

16.1 Melbourne Hill Road Catchment Drainage Improvement Options

File Number:	IN20/85
Responsible Director:	Director City Services
Attachments:	<ol style="list-style-type: none">1 MHR Option 1 Scope of Works2 MHR Flood Mapping3 MHR Option 2 Scope of Works4 MHR Estimated Tree Losses5 Option Cost Estimates6 MHR Drainage Upgrade Option Comparison

EXECUTIVE SUMMARY

The flooding event in December 2011 resulted in reports received of flooding of six houses. Flood mapping undertaken has confirmed this flood risk, and the modelling indicates that 7 houses in this catchment are susceptible to flooding of habitable floor areas in a major (1% AEP) storm event. This flooding is due to uncontrolled flows and inadequacies in the existing drainage infrastructure.

Consultants were previously engaged to investigate sustainable drainage upgrade options and extensive community consultation was previously undertaken involving the community, the Melbourne Hill Road Reference Panel, ward councillors and officers. In November 2015, Council reconfirmed previous resolutions in support of Scheme 1 (Modified), as the preferred solution to address this flood risk.

Following further arboricultural investigation, it is estimated that Scheme 1 (Modified) will result in the loss of an estimated 299 trees. Councillors requested that officers investigate alternative options to minimise anticipated tree losses accordingly. This report consequently compares two shortlisted drainage upgrade options.

Options 1 and 2 are shown in Attachments 1 and 3, both of which achieve the desired flood mitigation objective.

Option 1 is essentially the same as Scheme 1 (Modified), but with an increased extent of pipe jacking (boring) and some minor pipe realignment to reduce the estimated tree losses to 206. Its estimated cost is \$4.795M.

Option 2 is estimated to result in the loss of 114 trees, but it achieves this through a significant reduction in the proposed scope of the underground drainage network to be constructed, at an estimated cost of \$3.485M. Option 2 lessens the extent of tree losses and the project cost. However, it results in greater susceptibility to incidental flooding from pit inlet blockages.

Attachment 6 to this report provides a succinct comparison of the two options.

It is recommended that Council adopt drainage improvement Option 1 as the preferred flood mitigation option for this catchment, that all affected property owners be so notified, and that the detailed design be completed, and easement acquisitions and a planning permit be secured, prior to the commencement of construction.

1. RECOMMENDATION**That Council:**

- A. Adopt drainage improvement Option 1 as the preferred option to address flood mitigation for the Melbourne Hill Road catchment, noting the reduction in the estimated tree losses from 299 to 206 and noting that the proposed scope of works is similar to Scheme 1 (Modified), as previously adopted by Council in November 2015.**
- B. Notify all affected property owners within the catchment of Council's adoption of Option 1 as soon as possible.**
- C. Officers complete the detailed design for Option 1, progress the acquisition of easements, and secure a planning permit and all necessary approvals, prior to the commencement of construction.**
- D. Develop a plan to manage community communications throughout the duration of the project.**

2. BACKGROUND

- 2.1 Council records indicate that 6 houses, primarily located within the downstream valley, were flooded as a result of the December 2011 flood event. The intensity of the December 2011 storm event was estimated by officers to be of the order of a 1 in 80 year event. The base case flood model results (Attachment 2) show that there is a significant flooding problem in this catchment, with 7 houses flooding in a major, or 1% Annual Exceedance Probability flood event (statistically the worst storm in 100 years).
- 2.2 Consultants were engaged to investigate drainage upgrade options, flood modelling was undertaken for the catchment and extensive community consultation was undertaken, involving the community, Reference Panel, ward councillors and officers. In November 2015, Council reconfirmed previous resolutions in support of Scheme 1 (Modified), as the preferred solution to address this flood risk.
- 2.3 Further arboricultural assessment undertaken since indicates, however, that Scheme 1 (Modified) will result in the loss of an estimated 299 trees. Councillors requested that officers investigate alternative options to minimise estimated tree losses, while still achieving the target flood mitigation for habitable floors within the catchment. This report compares two alternative drainage upgrade options, accordingly.

Drainage Upgrade Options

- 2.4 Tree losses can be minimised by selecting an alternative construction methodology to open trenching, such as pipe jacking, which involves underground boring, rerouting pipes away from trees or reducing the extent of works. Pipe jacking is a significantly more expensive and less invasive process than open trench excavation.

- 2.5 Two drainage improvement options have been developed for consideration, as shown on the attached plans and described below. Both options theoretically provide protection for habitable floors in a 1% AEP storm event.
- 2.6 Option 1 – This option involves a similar scope of works to Scheme 1 (Modified), but incorporates several realigned drains and a greater extent of pipe jacking when compared with Scheme 1 (Modified). Notably, the Drysdale Road easement drain has been diverted from running across the rearages of 31 and 33 Drysdale Road to run through 86 Melbourne Hill Road, in order to avoid disturbance of the largest recorded tree in the catchment. This option also provides a point of drainage discharge to an underground drain to the majority of properties within the catchment (Attachment 1).
- 2.7 Option 2 – This option was developed as part of the 2014/2015 consultant study, and was known as Scheme 2.1 at that time. Option 2 primarily reduces the level of tree losses by reducing the scope of the drainage works compared with Option 1. Should Option 2 be supported, the remaining underground drainage works could be undertaken in the future to complete the full Option 1 easement drain extent. However, Option 2 does not provide points of drainage discharge to the majority of properties within this catchment (Attachment 3).
- 2.8 A comparison of these options is provided in Attachment 6 to this report.
- 2.9 It should be noted that officers will review the alignment of the proposed drains through 73 and 77 Melbourne Hill Road as shown on Attachments 1 and 3, to realign the drain from the road reservation to the alignment of the existing easements through 73, 75 and 77 Melbourne Hill Road. Easement widening requirements will also be assessed.

Tree Impacts of Options

- 2.10 This catchment is located in Neighbourhood Residential Zone 1, and is subject to Environmental Significance Overlay 5 under the Manningham Planning Scheme. Tree losses associated with this project will trigger a requirement for a Planning Permit.
- 2.11 The existing condition and works impact have not been assessed by the arborist for all trees that could be affected by these options. Further condition and impact assessment of surveyed trees will be required for the adopted option.
- 2.12 Attachment 4 to this report provides an assessment and estimation of anticipated tree losses as a result of the works for each of the potential options, as summarised below.

Option Number	Percentage of Trees Considered to be Lost Assessed by Arborist	Total Estimated Number of Trees Considered to be Lost
1	69%	206
2	58%	114

- 2.13 There are a significant number of existing trees within the catchment that will not be impacted by either option.

- 2.14 Although trees with greater than 10% intrusion into their Tree Protection Zones are considered to be lost for the purposes of a Planning Permit application, these trees will not necessarily require removal from site during the works. A tree management protocol will be adopted where the impact of the works on the Tree Protection Zone exceeds 10%, to minimise the extent of tree removal. The protocol will be informed by arborist advice before, during and after the works.

3. DISCUSSION / ISSUE

Property Valuations and Easement Acquisitions

- 3.1 Many of the easements within this catchment are occupied with existing sewers, and easement widening or, in some cases, the creation of new easements will be required in order to accommodate the proposed drains. The easement acquisitions will be undertaken by compulsory process.
- 3.2 The creation of new easements or widening of existing easements will encumber private property. Compensation will be paid to affected property owners in respect of the easement creation, as informed by independent valuations. It will be necessary for the valuers to undertake detailed valuations for each affected property for the adopted drainage option, to complete the easement acquisition process.
- 3.3 Should Option 2 be adopted by Council, it will be necessary to acquire easements to facilitate the eventual construction of the easement drains identified as part of Option 1, which would not be constructed as part of Option 2. This approach will ensure the protection of these alignments for future easement drain construction. It is strongly recommended that the Option 1 easement extents, adjusted as required through the design process, be acquired irrespective of which option is adopted.

Point of Drainage Discharge

- 3.4 Council is required to nominate a Point of Drainage Discharge for any property, either within the allotment or at the allotment boundary, where a building permit is required for the carrying out of building works.
- 3.5 Under the requirements of Council's Nominated Point of Drainage Discharge Policy, where a property's *point of drainage discharge is not within the immediate vicinity of a Council drain, ... , Council will consider options for the effective drainage of the site, including whether it is appropriate to require the owner of any property to construct an underground outfall drain from the property's point of drainage discharge to the nearest drainage system,.... in order to establish an effective point of drainage discharge for the property.*
- 3.6 Requirements for permit holder provision of an outfall drain can be triggered through a Planning Permit or a Building Permit associated with the construction of a house or other works. If an outfall drain requires upsizing to cater for additional downstream properties, then Council contributes the difference in cost.
- 3.7 The provision of connections to the majority of properties to underground drains facilitates undergrounding of stormwater flows from impervious surfaces within private property. The greater the number of storm water collection points provided, the less impact inlet blockages can be expected to have on system performance in a storm event.

20 and 22 Melbourne Hill Road

- 3.8 The properties located at 20 and 22 Melbourne Hill Road are subject to existing planning permit conditions requiring the owners to fund the construction of an outfall drain through several downstream properties. If Option 2 is adopted, this outfall drain will not be included in Council's scope of drainage works, and officers will need to conduct further investigations to determine a course of action to address this matter.

Option Cost Estimates

- 3.9 Cost estimates have been prepared for the two options under consideration, as tabulated below. Further details are provided in Attachment 5, including assumptions, inclusions and exclusions underpinning these cost estimates.

	OPTION 1	OPTION 2
TOTAL ESTIMATED PROJECT COST	\$4,795,000	\$3,485,000

- 3.10 The extra cost of acquiring the easements for future drains which are excluded from Option 2 over and above the Option 2 project cost is estimated to be \$342,000.

Comparison of Drainage Upgrade Options

- 3.11 A range of attributes have been identified to compare the available drainage upgrade options, based on the above information. A colour coded system has been adopted to rate the best and worst performing options against each attribute. Details of the adopted rating system, a summary of the key attributes for each of the identified drainage upgrade options and associated ratings for each option are provided in Attachment 6.

4. COUNCIL PLAN / STRATEGY

- 4.1 Item 3.2 of Council's Strategic Resource Plan 2019/2020 requires continued upgrades to Council drainage infrastructure, to protect habitable floor levels and improve community safety. The delivery of the Melbourne Hill Road drainage upgrade is a key project in this context.

5. IMPACTS AND IMPLICATIONS

- 5.1 Both options will theoretically deliver habitable floor flood mitigation in a major storm event for the catchment, whilst Option 1 also provides adjacent points of discharge for all properties.
- 5.2 Option 2 offers the lowest level of tree loss, and is the lowest priced of the options. However, it is more susceptible to drainage system blockage risk than Option 1, as it will rely on fewer drainage system inlet points and provides fewer Points of Drainage Discharge to the proposed underground drains than Option 1. Option 1 will also better manage residual flood risk, and will be more effective in conveying storm water.
- 5.3 Option 1 will also provide a point of drainage discharge to 20 and 22 Melbourne Hill Road as part of the project. Option 2 will not; thereby leaving future works, potentially by property owners, to cause further tree losses at the time.

- 5.4 The Council works will necessitate the loss or adverse impacts on existing trees, which will impact the aesthetics of the area. Every effort will be made to minimise the removal of trees that are considered lost, through the appropriate selection of construction methodology and arborist assessments prior to and during construction. Where feasible, trees will be retained on site and their condition monitored to retain as many trees as possible. Landscaping and revegetation works will be undertaken to re-establish vegetation over time. The easement creation compensation will also consider these impacts.

6. IMPLEMENTATION

6.1 Finance / Resource Implications

6.1.1 Cost estimates for each of the project options have been developed (Attachment 5).

6.1.2 An allocation of \$270,000 has been made for the 2019/2020 financial year to progress the design and easement acquisition.

6.2 Communication and Engagement

6.2.1 A Reference Panel meeting was last conducted on 29 April 2019, to reiterate that there will be no special charge for this project, to provide advice on the project status, project staging, the easement acquisition process, the project program and proposed communications to the community.

6.2.2 The majority of affected properties have now been visited by officers to obtain preferred contact details and to undertake preliminary investigations, including survey.

6.2.3 Once a drainage upgrade option has been adopted, the next phase of this project will involve finalisation of the detailed design, the acquisition of easements and securing the necessary planning approval. There will be associated need for surveyors, Council officers, valuers and, in some cases, the arborist and other consultants to enter and inspect affected properties.

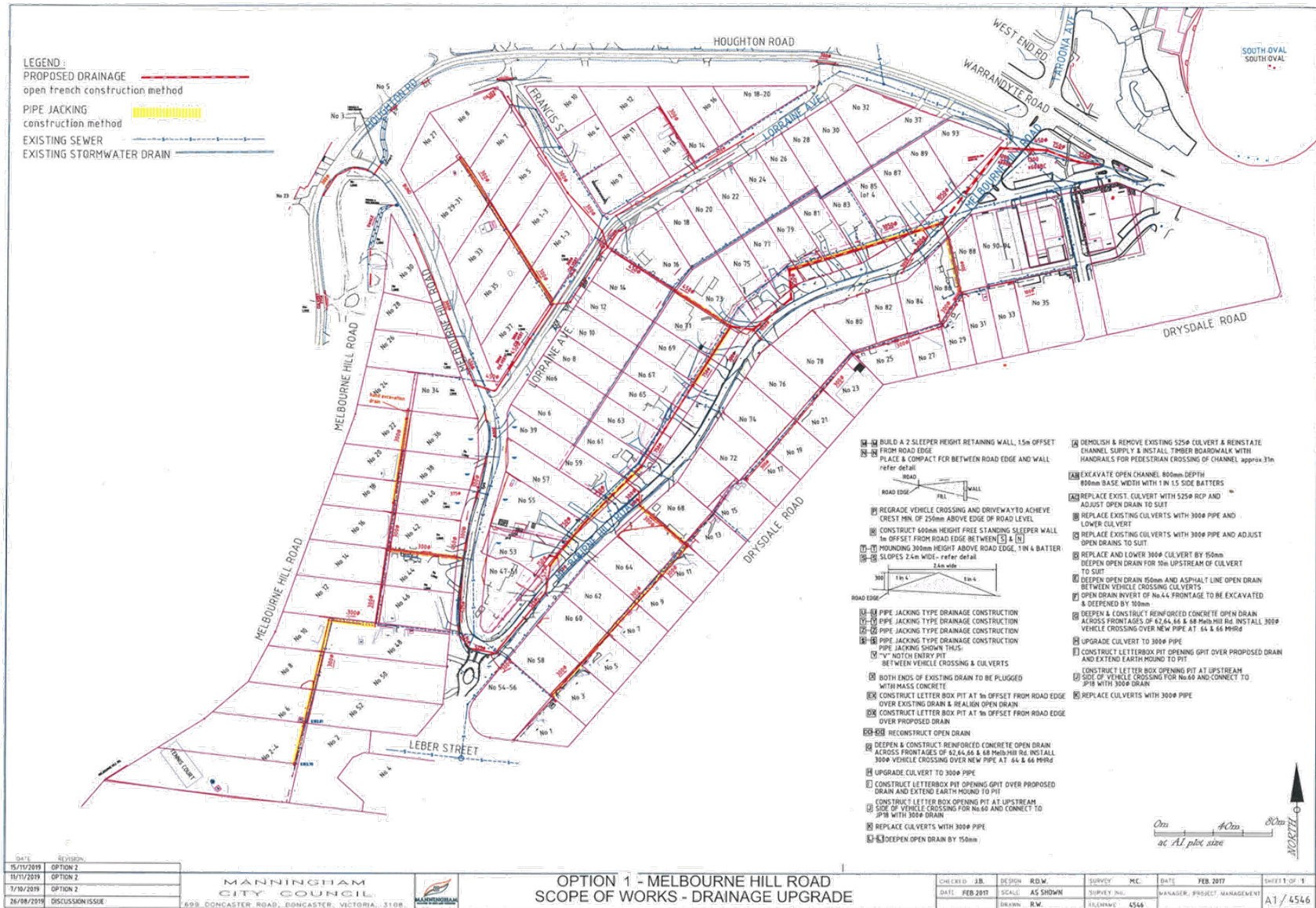
6.2.4 A communications plan will be developed, including details of the proposed easement acquisition process and tree management strategy, once a drainage upgrade option has been adopted. The Communications Plan will also consider the approach to be taken with 20 and 22 Melbourne Hill Road.

6.2.5 Letters will be distributed to all affected property owners advising of Council's resolution following the 25 February 2020 Council meeting, and inviting the owners to attend a drop-in session with Council officers to discuss the new concept and remaining project development process.

6.2.6 For properties where easement acquisition is required, correspondence and notices will be issued by Council's legal representatives directly to property owners, to ensure compliance with all requirements of the Land Acquisition and Compensation Act.

7. DECLARATIONS OF CONFLICT OF INTEREST

No officers involved in the preparation of this report have any direct or indirect conflict of interest in this matter.



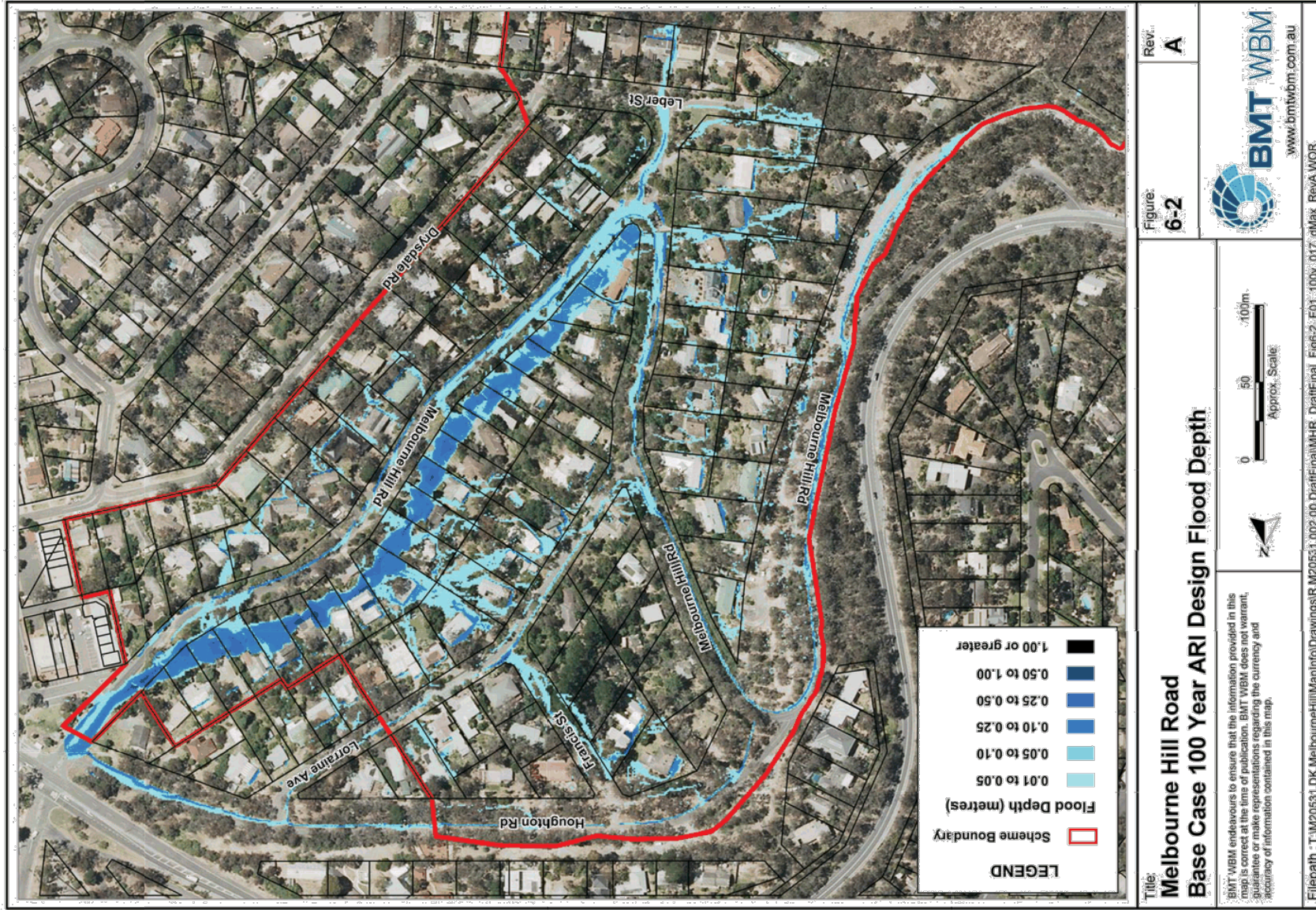
DATE	REVISION
15/11/2019	OPTION 2
12/11/2019	OPTION 2
7/10/2019	OPTION 2
26/08/2019	DISCUSSION ISSUE

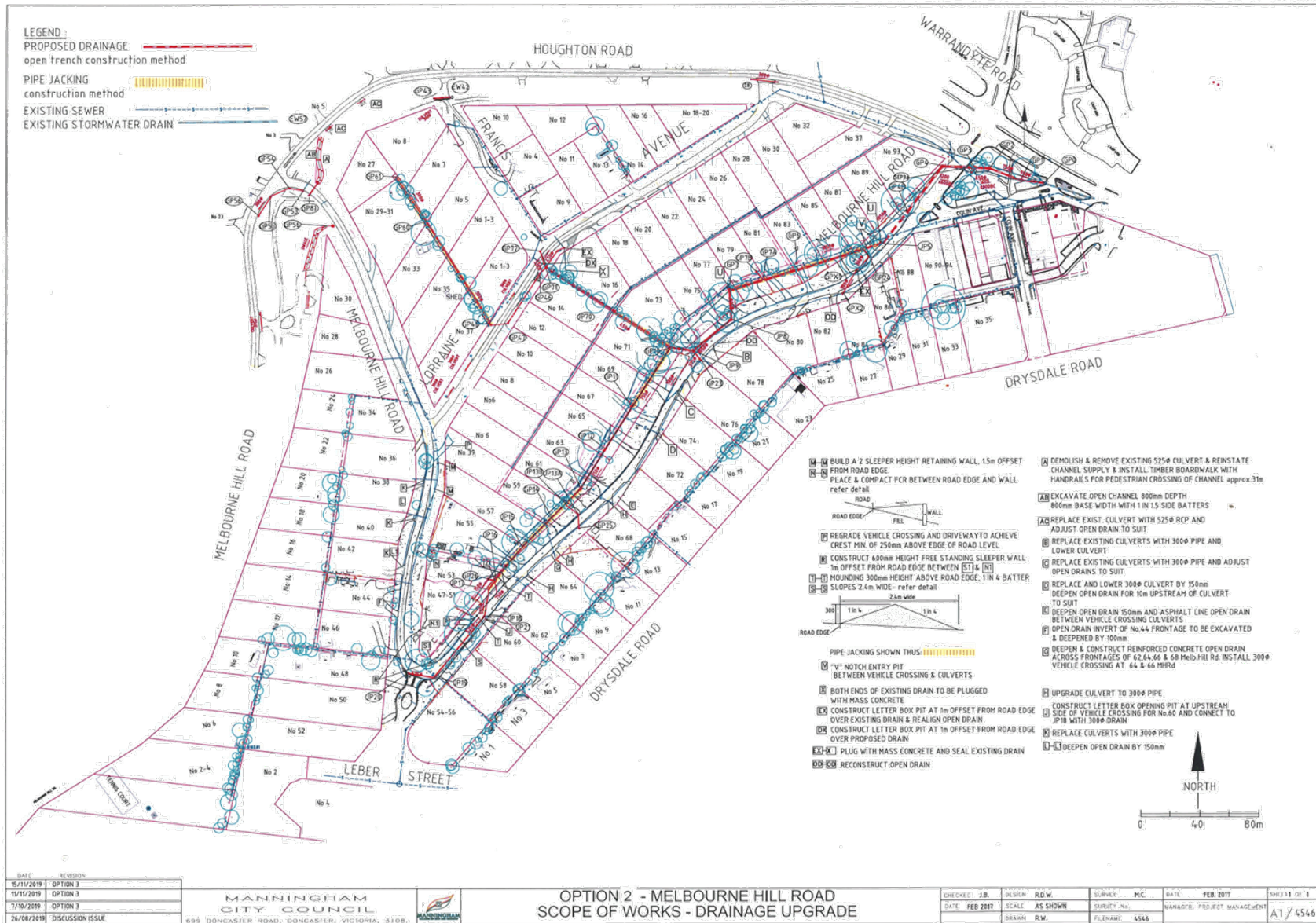
MANNINGHAM CITY COUNCIL
 699 CONCASTER ROAD, EDNCASTER, VICTORIA, 3108



**OPTION 1 - MELBOURNE HILL ROAD
 SCOPE OF WORKS - DRAINAGE UPGRADE**

CHECKED	DESIGN	R.D.W.	SURVEY	M.C.	DATE	SHEET
J.B.	R.W.	R.W.	R.W.	4546	FEB 2017	OF 1
DATE	SCALE	AS SHOWN	SURVEY	MANAGER, PROJECT MANAGEMENT		
FEB 2017	R.W.					A1 / 4546





**Melbourne Hill Road Catchment Drainage Improvement Options - Comparison of Tree Impacts
Attachment 4**

	Option 1 (No of trees)	Option 2 (No of trees)
Trees Assessed By Arborist		
<i>Tree Size</i>		
Trees considered to be lost with unspecified Diameter at Breast Height (DBH)	3	3
Trees considered to be lost with trunk (DBH) up to or equal to 25cm	80	32
Trees considered to be lost with DBH between 26cm and 79cm	56	28
Trees considered to be lost with trunk DBH equal to or exceeding 80cm	3	3
<i>Tree type (planning significance)</i>		
No. indigenous or Victorian Native trees considered to be lost	82	38
No. Australian native / exotic / other native trees considered to be lost	60	28
<i>Tree Arboricultural Rating</i>		
No. trees considered lost with moderate to high arboricultural rating	73	34
No. trees considered lost with none to low arboricultural rating	69	32
Surveyed trees considered to be lost (preliminary assessment) – Not assessed by Arborist.	64	48
Total No. trees estimated to be lost	206	114

Melbourne Hill Road Drainage Upgrade Option Cost Estimates Attachment 5

	OPTION 1	OPTION 2
Construction	\$2,857,755	\$2,261,093
Tree Removal	\$232,000	\$135,000
Tree Root Investigations	\$30,000	\$15,000
Easement Acquisition	\$605,000	\$263,000
Land Acquisition	\$0	\$0
Service Alterations	\$20,000	\$20,000
Landscape / Revegetation	\$30,000	\$20,000
Contingency	\$634,786	\$488,577
Professional fees	\$385,459	\$282,330
TOTALS	\$4,795,000	\$3,485,000

Assumptions, inclusions and exclusions underpinning these estimates are as follows:

- A 20% contingency allowance has been made in respect of each estimate.
- Easement acquisition estimates include compensation and the cost of Council valuer, surveyor and legal representation. No allowance has been made in this estimate for Council payments in respect of property owner legal and valuer representative charges or for conferences between Council's valuer and any valuer representing an owner. Similarly, no allowance has been made for professional fees associated with any negotiations to secure easements.
- Allowances for tree root investigation relate to non-destructive digging prior to trenching to assess the ability to preserve trees considered to be lost based on initial Arborist advice.

Melbourne Hill Road Drainage Upgrade – Option Comparison

Attachment 6

OPTION ATTRIBUTES	OPTION 1	OPTION 2
Estimated Project Cost	\$4.795M	\$3.485M
Number of properties affected by easement or land acquisition	47	21
Estimated number of trees requiring removal	206	114
Properties provided with a Point of Drainage Discharge to a Council underground drain / Flood protection	89	31
Options providing point of drainage discharge for 20 and 22 Melbourne Hill Road	Yes	No
Officer recommended option for adoption	Yes	No

Legend

Best performing option

2nd best performing option

Gold
Silver