaction, in accordance with the City Council's resolution at the 29 May 2018 Meeting (excerpt of minutes at **Attachment 2**), prior to any works within the foreshore reserve being commenced. All costs associated with the preparation of the licence and registration of the caveat are payable by the landowners.

2.2 The licence shall be finalised pending the outcome of this development application.

Department of Water and Environmental Regulation, Swan Region

2.3 The Department of Water and Environmental Regulation (DWER), Swan Region advised that it does not have the capacity to conduct an engineering review of the proposal.

2.4 DWER also advised that floodplain management and contaminated sites advice are not required for this proposal and so has no comments in this regard.

Department of Planning, Lands and Heritage

2.5 The Department of Planning, Lands and Heritage (DPLH) has reviewed the proposal and advised that the proposed works do not intersect any known Aboriginal Sites or heritage places and therefore no approval under the *Aboriginal Heritage Act 1972* is required.

2.6 DPLH further advised that the applicant refer to the *Aboriginal Heritage Due Diligence Guidelines* (Department of Aboriginal Affairs, 2013) for any future proposed works.

3.0 PUBLIC COMMENT – SUBMISSIONS ON DRAFT REPORT

3.1 In accordance with the requirements of Part 5 of the SCRM Act, a copy of the draft report and proposed recommendation was provided to the applicant and the City, DWER and DPLH. A copy was also published on the DBCA website for a period of two (2) weeks from 9 – 22 July 2019 with an invitation for public submissions.

3.2 Two submissions were received within the two-week comment period and four were received in the week following. The concerns raised have been addressed below.

3.3 Three of the submissions received state that the flooding issues in the reserve are a result of the development at 152 Joel Terrace (one assumed the proposed pipe is already installed and causing these issues). One of these submissions provided extensive feedback, with the other two submissions supporting these comments –

- It was suggested that the proponent should construct a sump and pump the excess stormwater uphill to the City's stormwater drainage network along Joel Terrace, which has been a requirement of nearby developments in the past. DBCA notes that this method was considered by the City previously, but it was determined to be unsuitable due to the excess pressure it would put on the City's drainage network.

- Issues with the groundwater system installed at 152 Joel Terrace were raised and these are discussed further in Section 7.1 – 7.4 and 7.16 below. According to the applicant, the groundwater system is functioning as intended. However, due to site limitations, excess stormwater cannot be retained on the property (at-source) and this is currently entering the groundwater system and causing visible overflow to the foreshore reserve. The applicant asserts that once the proposed pipe is installed to manage stormwater, water will no longer be discharging to the foreshore via the property's overflow pipe.
- It was suggested that the licence being prepared by the City, which requires the repair of damage to the Crown Reserve, be extended to include repair of damage to properties adjoining the Crown Reserve. It should be noted that this section of the licence refers to the installation and maintenance of the pipe, not ongoing issues within the reserve. The City advised that it has previously advised that all groundwater issues within private lots should be managed within the lot in question, and the City will determine an overarching solution for the waterlogging issues within the reserve. The City advised that it will not be amending the licence.

3.4 Two of the submissions did not object to, or support, the proposal. These submissions were concerned with the current state of the Crown Reserve and requested that the area be restored to its previous condition. The City understands the issues raised by the residents adjacent to the reserve and is currently investigating the most appropriate response to the waterlogging issue.

3.5 One submission misunderstood the intention of the proposal, believing that the stormwater from 152 Joel Terrace was being diverted directly into the reserve rather than into the river via a pipe and vegetated swale. The report has been updated to make this clearer.

3.6 Overall, the submissions raised concerns about having the stormwater directed to the already waterlogged reserve. Although the stormwater is being directed to the reserve, it will be conveyed to the river via the pipe and existing vegetated swale and so should not contribute to the waterlogging issue. However, as this issue appears to be related to the surface expression of groundwater within the reserve, the waterlogging will likely continue until the City implements a foreshore-wide approach. Any future issues will need to be managed in accordance with this approach.

3.7 The report has been updated to address feedback received during the public submission period. However, the recommendation and conditions have not been modified.

4.0 RELEVANT POLICIES AND PLANS

- State Planning Policy 2.10 – *Swan-Canning River System* (SPP 2.10)
- Corporate Policy Statement No. 42 – *Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area* (Policy 42)
- Corporate Policy Statement No. 49 – *Planning for Stormwater Management Affecting the Swan Canning Development Control Area* (Policy 49)
- Corporate Policy Statement No. 50 – *Planning for Dewatering Affecting the Swan Canning Development Control Area* (Policy 50)

5.0 ENVIRONMENTAL AND PLANNING CONSIDERATIONS

- Groundwater Management
- Stormwater Management
- Environmental Protection
- Precedent

6.0 BACKGROUND

6.1 Lot 900 (152) Joel Terrace (previously Lots 801 (152) and 348 (154) Joel Terrace, Mount Lawley) (the property) abuts the Swan Canning DCA. As a result, all previous development applications for the property have been referred to DBCA or the Swan River Trust for conditions and advice under Clause 30A of the *Metropolitan Region Scheme*. The original development of the property was supported by the Swan River Trust in July 2013 (file number SRT5231) and amendments to the original design were supported in March 2014 (file number SRT5682).

6.2 The property contains a groundwater spring that flows year-round and has a history of waterlogging and minor localised stormwater flooding issues due to the soil types, shallow groundwater, unusual topography and initially ill-informed stormwater management strategy (via infiltration) that was installed in 2013 and 2014 as part of the development approval and building permit.

6.3 Originally, the site had Atlantis drainage cells and Stormtech cells installed, which failed to infiltrate stormwater onsite. This caused excess water to flow over the eastern boundary of the property and flood the foreshore reserve. This has been an ongoing issue throughout the construction of the home. The cells have since been removed.

6.4 In March 2017 a permit was submitted to DBCA to install a pipe to convey excess groundwater and stormwater from the property to the river via an existing swale within the reserve. However, there were several issues with this application. Firstly, previous water quality testing found that the groundwater on site had elevated levels (well above the ANZECC guidelines) of aluminium, iron, and nitrogen as well as a very high pH level. As well as this, the Swan and Canning River Management Regulations 2007 only allow DBCA to grant a permit for works within the DCA to Schedule 5 Authorities (such as the local government). The applicant was advised that, unless the City was willing to undertake the works on their behalf, the works could only be approved under Part 5 of the SCRM Act. The applicant was also advised that, as well as the groundwater issue, DBCA would be unlikely to support private property owners installing drainage infrastructure within a foreshore reserve unless it could be demonstrated that there is no other alternative.

6.5 In order to address DBCA's concerns regarding the poor quality of the groundwater, the builder proposed a separate system for groundwater and stormwater management (see plans at **Attachment 3**). The groundwater system was installed around February 2018 and manages groundwater within the property through reinfiltration. Stormwater from the driveway and rooftops are proposed to be managed through treatment (by a HumeCeptor system) and discharge to the river via a vegetated swale within the reserve (further details in discussion below).

6.6 Following extensive consultation between the owners, the builder, the City and DBCA, this application was submitted. The application proposes to install a 225mm PVC pipe and bubble-up pit within the reserve to convey stormwater run-off from the driveway and rooftops of the property into the river via an existing vegetated swale.

7.0 DISCUSSION

Groundwater Management

7.1 Policies 49 and 50 aim to ensure that any stormwater management systems or dewatering proposed within the Swan Canning River system protects and enhances the ecological health, community benefits and amenity of the Riverpark and does not result in further water quality degradation of the river but rather improves the situation where possible.

7.2 As part of the dewatering that was undertaken on the property during past construction works, the groundwater quality was tested. The results showed elevated levels (well above the ANZECC guidelines) of aluminium, iron, and nitrogen as well as a very high pH level. As a result, the applicant was not able to meet the discharge criteria outlined in Policies 49 or 50 and DBCA could not support the discharge of groundwater from the site without further treatment.

7.3 The groundwater is now managed within the property through reinfiltration. All groundwater – captured via subsoil drains and overflow from the well – is redirected to a rectangular infiltration trench (54m long, 0.2m deep and 2.4m wide) that connects to a circular trench (6m in diameter and 350mm deep). These trenches provide an infiltration area of $158m^2$ and volume of $36m^3$. The circular trench includes an overflow pipe that allows groundwater to overflow into a third trench (45m long, 0.35m deep and 1m wide) located under the stone-pitched retaining wall, adjacent to the reserve, providing an infiltration area of $31.5m^2$ and volume of $11m^3$. Overall, the system has the capacity to reinfiltrate a total volume of $47m^3$ of groundwater. There is also an overflow pipe (50mm diameter) from the third trench through the retaining wall to the reserve as a contingency measure. The builder has stated that the intention is to remove this overflow pipe once the stormwater has been removed from the system.

7.4 These trenches were constructed around February 2018 and, according to the applicant (a hydrologist employed by the landowners of the property), the system is functioning as intended. However, due to site limitations, excess stormwater cannot be retained on the property (at-source) and this is currently entering the groundwater system and causing overflow to the foreshore reserve.

Stormwater Management

7.5 Policy 49 states that stormwater run-off from constructed impervious surfaces generated by 1 year, 1 hour average recurrence interval (ARI) events should be retained and/or detained at the run-off source as much as practical. This is not able to be achieved on the property due to the site conditions and groundwater management outlined above.

7.6 Although there is space within the reserve to allow for overland flow of the stormwater, this could contribute to waterlogging of the foreshore (which is already occurring to an extent due to the high groundwater in the area), inhibiting public access and community use. The City is not supportive of any approach that would result in further waterlogging of the reserve.

7.7 The stormwater being conveyed through the piped network and proposed to be discharged into the river via the swale within the reserve, is water collected from the driveway and rooftops of the buildings on the property. The stormwater system is designed to cater for all storm events up to the 1 in 20 year ARI, with minimum

onsite storage to cater for differences in pre- and post-development flow rates up to the 1 in 5 year ARI (retention capacity of 15.28m^3). All other events will reach the reserve via overland flow from the eastern boundary of the property.

7.8 The builder has installed a HumeCeptor system (STC-3) to treat the stormwater before leaving the site. This will treat stormwater from the driveway and most of the building roofs. However, run-off from a portion of rooftops on the southern side of the property is not able to reach this system due to the site levels. All water leaving the property will be passed through a concrete silt pit before being discharged to the pipe within the reserve, with flows controlled by a bubble-up pit at the end of the pipe. The water will then be conveyed to the river via an existing vegetated swale within the reserve, which was constructed to treat groundwater flowing from a similar spring on the neighbouring property at Lot 100 Joel Terrace, Mount Lawley (approved and constructed prior to the inception of the Swan River Trust).

7.9 The applicant has assessed the existing swale within the reserve and demonstrated that it has the capacity to withstand the extra waterflow volumes from the property.

7.10 Although the stormwater system proposed does not retain/detain run-off at the source in accordance with Policy 49, the majority of first flush events (including those from the driveway) will be treated prior to leaving the site and will therefore not result in further water quality degradation of the river.

Environmental Protection

7.11 The installation of the pipe will require minor excavation within the reserve and no vegetation is expected to be impacted by the works. In regard to ongoing maintenance, the owners of the property will be required to enter into a licence with the City that will include the lifetime maintenance of the pipe and bubble-up pit.

7.12 Overall, the impact on the reserve from the works will be minimal. However, considering the hydrology of the site, minor dewatering may be required to facilitate the works. It is recommended that a Construction Environmental Management Plan be required as a condition of approval. This plan should outline how the pipe and bubble-up pit will be installed, including contingency measures for dewatering that may be required, and any environmental protection measures necessary to protect the foreshore, swale and river during the works.

Precedent

7.13 The hydrological issues faced by the owners of Lot 900 (152) Joel Terrace, Mount Lawley, are not isolated to this site. The City has received several complaints from other properties located on the eastern side of Joel Terrace. The City is investigating how this will be dealt with going forward.

7.14 There is a risk that the approval of this proposal will set an undesirable expectation around the use of the public reserve for private infrastructure associated with the management of hydrological issues on the adjacent lots.

7.15 To address these issues, the City is undertaking an investigation, in consultation with DBCA, to inform an area-wide approach to the hydrological issues. Therefore, any future proposals for adjacent lots (including this lot if the approach is found to be ineffective) will need to align with this.

7.16 As mentioned in Section 7.4 above, excess stormwater from the property is currently overflowing into the foreshore reserve. According to the applicant, once the proposed stormwater pipe is installed water will no longer be discharging to the foreshore via the property's overflow pipe. This will be monitored, and it is considered reasonable that any impacts to the reserve from the discharge be addressed by the applicant, including via remediation or modifications to the stormwater or groundwater management system.

8.0 SWAN RIVER TRUST ADVICE

8.1 In accordance with section 75 (3A) of the SCRM Act, the Trust considered DBCA's draft report at its meeting on 11 June 2019, where the Trust resolved to send its recommendation of support to the Director General of DBCA subject to the landowner entering into an agreement with the City for an appropriate mechanism to ensure that any prospective or future landowner is aware of the intended licence over the pipe within the reserve. The Trust noted other historical examples of vegetated systems in the area, and that the City was supportive of the proposal. The challenge of pumping stormwater to the existing street stormwater drainage network for eventual discharge to the river system was also noted.

8.2 DBCA consulted the City to discuss this recommendation and it advised that the licence includes a 'subject to claim' caveat that will be noted on the certificate of title, and also requires any prospective purchasers to enter into a 'deed of assignment' to ensure they are aware of their obligations under the licence. Therefore, the intention of the Trust will be achieved through the licencing process of the City.

9.0 CONCLUSION

9.1 DBCA is generally unsupportive of private stormwater infrastructure within a public reserve. However, all other alternatives to this proposal have been explored and found unsuitable. The City is currently investigating the most appropriate response to the waterlogging issues occurring within the reserve and any future issues arising on nearby properties or within the reserve are expected to be managed in accordance with this area-wide approach. However, given the timing constraints, it is recommended that private stormwater infrastructure within a public reserve be approved in this instance.

9.2 Environmental impacts from the installation of the pipe are expected to be minimal and can be further managed through conditions.

9.3 For these reasons, the proposal is recommended for approval, subject to conditions and advice.

10.0 RECOMMENDATION – APPROVAL WITH CONDITIONS

That the Director General of the Department of Biodiversity, Conservation and Attractions advises the Minister for Environment that 360 Environmental's proposal to install a private stormwater pipe and bubble-up pit within Crown Reserve 43459 adjacent to Lot 900 (152) Joel Terrace, Mount Lawley, as described in the application received on 12 December 2018 (valid application received 29 March 2019) and additional information submitted on 28 February 2019, be approved, subject to the following conditions:

1. Approval to implement this decision is valid for two (2) years from the date of the approval. If substantial on-site works have not commenced within this period, a new approval will be required before commencing or completing the development.

Prior to the commencement of works

2. The applicant shall notify the Department of Biodiversity, Conservation and Attractions in writing not less than seven (7) days prior to the commencement of works (see **Advice Note 1**).

3. At least 30 days prior to the commencement of works, a Construction Environmental Management Plan shall be submitted to and approved by the Department of Biodiversity, Conservation and Attractions (see **Advice Note 2**).

4. At least 30 days prior to the commencement of works, the landowners shall enter into a licence with the City of Vincent to govern the encroachment of drainage infrastructure from Lot 900 (152) Joel Terrace, Mount Lawley, into Crown Reserve 43459. All costs associated with the preparation of the licence and registration of the caveat are payable by the applicant (see **Advice Note 3**).

During works

5. The applicant shall ensure that no damage to the foreshore, riverbank, or waterway (including vegetation and infrastructure) occurs beyond the scope of the approved works. If any inadvertent damage occurs, the applicant is required to notify the Department of Biodiversity, Conservation and Attractions and the City of Vincent within 48 hours of the damage occurring. Any damage shall be rectified at the applicant's expense.

On completion of works

6. Within seven (7) days following the completion of the works, all waste materials, equipment and machinery shall be removed, and the reserve reinstated to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent.

7. Within two (2) winters following the completion of the works, if the stormwater system or groundwater outlet is not performing as intended to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent, then the structures are required to be modified and the reserve remediated (including removal of the pipe and bubble-up pit if required) to the satisfaction of the Department of Biodiversity, Conservation and Attractions on advice from the City of Vincent, at the applicants expense.

ADVICE TO APPLICANT

1. Notification of commencement of works and submission of documents can be emailed to rivers.planning@dbca.wa.gov.au.

2. Regarding **Condition 3**, the Construction Environmental Management Plan shall describe how the authorised works will be managed to minimise potential environmental impacts and shall include, at a minimum:
   a. a detailed work method statement outlining how the pipe and bubble-up pit will be installed;
   b. site access and management, including any temporary fencing requirements;

c. management of machinery and equipment;
d. details of dewatering, if required (the applicant is advised to refer to the Department of Biodiversity, Conservation and Attractions' Corporate Policy Statement No. 50 – *Planning for Dewatering Affecting the Swan Canning Development Control Area* in regard to management of dewatering tailwater);
e. any on-site storage and bunding of materials and equipment;
f. methods of foreshore protection (including vegetation protection if required) and protection of the river from inputs of debris, soil or other deleterious material;
g. management of public access and safety;
h. hours of operation and schedule of works; and
i. management of complaints and incidents.

3. Regarding **Condition 4**, the applicant is advised to refer to item 18.1 of the City of Vincent Council Meeting Minutes of the 29 May 2018 meeting, which are available from the City's website.

4. The applicant is advised to refer to the *Aboriginal Heritage Due Diligence Guidelines* (Department of Aboriginal Affairs and the Department of the Premier and Cabinet 2013) for any future works or maintenance requirements.

FINAL REPORT ENDORSED

Signed: _____ Date: 2/10/19
Mark Webb
Director General

ATTACHMENT 1 - AERIAL PHOTO OF SITE

18.1 LICENCE TO GOVERN ENCROACHMENT OF DRAINAGE INFRASTRUCTURE FROM 152 JOEL TERRACE, MOUNT LAWLEY INTO SWAN RIVER FORESHORE RESERVE 43459

TRIM Ref: D18/52901

Author: Meluka Bancroft, Property Leasing Officer

Authoriser: Kerryn Batten, Director Corporate Services

Attachments:
1. Plan showing location of stormwater infrastructure
2. Stormwater disposal plan submitted by builder
3. Submission from Owners dated 20 April 2018

RECOMMENDATION:

That Council:

1. APPROVES a licence to the owners of Lot 900 (No. 152) Joel Terrace, Mount Lawley, Deborah and Harold Schoolland, to access and use a portion of Crown Reserve 43459, for the purpose of locating a 225mm diameter PVC stormwater connection pipe and a concrete bubble up soakwell outlet, on the terms set out below, SUBJECT TO the owners obtaining development approval for the works (noted that granting the licence provides no indication or guarantee of development approval being granted):

1.1	Term:	life of the current development (single house) at Lot 900 (No. 152) Joel Terrace, Mount Lawley;
1.2	Licence Fee:	$6,000 payable within 60 days of the date of the licence;
1.3	Use:	right to access Crown Reserve 43459 to construct, repair, maintain and remove the stormwater connection pipe and soakwell, provided at least 1 weeks' prior notice is provided to the City at all times, excluding an emergency, in which case notice to be provided as soon as reasonably practical, but within 24 hours;
1.4	Upgrades:	no alterations or upgrades to the stormwater connection pipe and soakwell without the prior written consent of the City;
1.5	Reinstatement:	Owners to reinstate Crown Reserve 43459 to the satisfaction of the City following the construction of the stormwater connection pipe and soakwell;
1.6	Repair of damage:	Any damage to Crown Reserve 43459 which arises as a result of the Owners' repair or maintenance of the stormwater connection pipe and soakwell is to be immediately repaired by the Owners to the satisfaction of the City, unless otherwise advised by the City, in which case the Owners are to pay the City's costs associated with the required repair;
1.7	Indemnity:	Owners to indemnify the City and State in respect to any loss or damage arising in connection with the stormwater connection pipe and soakwell;
1.8	Insurance:	Owners to effect and maintain public liability insurance ($20,000,000 for any one occurrence) to cover any loss or damage arising in connection with the stormwater connection pipe and soakwell;
1.9	Water Quality:	Owners to comply with Department of Biodiversity, Conservation and Attractions' water quality standards and immediately cease use of the swale if water quality standards not met;

1.10	Approvals:	Owners must obtain any approvals required for the stormwater connection pipe and soakwell, including Part 5 of the *Swan and Canning Rivers Management Act 2006* development approval, and City notes that granting a licence provides no indication or guarantee of development approval being granted;
1.11	Redevelopment:	City or State may redevelop or repurpose the Foreshore Reserve at any time in which case the stormwater connection pipe and soakwell must be removed at the Owners' cost within 6 months' of the City's notice of the redevelopment, and City will provide no compensation for any loss incurred by the Owners;
1.12	No warranty:	City notes that the swale is a natural drainage system and provides no warranty that the swale will remain suitable as a drainage system in the future. In the event that the swale is no longer suitable the Owners must remove the stormwater connection pipe and soakwell and no compensation will be provided for any resultant loss incurred by the Owners;
1.13	Caveat:	Licence to be secured by a subject to claim caveat over Lot 900. All costs associated with the registration of the caveat will be payable by the Owners;
1.14	Termination:	Licence will terminate when the current development on Lot 900 is substantially altered in a manner which impacts the stormwater disposal on the site;
1.15	Assignment:	Licence may be assigned to a prospective purchaser of Lot 900 subject to the purchaser entering into a Deed of Assignment of Licence with the City; and
1.16	Licence costs:	The licence is to be prepared by the City's solicitors to the satisfaction of the City, with all costs associated with the licence payable by the Owners.

2. Subject to final satisfactory negotiations being carried out by the Chief Executive Officer, AUTHORISES the Mayor and Director Corporate Services to affix the common seal and execute the licence in 1. above.

COUNCIL DECISION ITEM 18.1

Moved: Cr Topelberg, Seconded: Cr Loden

That the recommendation be adopted.

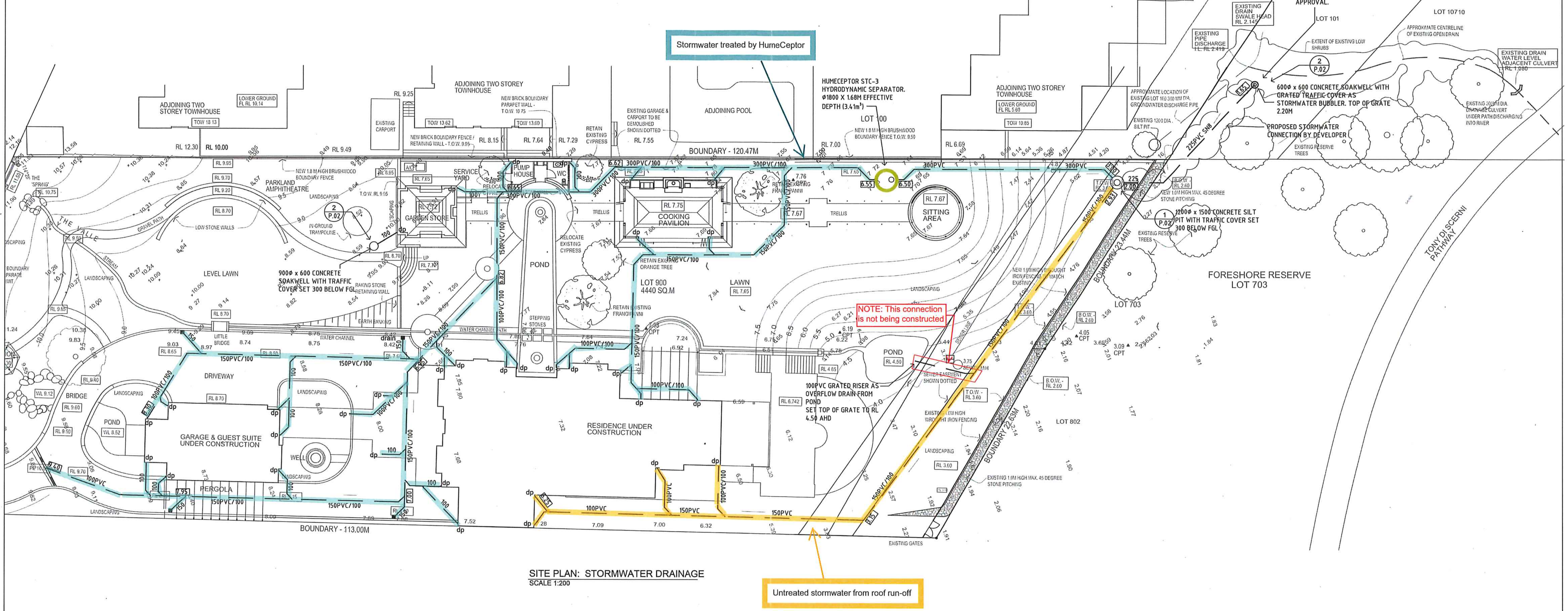
CARRIED UNANIMOUSLY (9-0)

For: Presiding Member Mayor Cole, Cr Gontaszewski, Cr Castle, Cr Fotakis, Cr Hallett, Cr Harley, Cr Loden, Cr Murphy and Cr Topelberg

Against: Nil

MAKE APPLICATION AND PAY ALL COSTS FOR CONNECTION TO CITY OF VINCENT STORMWATER SYSTEM. ALLOW TO CO-ORDINATE ALL WORKS WITH CITY BEFORE AND DURING CONSTRUCTION. TERMINATION TO BE CONSTRUCTED TO CITY REQUIREMENTS AND APPROVAL.

CALCULATED FLOWS	
Q_5	= 0
Q_{10}	= 0.0021 CUSEC
Q_{20}	= 0.0160 CUSEC
Q_{100}	= 0.0547 CUSEC



SITE PLAN: STORMWATER DRAINAGE
SCALE 1:200

PRE DEVELOPMENT NOTES	
SITE AREA	= 4460m²
TIME OF CONCENTRATION	= 15mins
$^{15}I_1$	= 38mm/hr
C	= 0.312
PSD	= 14.7L/s
	= 0.0147m³/s
POST DEVELOPMENT NOTES	
SITE AREA	= 4460m²
IMPERVIOUS AREA	= 2250m²
FRACTION IMPERVIOUS	= 0.50
C_{10}	= 0.67

Joel Terrace	1:5 Storm		8.12.2017 JGT
INFLOW	I=(CIAD)/1000	C	0.67 (IMPERVIOUS)
			0.67 (PERVIOUS)
OUTFLOW	Pre-Development	A	726 m²(ROOF)
			1524 m²(PAVING)
Time Of Concentration	5 mins	U	1
		Q_o	14.7 L/s
			0.0147 m³/s

D(hr)	I (mm/hr) SARI	INFLOW IMPERVIOUS	INFLOW PERVIOUS	OUTFLOW m³	REQUIRED VOLUME m³	
0.08	103	4.01	8.41	4.23	8.19	Time of Conc
0.1	95.6	4.65	9.76	5.29	9.12	
0.167	75.6	6.14	12.89	8.84	10.19	
0.33	51.3	8.23	17.29	17.46	8.06	
0.5	40.1	9.75	20.47	26.46	3.77	CRITICAL EVENT
1	25.7	12.50	26.24	52.92	-14.18	
2	16.2	15.76	33.08	105.84	-57.00	
3	12.3	17.95	37.68	158.76	-103.13	
6	7.74	22.59	47.42	317.52	-247.51	
12	4.92	28.72	60.28	635.04	-546.04	
24	3.16	36.89	77.44	1270.08	-1155.75	
48	2.01	46.93	98.51	2540.16	-2394.72	
72	1.49	52.18	109.54	3810.24	-3648.52	

DESIGN PRINCIPLES

THE STORMWATER DESIGN PRINCIPLE IS TO COLLECT ALL RUN OFF AND DISPOSE TO CITY OF VINCENT EASEMENT SWALE STORMWATER SYSTEM VIA A PIPED DRAINAGE SYSTEM AND SILT TRAP.

SYSTEM DESIGNED TO CATER FOR ALL STORM EVENTS FROM 1 ARI TO 20ARI.
MINIMUM ON SITE STORAGE TO CATER FOR DIFFERENCE IN PRE AND POST DEVELOPMENT FLOW RATES FOR A 5 ARI STORM EVENT WITH A 5 MINUTE TIME OF CONCENTRATION.

100ARI STORM EVENT OVERLAND FLOW PATH TO EASEMENT AT REAR OF BLOCK.

STORMWATER DRAINAGE NOTES

ALLOW TO SUPPLY ALL DRAINAGE COMPONENTS INDICATED ON THIS DRAWING COMPLETE WITH ALL FIXINGS AND ANCILLARY ITEMS AS NOTED.
ALLOW TO MAKE ALL NECESSARY APPLICATIONS AND GAIN ALL APPROVALS PRIOR TO COMMENCING ON SITE. COMPLY WITH ALL STATUTORY AND LOCAL AUTHORITY REQUIREMENTS.
INSTALL STORMWATER DRAINAGE PIPE WORK TO GRADES AND LEVELS AS SHOWN.
ALL PVC SHALL BE INSTALLED TO AS 2032 AND AS/NZS 3500.3.2 AND TO SATISFACTION OF CITY OF VINCENT ENGINEERING DEPARTMENT.

EXCAVATION AND DEWATERING

ALLOW TO EXCAVATE TO PERMIT INSTALLATION OF DRAINAGE LINES AND SUPPORT EXCAVATION.
ALLOW TO OVER EXCAVATE AND INSTALL A 100MM THICK BLUE METAL AGGREGATE BED (14MM AGGREGATE) TO ALL NEW DRAINAGE STRUCTURES AND A 100MM THICK AGGREGATE BED UNDER NEW DRAINAGE LINES.
COMPACTED TO PROVIDE STABLE AND TRUE BASE FOR STRUCTURES. ALLOW TO STORE ALL SPOIL ON SITE.
ALLOW TO CONTINUOUS DEWATERING OF EXCAVATIONS FROM WHATEVER CAUSE AND MAINTAIN A DRY EXCAVATION UNTIL BACKFILLING IS COMPLETED.

BACKFILL AND COMPACTION.

THE INITIAL 300MM OF BACKFILL OVER DRAINS SHALL BE WITH CLEAN SHARP SAND FREE FROM CLAY, ROCKS OR VEGETABLE MATTER, IN LAYERS NOT EXCEEDING 300MM.
COMPACT WITH TWO PASSES WITH A 50 KG VIBRATORY PLATE COMPACTOR. TO OBTAIN 95% OF EXISTING NATURAL DENSITY.
THE FINAL 300MM OF BACKFILL CAN BE CARRIED OUT USING THE ORIGINAL EXCAVATED MATERIAL FREE FROM ROCK OR CLAY LUMPS AND COMPACTED TO ORIGINAL DENSITY OF SURROUNDING SITE AREA.

SUBSOIL DRAINAGE

ALLOW TO COORDINATE WITH A GEOTECHNICAL ENGINEER AND STRUCTURAL ENGINEER TO ASCERTAIN THE NEED FOR SUBSOIL DRAINAGE IN RELATION TO FUTURE CONSTRUCTION OF BUILDINGS.

SITE STORMWATER NOTES:	
TOTAL SITE AREA	= 4460m²
TOTAL PAVED AREA	= 1524m²
ROOF/BALCONY AREA	= 726m²
ON SITE STORAGE:	
1 x HUMECEPTOR SYSTEM STC-3	= 3.41m³
1 x 1200Ø x 1200D SILT PIT	= 1.357m³
TOTAL PIPE CAPACITY	= 10.51m³
TOTAL ON SITE RETENTION	= 15.28m³

CLIENT REVIEW ISSUE
NOT FOR CONSTRUCTION

NORTH POINT

DESIGN CERTIFICATION
This drawing the referenced copy and issue as noted in the Technical Design Certification as issued in compliance with the Building Act 2011.
Refer to Design Certificate dated same for reference design standards
Subsequent revisions after the date of certification must be referenced by the installing contractor when submitting final certification.

Authorized Engineering Staff For PJ Wright& Assoc. Date

Revision	Date	Description
01	11/1/2018	PROPOSED STORMWATER CONNECTION CHANGED TO PVC - CLOUDED

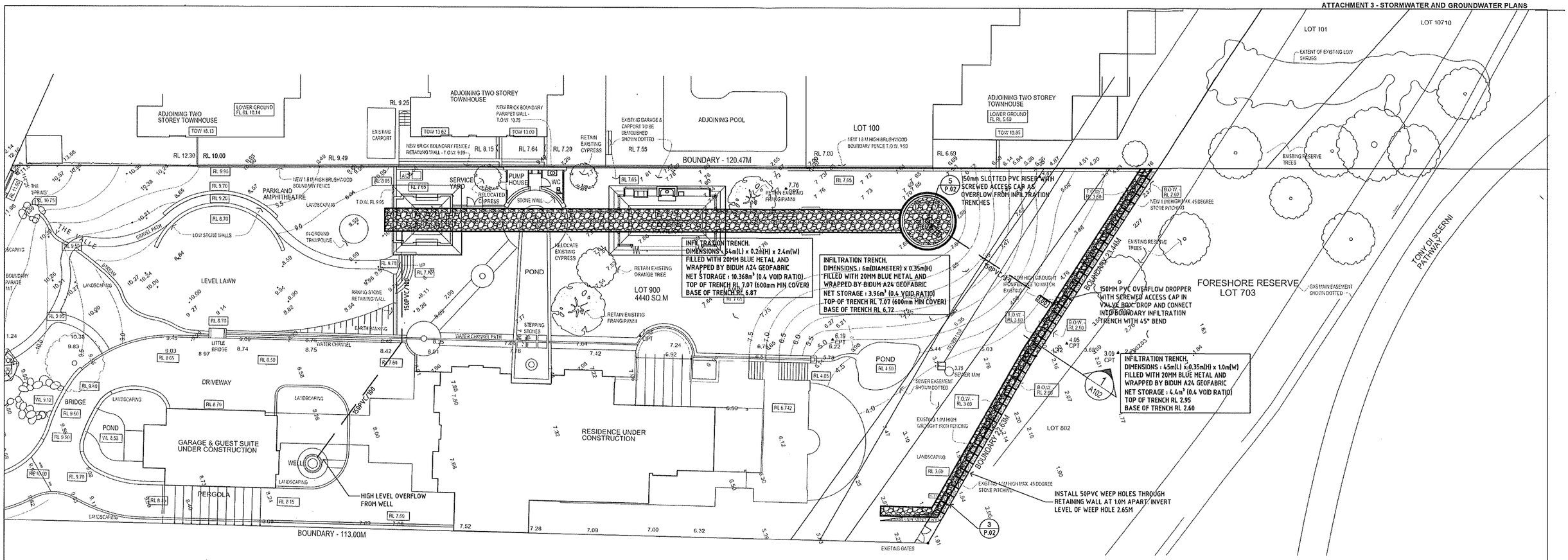
P.J. WRIGHT
& ASSOCIATES PTY LTD
Hydraulic & Fire Design Consultants
Suite 2 / 101 Scarborough Beach Road Mount Hawthorn Western Australia 6016
PO Box 335 Mount Hawthorn Western Australia 6915
telephone (08) 9443 3466 facsimile (08) 9242 2304 email contact@pjwrightandassociates.com.au

AHSCA THE ASSOCIATION OF HYDRAULIC SERVICES CONSULTANTS AUSTRALIA INCORPORATED

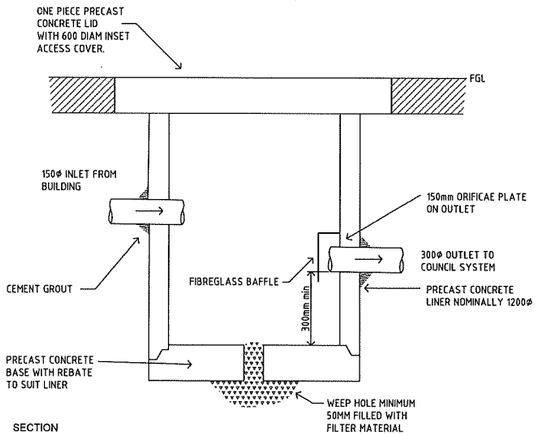
Project
NEW RESIDENCE
152 JOEL TERRACE
MOUNT LAWLEY

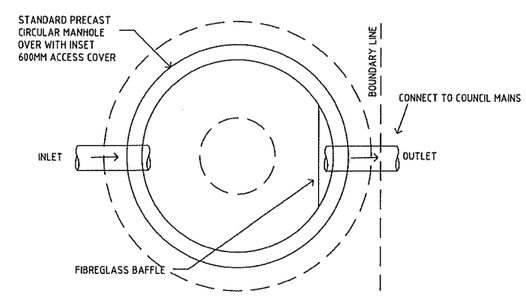
Drawing Title	Date	Drawing Number	Revision
STORMWATER DESIGN SITE PLAN	DEC 2017	P.01	01
	Scale 1:200 @ A1		
	Drawn TRS/JGT		

This drawing is an Autocad format document and manual adjustment of plots or prints is not permitted.

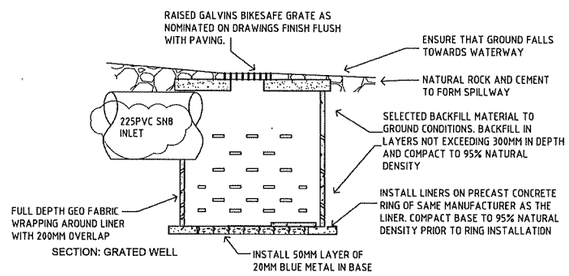


SITE PLAN: GROUND WATER DRAINAGE
SCALE 1:200

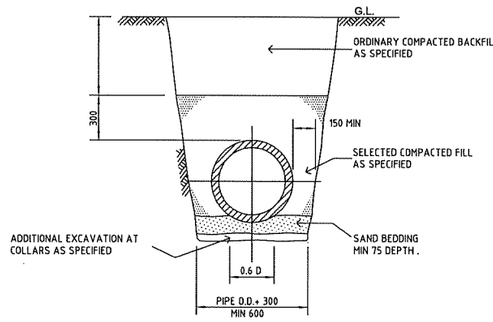




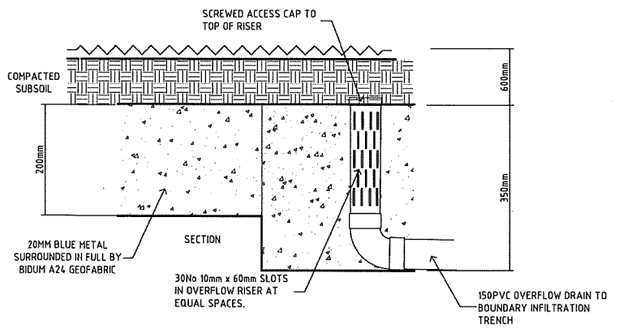
1 P.02 DETAIL : SILT PIT
DIAGRAMMATIC



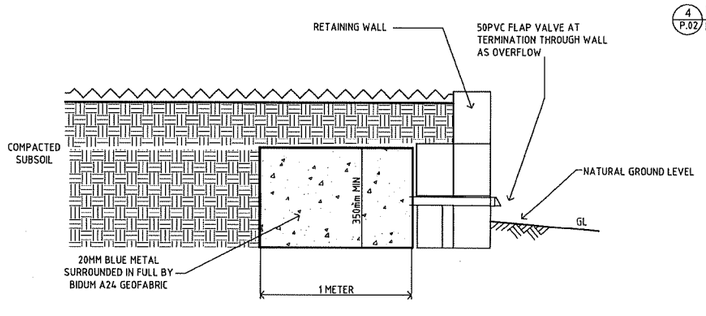
2 P.02 DETAIL: DRAINAGE SWALE AND PICTHING
SCALE 1:20



4 P.02 DETAIL : DRAINAGE EMBEDMENT
NTS



5 P.02 DETAIL: INFILTRATION TRENCH OVERFLOW
DIAGRAMMATIC



3 P.02 DETAIL: INFILTRATION TRENCH OVERFLOW
DIAGRAMMATIC

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Revision	Date	Description
01	11/1/2018	PROPOSED STORMWATER CONNECTION CHANGED TO PVC - CLOUDED

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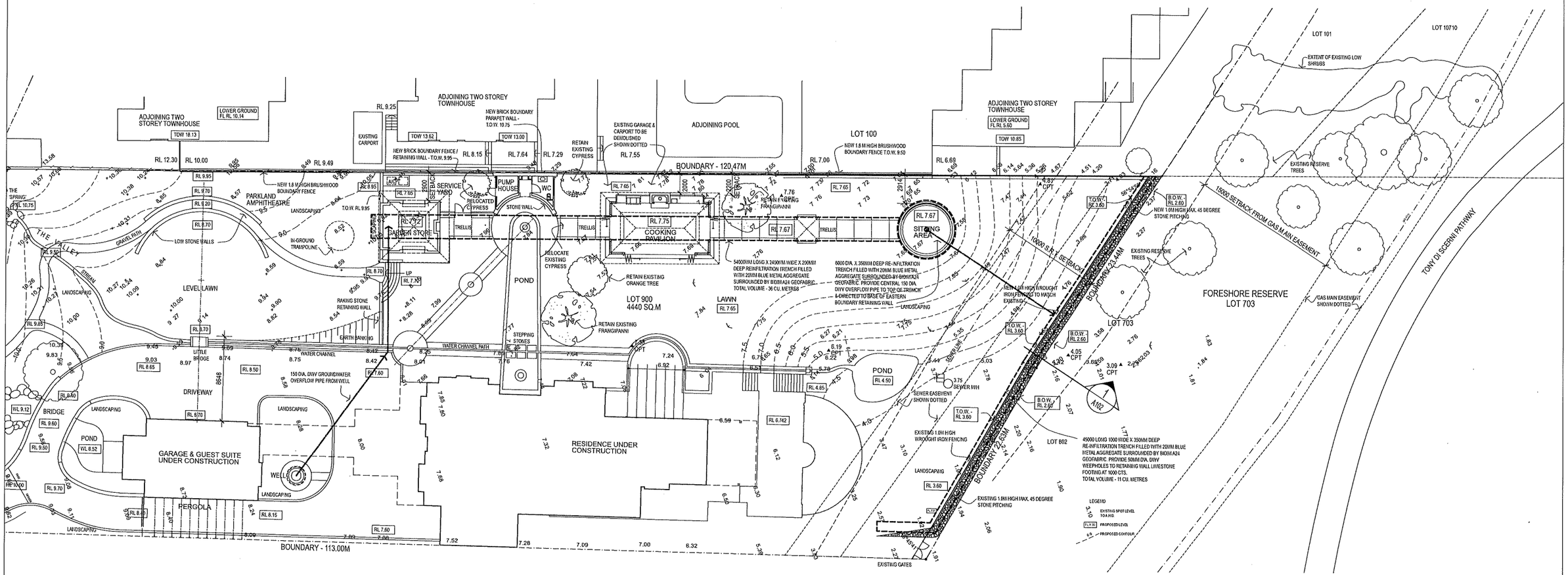
Authorized Engineering Staff For PJ Wright& Assoc Date

Project
NEW RESIDENCE
152 JOEL TERRACE
MOUNT LAWLEY

Drawing Title
STORMWATER DESIGN
GROUND WATER & DETAILS

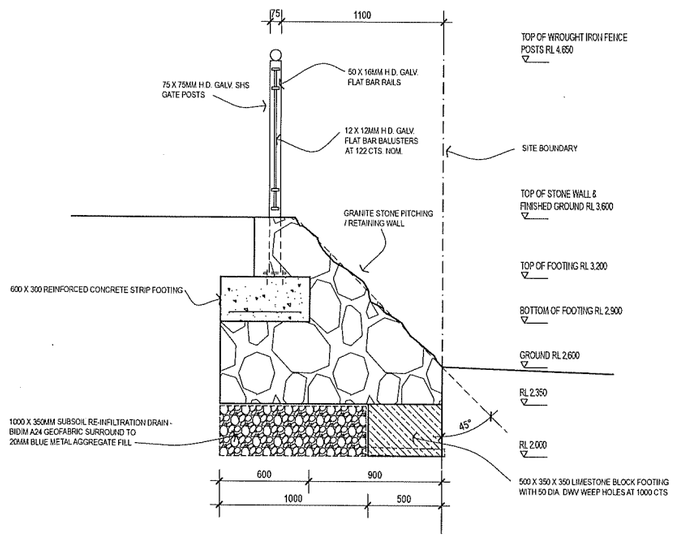
Date	DEC 2017
Scale	1:200 @ A1
Drawn	TRS/JGT

Drawing Number: P.02
Revision: 01



- / A01 PART SITE & FORESHORE PLAN
1:200 - GROUNDWATER RE-INFILTRATION LAYOUT

0 1 2 5 10 20M



1 / A102 EASTERN BOUNDARY RETAINING WALL DETAIL
1:20

REV.	DATE	REVISION	BY
A	8.11.17	PRELIMINARY ISSUE	JD

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Mo: 0412 502 821, E: philip@pnarchitect.com.au

CLIENT: SCHOOLLAND

DRAWING TITLE: PART SITE & RIVER FORESHORE PLAN PROPOSED GROUNDWATER RE-INFILTRATION LAYOUT & DETAIL

PROJECT: **EXTERNAL WORKS** 152 (LOT 900) JOEL TERRACE MOUNT LAWLEY

SCALE:	DATE:	DRAWN:	CHECKED:
1:200 @ A1	NOV 17	JD	PN
JOB No.:	CAT.	DRWG. No.:	REV.:
1506	WD	A102	A