



WESTERN AUSTRALIAN
LOCAL GOVERNMENT ASSOCIATION

WALGA Submission on the Market Development Study – Used Glass for Western Australia

Status of this submission

This submission has been prepared through the Municipal Waste Advisory Council (MWAC) for the Western Australian Local Government Association (the Association). The Municipal Waste Advisory Council is a standing committee of the WA Local Government Association with delegated authority to represent the Association in all matters relating to solid waste management.

In addition to general consultation, MWAC held a workshop open to all Local Government representatives to elicit direct feedback on the Investigation. The workshop was attended by 33 Local Government representatives (16 metropolitan and 10 non-metropolitan and 7 Regional Government representatives). Discussion from the workshop is the primary driver for this submission.

Summary

This submission is divided into two parts. The first part makes general comments on issues with the Western Australian glass market that Local Government has identified as being particularly pertinent. The second part of the submission specifically responds to the recommendations suggested in the report.

In summary, whilst the Waste Management Board is congratulated for initiating investigations into this pressing issue, none of the potential markets identified seem likely to be viable in the short-term. That is not to say that none are worth pursuing. However, it is considered that complementary support programmes not addressed in the report, such as extended producer responsibility (EPR) and tax mechanisms, must be implemented if the proposed markets are to be economically viable. Without such measures, it seems inevitable that it will fall to Local and State Government to continue to subsidise an uneconomical glass recycling market; a situation Local Government is resistant to endorsing.

WALGA Recommendations

Recommendation 1: That the Board undertake a triple-bottom line lifecycle analysis for each region of Western Australia comparing the costs and benefits of recycling glass to land-filling glass.

Recommendation 2: That the Board should seek to conduct a consultation with all stakeholders to establish a clear policy direction in regard to whether glass recycling should continue to be pursued across Western Australia if net benefits cannot be evidenced.

Recommendation 3: That open consideration be given to allowing the land-filling of glass, in monofills where this is operationally practical, until such time as net-benefit markets are established.

Recommendation 4: That a commitment be made to openly and honestly advise the community of the costs and benefits of glass recycling in WA; and to include the general public in future consultations on this issue.

Recommendation 5: That any community education campaign concerning glass recycling should be developed in close consultation with the Municipal Waste Advisory Council.

Recommendation 6: That a range of Extended Producer Responsibility (EPR) schemes, including direct industry responsibility, be investigated to assist in resolving the problems associated with glass recycling in WA; and that such schemes are introduced as appropriate.

WALGA Recommendation 7: That the Board commit to investigating the impacts and benefits of tax mechanisms to improve the economic competitiveness of recycled products in WA; and to lobby the Federal Government for the introduction of such measures to ensure the recycled products are on an equal or better playing field than the associated virgin extracted material(s).

WALGA Recommendation 8: That the Report Recommendation 1 not be endorsed; and that any public education campaign rather focus on advising the public of the issues associated with glass recycling in WA as per WALGA Recommendation 4 and 5.

WALGA Recommendation 9: That the mandatory aspects of Report Recommendation 4 be rejected; and that a system of weighted tendering criteria favouring the use of recycled glass products be considered instead.

WALGA Recommendation 10: That as an extension to the Report Recommendation 6, the State Government consider what support it may be able to offer to Local Government and commercial glass collectors to assist them in adapting to new markets.

WALGA Recommendation 11: That actions focused on increasing the supply of glass for recycling markets not be considered until a market need is established.

WALGA Recommendation 12: That the Report Recommendation 11 should be amended to incorporate a wider consultation on the issues associated with glass recycling in WA.

Part 1: General Comments

Local Government considers that there are four main issues that need to be addressed to enable a resolution of the current glass recycling markets crisis in Western Australia. In part, these issues sit outside the general remit of an investigation into glass market development opportunities. However, they are discussed in this submission as they are considered a necessary pre-cursor to moving forward.

1.1 Life-cycle analysis of glass

Before steps can be taken resolve any other issues, it is considered that a full lifecycle assessment of glass recycling in Western Australia must be conducted in the short term. It is evident from the report that, at least in the short to medium term, collecting glass for recycling will represent a cost to Local Government. Of all the markets identified, recycled glass was only genuinely competitive against virgin product when used as glass cullet for beneficiation. Even in this market, currently paying \$40 a tonne for mixed glass cullet, the cost to Local Government for the collection and transport of glass often outweighs the payments made for the glass by the re-processor.

If recycling glass is an uneconomical service for a Local Government to undertake, it is questioned whether continuing to collect glass is in the best interests of the community; particularly given the completely inert nature of glass in landfill. Such a question can only be answered with a triple-bottom line lifecycle analysis comparing the costs and benefits of recycling glass to land-filling. The study should be undertaken for each region of Western Australia and take into account the range of impacts associated with the transport and the reprocessing of glass; particularly in regard to greenhouse gas emissions and water consumption. The analysis should also include consideration of the potentially positive impacts of removing glass from the recycling stream (e.g. increase in value of paper and less damage to processing equipment); and the potentially negative impacts of returning glass to the general waste stream (e.g. municipal solid waste organics contamination, upsetting public recycling behaviours). It is considered essential that the investigation is open to the possibility that recycling may not be the most environmentally, socially and economically beneficial end-use for glass in all instances.

From this analysis, a transparent consultation with all stakeholders needs to occur to establish a clear policy direction in regard to whether glass recycling should continue to be pursued across Western Australia if net benefits can't be evidenced. Some Local Governments have indicated that they are currently, actively considering stopping glass collections unless net benefits are demonstrated. A suggested effective compromise for consideration is that the Board continue to pursue the establishment of glass markets and Local Government continue to collect glass; but that land-filling of that glass be considered an acceptable practice until such time as net-benefit markets are established. Where it is operationally practical, glass monofills could be established to aid later recovery if and when glass markets do emerge.

Recommendation 1: That the Board undertake a triple-bottom line lifecycle analysis for each region of Western Australia comparing the costs and benefits of recycling glass to land-filling glass.

Recommendation 2: That the Board should seek to conduct a consultation with all stakeholders to establish a clear policy direction in regard to whether glass

recycling should continue to be pursued across Western Australia if net benefits cannot be evidenced.

Recommendation 3: That open consideration be given to allowing the land-filling of glass, in monofills where this is operationally practical, until such time as net-benefit markets are established.

1.2. Community Education

It is acknowledged that the concept of monofilling of glass in landfills for future recovery is likely to meet with considerable opposition from some sectors of the general public. However, it is considered that this is largely the result of the community being uninformed with regard to the problems of glass recycling in WA. There is a great deal of concern amongst Local Government that the general public's ignorance of these issues runs the risk of undermining confidence in recycling programs overall. It would be catastrophic for the public image of recycling if Owens Illinois (OI)-Australia were to suddenly stop taking glass cullet from WA and collected glass had to rather be sent to landfill without the public having any prior knowledge of glass market problems.

Local Government believes that the community as a whole should be made aware of the problems associated with recycling glass in WA and the implications of these problems. As described above, an investigation into the costs and benefits of glass recycling is urgently needed; to be followed by an open and honest consultation on these issues incorporating the general public. Only through such a mechanism can an informed decision on the best way forward in regard to glass recycling for each community be made. It is considered that, due to Local Governments role as a representative of the community and as the primary collector of glass, any general public education campaign concerning glass recycling should be developed in close consultation with the Municipal Waste Advisory Council.

Recommendation 4: That a commitment be made to openly and honestly advise the community of the costs and benefits of glass recycling in WA; and to include the general public in future consultations on this issue.

Recommendation 5: That any community education campaign concerning glass recycling should be developed in close consultation with the Municipal Waste Advisory Council.

1.3. Extended Producer Responsibility

It is surprising and disappointing that the report contained no discussion of the potential of Extended Producer Responsibility (EPR) schemes to assist in resolving the glass recycling problems in WA. EPR schemes could be used to effect two major changes to the WA glass market place.

1. A variable handling and processing fee set to reflect the true, total cost of re-processing a material would encourage producers to give greater consideration to using more readily recyclable materials. That is, a producer is more likely to choose to use materials that are currently easier and more economic to re-

process than glass, such as select metals and plastics, as these materials would attract a lower handling and processing fee.

2. The responsibility for dealing with waste glass would be more appropriately directed towards the producer of that waste. This could be through the provision of funding to subsidise the end recycled product (thus making glass more economically competitive against virgin aggregate), collection, transport, labour costs and infrastructure; or more directly through the producer retaining direct responsibility for the complete life-cycle of the product through to end-use. In this latter example, the producer would be directly responsible for ensuring infrastructure for collection, transport (possibly through mandatory back-loading), and an economic end-market for the processed product were established and maintained.

Indirect funding responsibility is considered likely to be most acceptable type of scheme to industry; probably taking the form of a container deposit type system. However, it is considered that the direct responsibility model has the considerable advantage of ensuring industry has a vested interest in creating sustainable and on-going markets for recycled product. Since it is the glass markets rather than glass collection that is the real problem in WA, it is considered that concept of direct responsibility should at least be investigated.

The introduction of an EPR scheme is also likely to effectively reduce the amount of glass being littered or being placed in the municipal waste stream. This presents the benefit of significantly more glass being likely to reach the final processing stage without breaking and becoming unusable glass fines. This should have the carry on effect of creating a significant improvement in the economics of the glass cullet market by both increasing the amount of quality product reaching the end-market and decreasing the cost of sending glass fines to landfill.

The lessening of glass quantities in the kerbside recycling stream is also beneficial as glass can be a problematic waste (i.e. it can damage expensive sorting equipment; and it significantly reduces the price obtained for products like paper where glass shards and fines are difficult to extract). In the municipal waste stream where the stream is processed through an Alternative Waste Treatment (AWT) facility, glass in the composted organics stream is also considered to be a major contaminant and significantly reduces the marketability of the product.

It is also necessary to point out that compaction trucks for kerbside recycling are set at around 160kg/cm³ to 200kg/cm³. To preserve glass, this would probably have to be reduced. This would necessarily lead to smaller loads being collected on each run and would cause a significant increase in collection costs. Contractors are very sensitive to such cost increases and would have to be convinced that the costs are justified through a triple bottom line assessment. This is further complicated due to the fact that some Local Governments operate their own MRF's and others pay through the gate. In both cases, any costs are likely to be passed on; where- as savings may not be.

Recommendation 6: That a range of Extended Producer Responsibility (EPR) schemes, including direct industry responsibility, be investigated to assist in resolving the problems associated with glass recycling in WA; and that such schemes are introduced as appropriate.

1.4. Tax Mechanisms

The Waste Management Board has released a number of papers recently, this paper included, that have as their central goal the diversion of waste from landfill through encouraging recycling and reuse of materials. The Association believes that a key action that has been omitted from all these papers is consideration of the cost of virgin materials against the cost of recycled products. Namely, it is questioned whether the cost of virgin materials truly reflects the environmental externalities of increased resource usage. In direct response to this issue, the UK has introduced a tax on the use of all virgin aggregates. The purpose of this tax is to ensure the cost of virgin aggregates incorporates the environmental externalities of their use. In this, the tax ensures recycled aggregates are more cost competitive in the market place. The applicability of introducing such a measure in Western Australia to improve the market for re-processed glass and other recycled materials is obvious.

Another option suggested for consideration is the use of tax incentives. Reprocessed glass products could be given a tax exemption along the lines of the tax break given to primary industries such as plantations. There is some risk that this might be used as a tax avoidance vehicle, thus impeding real research and development in the industry. However, this could be managed through careful investigation of where the exemption should be applied. For example, the exemption could be given on the sale of reprocessed product. It is considered that a tax exemption could also be applied to recycled materials other than glass and would be in-line with reducing dependence on virgin materials and working Towards Zero Waste.

It is understood that it is beyond the power of the States to introduce tax mechanisms unilaterally. However, it is considered that market development for recycled materials will always be hindered whilst virgin materials remain cheaper. Therefore, it is considered that the Board should commit to investigating the impacts and benefits of such mechanisms; and to lobby the Federal Government for their introduction should they be found to be appropriate.

WALGA Recommendation 7: That the Board commit to investigating the impacts and benefits of tax mechanisms to improve the economic competitiveness of recycled products in WA; and to lobby the Federal Government for the introduction of such measures to ensure the recycled products are on an equal or better playing field than the associated virgin extracted material(s).

Part 2: Specific Comments on the Report Recommendations

Report Recommendation 1: That a broad, common themed community educational recycling awareness program be developed and implemented State-wide immediately, communicating the message of 'bottle and jar recycling'. The program must identify that household cookware, glassware and light globes are non-recyclable.

This recommendation is not supported by Local Government for a number of reasons –

- It is considered impractical and irresponsible to have a State-wide programme of this nature. Local Government's must be able to implement recycling programmes that suit the particular needs of their community. Broad-brush programmes, such as the

one described above, are unable to take into account these variations, and are therefore likely to create more difficulties than they resolve.

- For example, Local Governments that produce Municipal Solid Waste (MSW) organic product have expressed a desire to see glass out of the green bin. For this reason, some (most notably the Southern Metropolitan Regional Council (SMRC)) have chosen to encourage all glass, cookware and light globes to be placed in the recycling bin. It is the SMRC's analysis that it is preferable and more economic to sort non-recyclable glass out of the recycling bin system for landfilling than to have it in the green-bin collection. By contrast, many Local Governments that do not produce MSW-organic product would prefer to see all glass removed from the recycling-bin system, as glass can damage expensive sorting equipment and acts to lower the value of paper recyclables.
- In 2006, OI-Australia conducted an inspection of all the glass collection and sorting facilities in Western Australia. Each facility was given full quality approval for the contamination levels of their final product. Therefore, as contamination is not currently an issue for glass cullet coming from WA, it is questioned what implementing this recommendation would achieve.
 - The current process of manual positive hand sorting of glass does have significant labour cost and OHS issues for Local Government. However, as no education programme can expect to ensure zero contamination, it is considered that some form of sorting processes will always be required. To remain compliant with industry standards, the sorting process will either have to continue to be done by hand or very expensive state-of-the-art optical sorting equipment would have to be installed. Therefore, it is considered that this recommendation would represent a cost burden on Local Government in terms of educational programmes; but not create any subsequent cost savings in terms of minimising the sorting required.

It is suggested that, as discussed in Part 1 of this submission, any education programme should rather focus on making the public aware of the problems associated with recycling glass in WA and the implications of these problems for the community as a whole. The report itself seems to make clear that a sustainable glass market being established in WA (in the absence of the introduction of EPR or a change to the pricing of virgin aggregates) is at best fairly unlikely, even in the long-term. The community need to be made aware of these issues so that they are able to make an informed decision for themselves whether or not to use glass; and also actively contribute to a whole-of-community decision on the direction glass recycling in WA should take into the future.

It is also considered that the introduction of a Container Deposit System should have been identified in the report as a potential mechanism for reducing the contamination of glass cullet. The use of an appropriate deposit system could clearly be an effective tool for improving the collection of uncontaminated glass. It would also have the benefit of diverting glass out of the municipal waste system; which would in turn mean less glass breakages and also potentially improve the economics of municipal waste collections overall. Further, as described in Part 1 under 'Extended Producer Responsibility', a Container Deposit System could itself be used as an effective market-based educational tool to assist the general public's understanding of the true costs of recycling different materials, including glass.

WALGA Recommendation 8: That the Report Recommendation 1 not be endorsed; and that any public education campaign rather focus on advising the public of the issues associated with glass recycling in WA as per WALGA Recommendation 4 and 5.

Report Recommendation 2: *The WMB should enter into discussion with appropriate staff at the Department of Consumer Protection in relation to the exclusion of “products made from used container glass” in the Worksafe Regulations Code of Practice, Abrasive Blasting. This prohibition is not present in other state legislation where used glass is part of these applications. Its presence will severely impact on the future business viability as it removes a vital high-value market for processed used container glass.*

Local Government supports this recommendation on the condition that Worksafe is willing to endorse the necessary alterations to the Regulations. It is suggested that, if made, the changes should be in line with National Standards.

Report Recommendation 3: *That the WMB hold a forum for procurement managers and engineers from local and state government departments and agencies to showcase the available research and applicability of using glass as a substitute for virgin excavated materials. Each department or agency is then to be set a time-frame within which it is to modify specifications to incorporate the use of recycled glass in suitable applications.*

Local Government is willing to support this recommendation with the following caveats –

- It would have to be demonstrated that glass aggregate could be refined to meet the engineering requirements of the purpose for which it is intended, to a standard equal or superior to virgin aggregates.
- Glass aggregate would have to be available at a comparative cost to virgin aggregates. Local Government is not willing to bear the cost of using a recycled material if it is not cost competitive within reason. Existing Local Government policy is that 10% is the maximum acceptable price differential.
- The recommendation indicates that Local and State Government will be required to modify specifications to accept recycled glass. Local Government does not support enforced procurement. It is considered that glass aggregates must be competitive without being subsidised by enforced procurement. Local Government is also resolute in the belief that the collection of glass through municipal systems must remain voluntary.
 - A system of weighted tendering criteria favouring the use of recycled products is suggested as an alternative to enforced procurement. This system type is more flexible and allows for situations where suitable glass product may be unavailable or unreasonably expensive.

It is also recommended that the report should consider measures to address the market failures in the price of virgin aggregates. These measures should ensure the

cost of virgin aggregates more appropriately reflect the environmental externalities involved in bringing virgin materials to market; and to enable recycled materials (beyond just glass) to be more cost competitive in comparison. Two such measures considered in the workshop were that –

- The full cost of site rehabilitation be included in the licensing of the quarry or mine. This already occurs to some extent, but rarely involves complete rehabilitation costs.
- A ‘virgin aggregates’ tax could be introduced along the lines of the UK scheme. This would have to be introduced at a national level, but could be lobbied for at the Local and State level.

WALGA Recommendation 9: That the mandatory aspects of Report Recommendation 4 be rejected; and that a system of weighted tendering criteria favouring the use of recycled glass products be considered instead.

See WALGA Recommendation 6.

Report Recommendation 4: That the WMB hold forum for the concrete and cement industries together with procurement managers and engineers from local and state government departments and agencies, to showcase the available research and applicability of using glass as a component in concrete and cement. Each department or agency is then to be set a time-frame within which it is required to modify specifications to incorporate the use of recycled glass in suitable applications.

Local Government has no objections to this recommendation. However it is considered that the concrete and cement industry are likely to have similar issues as Local Government identified with regard to Report Recommendation 3.

Report Recommendation 5 + 6:

5. That the state government issue an “Expression of Interest” nationally and internationally, seeking interest from potential operators to set up a reprocessing operation in the state to process used glass and to identify the terms, conditions and support required to make such an investment decision.

6. That the state government consider what support it may be able to offer in the form of grants, direct or indirect funding for the purchase or lease of land, buildings, plant and equipment, the conduct of feasibility studies, trials to demonstrate alternate local uses, publication and promotion of results to assist in market development and market acceptance.

Local Government considered these recommendations together as Recommendation 6 was considered to extend from Recommendation 5. That is, the support identified by the State Government in Recommendation 6 would form a part of the terms, conditions and support identified in the ‘Expression of Interest’.

Local Government generally supports these recommendations, with the caveat that it is suggested Recommendation 6 should be underpinned by EPR in-conjunction with State identified support. It is strongly considered that industry has a responsibility to contribute to the management of the glass that they produce. As discussed in Part 1 of the submission, this support could be supplied either through indirect assistance in the nature of funding through a levy or deposit-type scheme; or directly through a 'take-back' type scheme.

- Experience has shown that markets created through government subsidies are less likely to be sustainable in the long-term (e.g. the closure of AMCOR's paper Mill in 2006). Industry has greater expertise than government in creating, advertising and sustaining markets. As such, it is considered that the best way of ensuring a sustainable glass market in Western Australia is to ensure glass producers and importers have a vested interest in the sustainability of that market through the use of EPR.

It is also considered that Recommendation 6 should incorporate a commitment by the State to identify what support it may be able to offer Local Government and commercial glass collectors to assist them in adapting to the new markets. This is discussed in more detail under Recommendation 7.

WALGA Recommendation 10: That as an extension to the Report Recommendation 6, the State Government consider what support it may be able to offer to Local Government and commercial glass collectors to assist them in adapting to new markets.

Report Recommendation 7: That a cost model be developed and made available to all commercial, council collection contractors and council officers to enable each operator to assess what the likely financial impact of changing from the current revenue stream to an alternate approach will have on the organisation.

This recommendation is not supported by Local Government as it is considered that it is simply not possible to develop a generic cost model for all operators. In any case, commercial operators and Local Government have the capability of assessing their own financial viability, providing they are provided with accurate information.

A preferred action is that, as a part of the Report Recommendations 5 and 6, consideration should also be given to identifying what costs will be incurred by glass collectors and processors (Local Government and commercial) in accessing the new market. The State Government should then identify what support it will provide to ensure glass collection and processing is economically viable. Certainly, even with a cost model, most Local Governments would be very hesitant to accept the financial impacts of adjusting to new glass markets unless appropriate support was identified from either the State or the glass industry through EPR. As discussed in previously in this submission, Local Government considers that EPR is the most appropriate mechanism to provide suitable and ongoing support.

- A number of Local Governments have stated that they will not subsidise the collection and recycling of glass through council rates. They will only continue to collect glass if it can be shown that it is economically viable or there are clear

environmental and/or social benefits to the process. Geraldton-Greenough Regional Council and Port Hedland Shire are both currently considering this resolution.

See WALGA Recommendation 10.

Recommendation 8: *In collaboration with the commercial collectors, the Government and collectors determine if there is a method of recovering glass from sectors not serviced with kerbside collections and what if any support or mechanisms are necessary to support this service provision.*

This recommendation is considered out of place in the report in that it is focused on increasing supply of glass rather than developing markets. The major issues associated with glass markets in WA have no link to increasing the supply of glass. In fact, the major problem for most Local Governments is having too much glass, with no viable market to absorb it. As such, it is considered that this recommendation should be removed from the report; with the understanding that the merit of the action could be revisited should glass markets develop.

- Notwithstanding the rejection of this Report Recommendation, it is considered odd that the use of EPR was not raised at this point in the paper. An EPR scheme, such as a container deposit system or 'take-back' scheme, would clearly be an effective method for increasing the recovery of glass from sectors not serviced by kerbside. Such a scheme would also be beneficial for minimising litter and the loss of glass to landfill associated with kerbside collections through reducing contamination and breakages.

WALGA Recommendation 11: That actions focused on increasing the supply of glass for recycling markets not be considered until a market need is established.

Report Recommendation 9 + 10:

- 9. Regional and rural communities will need to address the use of glass locally where possible. Government should provide support and skills to transfer knowledge to councils and interested parties in these regional and rural areas.*
- 10. Where local reuse in regional and remote areas is not achievable, consideration should be given to providing transport subsidies to offset the cost of moving glass to the metropolitan area for reprocessing as costs may become prohibitive relative to the revenue stream which will be generated.*

Local Government supports these recommendations. However, this support is given with the caveat that, prior to subsidies being provided, a full lifecycle analysis be conducted to demonstrate the environmental, social and economic benefits of the scheme.

- Local Government is resistant to supporting the subsidising of transport for materials for which there is no established end-market or for which a lifecycle analysis shows there are no net benefits.
- It is considered that Rural Recycling Cost Offset Scheme (recently approved by the Waste Management Board) should be directed towards assisting the recycling of items with the highest net economic, environmental and social benefits.

It is also considered that EPR schemes should be considered in the place of Government subsidies. As previously discussed, Local Government is of the strong opinion that EPR is the best (and perhaps only) means of ensuring collection and processing infrastructure, transport, and sustainable markets are established for glass in WA.

See WALGA Recommendations 1,2,3 and 6.

Report Recommendation 11: The WMB should seek to conduct a forum to disseminate information contained in the GHD Glass Recycling Review Assessment Report 2005 and this study to participants. It is suggested that such a forum should specifically involve O-I, fillers, and users of glass packaging, commercial and council collectors, recycling contractors, MRF operators, local, regional and state government stakeholders and potential end-users identified in this report.

This recommendation is generally supported by Local Government. However, it is considered that it should be amended to incorporate a wider consultation on the issues associated with glass recycling in WA, including the potential of support mechanisms such as EPR. It is also considered that this consultation should be open to the public.

WALGA Recommendation 12: That the Report Recommendation 11 should be amended to incorporate a wider consultation on the issues associated with glass recycling in WA.

Recommendation 12: It is strongly suggested that the WMB continue to take the leadership position on this critical issue and facilitate a dialogue with all parties in an open and transparent manner.

This recommendation is supported by Local Government. However, it is suggested that the WMB could take a stronger leadership position and provide clearer policy guidance on the issues identified by Local Government in this submission. In particular, it is considered resolution is required on the issues of the full lifecycle costs and benefits of recycling glass; public education with regard to the problems associated with glass recycling in WA; and the identification of appropriate support mechanisms for the creation of sustainable glass markets, including consideration of EPR.

See WALGA Recommendation 1 to 12.