



ADDENDUM TO STATEMENT OF ENVIRONMENTAL EFFECTS

The construction of 3 Self-Contained dwellings under SEPP (Housing for Seniors or People with a Disability) 2004.

27 Bellevue Road
AVALON NSW

Prepared for: Stephen & Julia Thompson

REF: M190179
DATE: 30 September 2021



DEVELOPMENT



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1. Introduction

This Addendum to Statement of Environmental Effects has been prepared to accompany amended Architectural Plans and supporting documentation relating to Proceedings 2021/108540 [*Stephen Thompson V Northern Beaches Council*]. An amended package has been prepared involving the following documents:

Table 1 Supporting documentation

Document	Author
Architectural Plans	SHED Architects
Landscape Plans	Narelle Sonter Botanica
Arborist Report	Bradshaw Consulting Arborists
Civil Plans	M+G Consulting
Access Report	ABE Consulting
Site and Street Survey	Bee & Lethbridge Pty Ltd
Traffic and Parking Impact Assessment	PDC Consultants
Clause 26 Compliance Report	SHED Architects

The amended package has been prepared in response to Statement of Facts and Contentions from the Council filed 7 June 2021 and following the Section 34 Conciliation Conference on 30 August 2021. The amended proposal deletes a number of requirements from the original proposal given a Complying Development Certificate (CDC210139) has been issued for demolition of the existing building and a Tree Application (TA2021/0378) has been approved for the removal and replacement of six (6) trees and the works under the CDC and tree removal have been carried out.

The proposed development, as amended, therefore involves the construction of 3 Self-Contained dwellings under *SEPP (Housing for Seniors or People with a Disability) 2004*, with semi-subterranean parking, excavation, tree removal, site works and additional landscaping.

This Addendum to the Statement of Environmental Effects has been prepared in light of the Land & Environment Court 'Practice Note – Class 1 Development Appeals' dated 14 May 2007. I recognise that as an expert witness my overriding duty is to assist the Court impartially on matters within my expertise and that my paramount duty is to the Court rather than to any party to the proceedings. I have read the Expert Witness Code of Conduct in Schedule 7 of the Uniform Civil Procedures Rules and I agree to be bound by that Code.

It is my view that the amended plans and documents appropriately address matters raised by the Respondent and that the proposal merits approval. The most significant changes to the original proposal include the following:

1. Delete the demolition of the existing dwelling and structures from the application as this was been approved under CDC210139 and the works have been carried out;
2. Delete the removal of Trees 16, 22, 31, 32, 36 and 38 from the application as these have been approved to be removed under TA2021/0378. The trees have been removed;
3. The mechanical car stackers have been replaced by tandem parking which extends to the Bellevue Avenue boundary. The floor levels of the tandem spaces have been raised and the soil depth above the tandem spaces in the front setback area is up to 750mm above the structures;
4. Reduction of impacts to certain trees including



- Driveway layout and levels amended to reduce the impacts to Tree 21;
 - "Stoneset" permeable paving is provided to all internal driveways and pedestrian access paths to improve penetration of water and aeration to Trees 21 and 23-29.
5. The elevated walkway has been replaced with a low walkway that is partially sunken below ground with an increased setback from the Sanders Lane boundary. The proposed walkway will comprise of "Stoneset" permeable paving
 6. The Removal of Tree 30 has facilitated the provision of a footpath landing on the western corner of Sanders and Wickham Lanes (opposite the kerb and footpath on the eastern corner of Sanders and Wickham Lanes);
 7. The swimming pool from apartment 2 has been flipped from the southern side of the rear terrace to the northern side and setback 1m from the northern (side) boundary with No. 29 Bellevue Road;
 8. Redesign of the garbage storage to the Lower Ground Level parking area including the removal of the doors and relocation to within 6.5m of the boundary;
 9. The Lower Ground Level Parking area has been modified in the following ways:
 - The location and layout of the Lower Ground Parking area has been shifted to the west with the excavation undertaken closer to the Sydney Water sewer which will facilitate a 2.5m setback from the trunk of Tree 33 which is outside of the SRZ. The works now involve an incursion into the TPZ of less than 10%;
 - The parking level has been lowered by 100mm and the provision of pedestrian "zebra crossing" markings in the semi-subterranean parking area off Wickham Lane;
 - Pedestrian line marking added in the lower ground level parking area;
 - A visitor Parking space has been provided closest to Wickham Lane.
 10. Changes to the kerb and gutter on the corner of the site and Wickham Lane to permit turning circles for garbage trucks;
 11. Internal layout of Apartment 3 amended with a new south facing opening for the living/dining area and amended fenestration to suit the new layout;
 12. Internal layout of Apartments 1 and 2 amended with amended fenestration and skylight to suit the new layout;
 13. Entrances to Apartments 1 and 2 amended to make entrances more prominent and directly visible from Sanders Lane;
 14. The GFA of the amended proposal reduced from 598sqm to 596.6sqm;
 15. The landscaped area of the amended proposal increased from 520sqm to 561.2sqm and the deep soil landscaped area of the amended proposal increased from 229sqm to 271.28sqm;
 16. The provision of an amended Landscape Plan that details the removal of Tree 30 (amongst others) and provides for new planting in accordance with TA2021/0378 and to offset the loss of the seven (7) trees on the site by providing an additional 25 canopy trees;
 17. The relocation of the OSD tank and bio-retention basins in an amended Civil Design package;
 18. The provision of detailed surveys of the gradients and distances to services and facilities provided by Clause 26 of SEPP Seniors. A separate report detailing compliance with Clause 26 is provided;

This Addendum to the SEE should be read in conjunction with the original SEE prepared by Planning Ingenuity. This addendum prevails over that document.



2. Amended Proposal

The additional plans and documents detailed in Table 1 above will amend the plans and documentation before the Court. The amended proposal still involves the construction of 3 Self-Contained dwellings under SEPP (Housing for Seniors or People with a Disability) 2004, with semi-subterranean parking, excavation, tree removal, site works and additional landscaping, but simply deletes demolition and tree removal from the amended proposal as these aspects have been granted separate approvals.

Specifically, the amended proposal no longer seeks demolition of the existing buildings on the site due to the approval of CDC No. 210139 which permits the demolition of the existing building and structures on the site. This CDC application was approved on 5 July 2021 and the works have been carried out. In addition, TA2021/0378 was approved on 4 June 2021 which permitted the removal of six (6) trees on the site being Trees 16, 22, 31, 32, 36 and 38. Part 2 of that approval required the planting of six (6) replacement trees characteristic of the Pittwater Spotted Gum Forest in suitable locations on the site. It is also noted that Council has undertaken some tree removal works on the Council verge but the main trees identified on plans and Arborist Report have been retained. Vegetation removed appears to be either exempt or smaller species, including bamboo but no details of approval could be found.

The amended proposal does not significantly alter the original built form unless where discussed in this Addendum SEE. The amended proposal does provide changes to a number of 'peripheral' elements to the proposal, including but not limited to, amendments to the layout and functionality of the car parking, access throughout the site, tree removal and new landscaping. The most significant issues contended by Council appear to revolve around the interplay between tree retention and the placement of the built form and associated structures. Whilst not diminishing the importance of other matters in the SOFAC, the amended proposal seeks to retain a number of significant trees and where tree removal is required, the proposal provides for additional canopy trees to compensate the loss. This is discussed in detail below.

Despite the changes discussed in Part 1, the assessment of the relevant planning controls in the original SEE prepared by Planning Ingenuity are still relevant to the assessment of the amended application. As such, the original SEE is to be read in conjunction with this Addendum to the SEE but this document prevails.

Where the amended proposal alters the assessment provided in the original SEE, these issues are assessed under Part 3 of this Addendum to the SEE where they relate to contentions in Proceedings 2021/108540 [*Stephen Thompson V Northern Beaches Council*] or below.



2.1 CAR PARKING AND SETBACKS

Contention 2(h) states that the proposed car stackers do not provide a convenient or appropriate type of parking for this type of development. The amended proposal deletes the original car stackers and now proposes tandem parking which requires additional excavation that extends to the western boundary with Bellevue Avenue. The amended proposal will still provide two (2) spaces each for Apartments 1 and 2 without the need for mechanical parking installations.

The provision of tandem parking will slightly increase the quantum of excavation and extend to the western (Bellevue Avenue) boundary which introduces a new element that does not comply with D1.8 of PDCP. In built into Part D1.8 of PDCP are variations provided the outcome of the control is achieved. Importantly, the DCP states as follows:

"On steeply sloping or constrained sites, reduced or nil setbacks for carparking structures and spaces may be considered, however all other structures on the site must satisfy or exceed the minimum building line applicable."

The amended proposal will provide a nil setback to the Bellevue Avenue boundary for car parking only with the remainder of the building setback 6.5m from the Bellevue Avenue boundary in accordance with the variation. In addition,



the proposed tandem parking will be up to 750mm below ground level at the boundary on a steeply sloping site which will not be readily discernible from the Bellevue Avenue streetscape. It is noted that the amended Arborist Report details that the proposed tandem garage will result in an incursion into the TPZ of street trees by less than 10% which will ensure the street trees are retained.

The deletion of the stackers and replacement with tandem parking with a nil setback from the boundary will achieve the outcomes of D1.8 which are as follows:

- *To achieve the desired future character of the Locality.*
- *The amenity of residential development adjoining a main road is maintained.*
- *Vegetation is retained and enhanced to visually reduce the built form.*
- *Vehicle manoeuvring in a forward direction is facilitated.*
- *To encourage attractive street frontages and improve pedestrian amenity.*
- *To ensure new development responds to, reinforces and sensitively relates to the spatial characteristics of the existing urban environment.*

The amended proposal will not only achieve the outcomes of the setback control but will also have a number of planning benefits that more than offset the nil setback which include the following:

- The deletion of the stackers will increase the usability and convenience of car parking for the occupants of Apartments 1 and 2;
- The deletion of the stackers will allow the driveway and parking levels to be increased which will minimise changes in level within the TPZ of Tree 21 on the Council verge;
- All vehicles will be able to enter and exit the site in a forward direction;
- The reduced head height for the stackers will allow up to 750mm soil depth above the tandem parking area to allow for substantial planting within the front setback area on Bellevue Avenue. Given the semi-subterranean nature of the tandem parking, upon completion, the amended proposal will not be readily discernible and will appear as a landscaped front setback area; and
- The proposal will still provide for approximately 45sqm of deep soil landscaped area in the front setback area with the remaining area comprising of landscaped area to maintain the landscaped character of the locality.

The provision of a tandem parking layout is therefore considered a superior solution to the original mechanical stacked parking arrangement. The proposed design is considered to provide a reasonable alternative solution to compliance with the planning controls in accordance with Part 4.15(3A) of the EPA Act given the amended proposal satisfies the above-mentioned outcomes and is considered entirely appropriate in this instance.

2.2 CLAUSE 26 AND ACCESS

Contention 2 raises numerous concerns regarding access both on the site and to the services and facilities required by Clause 26 of SEPP Seniors. In relation to Clause 26 of SEPP Seniors:

- An inspection of the Avalon Beach Village Centre confirms that shops, bank service providers and other retail and commercial services that residents may reasonably require, community services and recreation facilities and the practice of a general medical practitioner are all available within or in close proximity to the Avalon Beach Village Centre in accordance with Clause 26(1) of SEPP Seniors;
- The site is within 400m walking distance of the Avalon Beach Village Centre which contains all the services and facilities required under Clause 26 of SEPP Seniors. The walking distances and gradients to each of the services facilities listed in Clause 26(1) are within 400m, confirmation of which will be provided for under

separate cover. The survey information reveals the subject site is within the following distances of services and facilities under Clause 26:

- Avalon Post Office – 395m
- General Medical Practitioner – 382.9m
- Woolworth and associated shops – 367m
- Park on the eastern side of Old Barrenjoey Road – 160m
- Bus Stop on Old Barrenjoey Road – 108m
- In the alternative; whilst this is not relied upon, all the services and facilities required in Clause 26(1) are certainly available within 400m of the bus stop on Old Barrenjoey Road (108m distance) that provides access to a bus stop in the Avalon Beach Village Centre as required by Clause 26(2)(b). The walking distances and gradients to each of the services facilities listed in Clause 26(1) are provided under a separate cover.

Additional survey works has been undertaken by Bee & Lethbridge Pty Ltd to confirm the width of the pathway on the northern side of Sanders Lane is at least 1.5m wide. In order to meet the gradient requirements of Clause 26(1) of SEPP Seniors, the northern pathway of Sanders Lane is to be re-graded as detailed on the Civil Plans prepared by M+G Consulting. This is detailed in Contention 2 below.

2.3 TREE REMOVAL AND LANDSCAPING

The amended plans details that Tree 30 is proposed to be removed. The proposed accessible path of travel from the western end of the site and swept paths for waste vehicles necessitated excavation and a large incursion into the TPZ of Tree 30 to the point where the Arborist has recommended the tree be removed. The removal of Tree 30 will facilitate a number of planning benefits such as:

- Improved accessibility with an accessible footpath being provided to the western corner of Sanders and Wickham Lanes that is directly opposite the existing footpath on the eastern corner;
- The provision of a rolled kerb around Sanders Lane and Wickham Lane consistent with the requirements of Council's Landscape and Engineering sections;
- Improved accessibility for a 10.5m long garbage truck turning from Wickham Lane to Sanders Lane; and
- A 25m high Grey Gum tree will be located in the proximate location to ensure the landscaped character and canopy cover of this part of the site is retained. This additional canopy tree is to be complemented by additional planting on the amended Landscape Plan.

It is also noted that Tree Application TA2021/0378 was approved on 4 June 2021 which permitted the removal of six (6) trees on the site being Trees 16, 22, 31, 32, 36 and 38. The tree removal has already taken place. Part 2 of that approval required the planning of six (6) replacement trees characteristic of the Pittwater Spotted Gum Forest are to be planted in suitable locations on the site. These additional six (6) replacement trees are detailed on the amended Landscape Plan and are yet to be planted.

It is also noted that Council has undertaken some tree removal works in the Council verge but the main trees identified on plans and Arborist Report have been retained. Vegetation removed appears to be smaller species or bamboo but no details of approval could be found.

In summary, the amended proposal will:

- remove and replace six trees on the site under TA2021/0378;
- retain 30 trees in and around the site;

- remove 7 trees from the site (including 4 exempt species of trees); and
- provide 25 additional trees with heights varying between 3-25m on the site.

The proposed development will result in a nett increase of 18 trees on and around the site. The proposed development will enhance the landscaped character of the locality as detailed on the amended Landscape Plans. The amended proposal will provide a number of significant improvements to the trees and landscaping on the site which can be summarised as follows:

- The deletion of the car stackers allows for the reduction of excavation around Tree 21 to mimic the existing driveway and crossover;
- The driveway is further north from Tree 21 than the existing;
- The provision of “Stoneset” permeable paving for the internal driveway and pedestrian walkway which will benefit Tress 21 and 23-29 as follows:
 - Increase water infiltration.
 - Allow ground water recharge.
 - Allow gaseous exchange with tree root systems.
 - Supports sustainable development and water sensitive urban design.
 - Reduces peak loads on councils stormwater infrastructure.
 - Reduces the urban heat island effect.
 - Reduces the pollutants entering the stormwater.
 - Use of permeable paving over concrete offers greater amenity.
- The use of permeable paving is a proven design, used at Sydney Olympic Park over 20 years ago. It has provided a trafficable surface used by heavy vehicles while still allowing the growth of trees within the substrate under the paving;
- Natural ground levels around Trees 23-29 have been maintained throughout the development;
- The original swimming pool has been relocated to the north away from Tress 23-26;
- Removal of the masonry wall with the TPZ of Trees 26-29;
- Stomwater pipes and pits have been relocated or will be hand excavated around trees only;
- The sandy soil profile allows for tree root spread under the existing road, increasing available soil volume;
- The redesign of the Lower Ground Level parking area allows for a setback of 2.5m from the trunk of Tree 33 and all works are outside the SRZ; and
- Piling or similar has been proposed beside Tree 33 for the basement during excavation to prevent any unnecessary soil loss from the TPZ.

2.4 SWIMMING POOL

The amended proposal involves the relocation of the swimming pool from the southern end of the terrace to the northern end of the terrace for Apartment 2

Part D1.9 of PDCP contemplates swimming pools and spas setback a minimum of 1 metre from the boundary to the pool coping provided the following requirements are achieved:

- *satisfactory landscaping within the setback from the pool or spa coping to the side or rear boundary, and*
- *Council is satisfied that the adjoining properties will not be adversely affected, and*
- *the pool or spa is not more than 1 metre above ground level (existing), and*
- *that the outcomes of this clause are achieved without strict adherence to the standards, and*
- *where the site constraints make strict adherence to the setback impractical, and*
- *where strict compliance with these requirements will adversely impact on the views of adjoining residential properties.*

The proposal satisfies the above requirements for the following reasons:

- The northern boundary will provide a 1.8m high fence with additional planting and existing trees (including Tree 39) provided within the setback area. For the majority of the northern (side) setback area a 3m setback will be applicable which is heavily landscaped in accordance with the amended Landscape Plan;
- The proposed swimming pool is setback by 1m and lower than the height of the fence and landscaping which will not have an adverse impact on the amenity of No. 29 Bellevue Avenue;
- The proposed swimming pool will be a maximum of 1.1m above existing ground level at its highest point in order to ensure Tree 39 is retained (refer to Arborist Report);
- The proposed pool will be setback away from the Sanders Lane frontage to reduce its visual bulk and provide greater amenity for the occupants; and
- The outcomes of D1.9 are achieved despite a variation to the setback controls given the topography and need to retain existing trees on the site.

The provision of a swimming pool adjacent to the northern boundary is therefore considered a superior solution to the original location. The proposed design is considered to provide a reasonable alternative solution to compliance with the planning controls in accordance with Part 4.15(3A) of the EPA Act and given the amended proposal satisfies the above-mentioned outcomes is considered entirely appropriate in this instance.

2.5 DRIVEWAYS AND INTERNAL FOOTPATH

The proposed development involves the construction of “Stoneset” driveway and footpaths for the internal area which is a type of permeable paving. The provision of permeable paving for the driveways and footpaths on the site will provide for increased water penetration and aeration to the substrata to the benefit of the existing trees to be retained, particularly Trees 21 and 23-29. The proposed crossover on the Council verge will comprise of concrete as per Council’s specifications.

Contention 3(g) on the SOFAC state as follows:

(g) T21 (Sydney Red Gum): the updated arboricultural impact assessment provides construction recommendations including the use of permeable pavers for the proposed new driveway which is contrary to Council's engineering standards requiring concrete driveways, and hence the advantages of permeable paving to providing moisture and aeration to the existing root system is not available, thus restricting the available area for future root growth deemed necessary where the area lost to an encroachment should be compensated elsewhere and contiguous with the tree protection zone. The amount of built elements around T21 including driveway and pavement, and building reduces the natural ground area available for future growth,

Council acknowledges the “advantages of permeable paving to providing moisture and aeration to the existing root system” but states these benefits are not available as the driveway is contrary to Council’s Engineering Standards requiring a concrete driveway. With the greatest of respect to Council, the requirements of B6.2 (internal Driveways)

provide different requirements for materials to those under B6.1 (Access Driveways and Works on the Public Road Reserve). Specifically, B6.1 defines Access driveways in this chapter as follows:

Access Driveways include the driveway pavements, gutter crossings, supporting retaining walls, suspended slabs and related structures located on the public road reserve between the road edge and property boundary as illustrated in Appendix 10 -Driveway Profiles.

The relevant controls under B6.1 state as follows:

Access Driveway Profile and Gradient

Access Driveway profiles shall conform to the profiles as illustrated in Appendix 10 - Driveway Profiles.

Access Driveway Construction and Finishes

All Access Driveways shall be constructed with an impervious pavement and gutter crossing construction.

Gutter crossings are to be in plain concrete.

Access Driveways are to be in plain concrete. Cosmetic Access Driveways on a public road reserve are not permitted.

Clearly, B6.1 requires the proposed works on the public road reserve to be concrete. The applicant agrees with this interpretation and has therefore proposed concrete driveway and gutter crossings on the public road reserve as required by B6.1. Furthermore, the applicant anticipates specific requirements under the Roads Act to be implemented as conditions of consent.

However, the requirements for concrete driveways and gutter crossings do not extend past the property boundary. Specifically, B6.2 for internal driveways has no such requirements on materials and construction and sets a lower bar as follows:

Internal Driveway Construction/Finishes

Internal Driveways shall have a stable surface for all weather construction.

Internal Driveways where visible from a public road or public place are to be constructed of materials that blend with the environment and of dark earthy tones or natural materials.

The applicant proposes “Stoneset” permeable paving on the internal driveway (not on the public road reserve) which has a stable surface for all weather protection, is a material that will blend with the natural environment, and most importantly be permeable to provide the benefits for existing trees noted by Council in Contention 3(g). That is, the provision of “Stoneset” permeable paving provides clear benefits and represents a superior outcome to concrete driveways.

The outcomes for internal driveways are noted as follows:

- *Safe and convenient access.*
- *Reduce visual impact of driveways.*
- *Pedestrian safety.*
- *An effective road drainage system.*
- *Maximise the retention of trees and native vegetation.*
- *Reduce contaminate run-off from driveways.*

The provision of “Stonset” permeable paving for the internal driveways and footpaths satisfies the above outcomes for the following reasons:

- The proposed “Stoneset” paving will provide safe and convenient access for vehicles and pedestrians;

- The “Stoneset” paving will blend with the natural environment and reduce the visual impact of the internal driveway;
- The internal driveway is easily identifiable and will have no adverse impact on pedestrian safety;
- The “Stoneset” permeable pavers will allow for water penetration to the substrata and tree roots (if any) in the vicinity. A Technical Data Sheet for the “Stoneset” paving is provided in Annexure 1; and
- As above, the “Stoneset” permeable paving will maximize penetration of water through the pavers and drains at the property boundary will minimise contaminate runoff from driveways to the road reserve.

The provision of a permeable internal driveway complies with the DCP.

3. Response to Contentions

This Addendum to the Statement of Environmental Effects is framed in the context of the Contentions in these Proceedings.

3.1 CONTENTION 1 – CHARACTER AND CONTEXT

The proposed development is not compatible with the character of the area.

Particulars

- a. *The proposal is inconsistent with cl. 29 of SEPP 2004 as the proposal is not compatible with surrounding land uses having regard to criteria specified under clauses 25 (5)(b)(i), 25 (5)(b)(iii), and 25 (5)(b)(v).*
- b. *The proposed development is inconsistent with Clause 25(5)(i) as a sufficient response has not been provided to protect vegetation on the site. The presentation of the development's bulk is not sufficiently integrated with and screened by vegetation. The site and the adjoining properties are currently screened by often dense vegetation, which is characteristic of the locality. The proposal does not provide proper consideration through building design for the future retention and enhancement of environmental features to maintain this established natural character.*
- c. *Under cl. 31 of SEPP 2004, the Court must consider the Seniors Living Policy: Urban Design Guidelines for Infill Development. The proposed development is not consistent with the policy of with cl.25(5)(b)(v), as follows:*
 - i. **Context:** *the building form represents a substantial building mass oriented across the site without providing sufficient integration with the natural environment. The proposed development does not provide a sufficient balance between landscaped features and built form. The proposal has a poor relationship with the street.*
 - ii. **Site Planning and design:** *the proposed development does not minimise the impact on the neighbourhood character which integrates older established medium density developments with single low density forms of development with substantial natural features retained. The presentation at Wickham Lane and Sander Land frontages are dominated by built form with limited opportunity for vegetative screening.*
 - iii. **Streetscape:** *The street facing facades contain extensive areas of unmodulated walls with little to no glazing. The proposal provides poor surveillance of the surrounding streets and has an unacceptable street address, with front doorways significantly recessed and not directly accessible from the street (contrary to cl. D1.1 of DCP 21). The elevated walkway within the front setback is uncharacteristic of the locality and would have an adverse impact on the streetscape.*
- d. *The residual undeveloped sections of the site provide limited potential to support a tree canopy with sympathetic presentation to the street or integration with the landform in a landscaped setting.*
- e. *Clause 32 of SEPP 2004 prevents consent being granted unless the Court is satisfied that the proposed development demonstrates adequate regard with the design principles in Division 2 of Part 3. The respondent contends that the Court could not be so satisfied.*

PLANNING COMMENT

The contentions note that the proposal is to be compatible with surrounding land uses. However, Clause 29 of SEPP Seniors merely requires the consent authority "take into consideration" the criteria is Clause 25 which sets a lower bar. In any event, the amended proposal will satisfy the requirements of Clause 25 for the following reasons:

(i) the amended proposal will have a positive impact on both the natural and built environment surrounding the site. In particular, the proposal will positively contribute to the landscape character by retaining 30 trees in an around the site which will be complemented with the provision of an additional 31 canopy and screening trees (when including replacement trees under TA2021/0378) with a height greater than 3m as detailed in the amended Landscape Plan. The amended proposal will not adversely impact neighbouring amenity on adjoining or nearby properties;

(iii) as discussed in Part 2.2 of this Addendum SEE (above), the subject site is within an accessible location, close to services and amenities. The construction of high quality Seniors housing in this location will have a positive impact on nearby services. Seniors housing is in short supply in Avalon Beach and the proposal will increase the amount of this housing type in the locality to assist in meeting local demand; and

(v) the proposed development will be of scale and bulk that is entirely compatible with the streetscape and general built form in the locality. The proposal has been designed so as not to adversely impact neighbouring amenity and will have acceptable impacts on nearby existing and future uses in terms of solar access, visual and aural privacy and views.

Contention 1(c) details that the proposed development is not consistent with Clause 25 of SEPP Seniors or the *Seniors Living Policy: Urban Design Guidelines for Infill Development*. There is no requirement for the proposed development to be “consistent” with the above requirements which sets a lower bar for a policy document. In any event, the following points are noted:

Context – the proposed built form responds to the topography, natural vegetation and surrounding built and natural environment on the site. The proposed development has been designed to assimilate with surrounding built form, being predominantly one to two storeys in height and of an appropriate density to address the low density residential character of the area. Setbacks and landscaping have also been incorporated to reflect the character of the locality. The proposal retains the significant trees required by Council and provides additional planting and screening in the amended Landscape Plan.

Site Planning and Design - The proposed development provides high quality seniors housing in an appropriate location to address an existing housing need in the Avalon Beach locality. The site is located at the interface between the E2 land to the west, School (SP2) land to the south and B2 land to the east. The proposed scale of the development takes its cues from numerous building forms in the visual catchment whilst responding to the features of the site. The frontages to Sanders Lane and Wickham Lane are dominated by landscaping with the built form setback from both frontages by more than 3.25m in accordance with the applicable planning controls.

Streetscape – the amended architectural plans provide for improved levels of articulation and causal surveillance with the provision of additional windows. The development appropriately address all three street frontages of the site, providing an active frontage to the public domain, with legible vehicular and pedestrian accesses that are directly accessible and visible from the street. The elevated walkway within the Sanders Lane frontage has been amended to ensure an accessible path of travel is provided closer to the building envelope and predominantly below or at ground level thereby reducing its visual bulk and enhancing the appearance of the building.

Importantly, the subject site will increase the quantum of deep soil landscaping on the site from the original proposal and provide for 271.2sqm or 22.3% of the total site area which significantly exceeds the minimum requirement of 15% for Seniors Development under Clause 50 of SEPP Seniors. Furthermore, the proposed development will also increase the quantum of landscaped area on the site from the original proposal and provide for 561.2sqm or 46.2% of the total site area which also significantly exceeds the minimum requirement of 30% for Seniors Development under Clause 50 of SEPP Seniors. That is, the subject site attains the requisite deep soil and landscaped area requirements as the Landscape Plan details the amended proposal will maintain the landscaped character of the locality.

In terms of the character and setting of the building the Design and Sustainability Advisory Panel (DSAP) at its meeting on 22 October 2020 provided the following comments with regard to the proposed development:

- *As a development that will increase residential density, it should not be out of character with the surroundings. Well-designed buildings respond to and enhance the qualities and identity of the area with appropriate massing and spaces between buildings...*
- *The proposal has been designed as two pavilions that step down the slope with appropriate massing that is in character with the streetscape. The rear Wickham Lane built form of a single storey structure cantilevered above the natural ground level is acceptable given the site constraints of a sloping site and existing trees to be retained...*
- *The Panel commends the careful siting of the buildings to ensure the retention of trees. The Panel encourages the applicant to continue this diligent approach with particular attention being given to the extent of excavation, minimisation of disturbance to roots, consideration of ground water and foundations and footings as the design progresses.*

The DSAP concluded as follows:

- *The Panel supports approval of the application and commends the sensitivity of the design and commitment to the retention of trees on and near the site.*

Finally, the amended proposal has had adequate regard to the provisions of Clauses 33-39 of SEPP Seniors as detailed in the original SEE prepared by Planning Ingenuity. There are no contentions raised with regard to neighbouring amenity, privacy, solar access and crime prevention, while the only issues raised in terms of stormwater, accessibility and waste management are detailed in the amended documentation provided with this Addendum SEE.

3.2 CONTENTION 2 – ACCESSIBILITY / INTERNAL DRIVEWAY ACCESS

The subject property does not provide sufficient information to show the ability for occupants to sufficiently access infrastructure and transport links. The design for driveway access is unacceptable due to conflict between pedestrian movements and vehicular movements.

Particulars

- A consent authority cannot consent to a development application for seniors living development unless it is satisfied, by written evidence, that residents will have access to facilities such as shops, banks, post office, community services, recreation facilities and a general medical practitioner: cl.26(1) of SEPP 2004. Compliant access is one that provides a suitable access pathway of not more than 400m to the facilities themselves or to a public transport service: cl.26(2) of SEPP 2004.*
- The proposal has not provided sufficient information to show compliance with the requirement of cl.26(2) of SEPP 2004.*
- Clause 26 and Clause 38(a) of SEPP 2004 requires that the proposed development should have obvious and safe pedestrian links from the site to public transport services or local facilities.*
- The footpath connection to the bus stop located along Old Barrenjoey Road, is not fully accessible. Upgrades to the footpath is required to comply with the SEPP accessibility and gradient requirements. The access route to the transport facilities should be along the northern side of Sanders Lane and not the southern side as indicated in the survey. This connection provides safer access for pedestrians exiting the development by crossing Wickham Lane (less traffic flow and vehicle turning movements) instead of Sanders Lane. This will also prevent any works on the southern side of Sanders Lane where there is high pedestrian use of the footpath and minimises impacts to the School frontage during the construction period.*
- A 1.5m footpath is required along the frontage of Bellevue Avenue. The footpath should extend 10m north of the Sanders Lane property boundary, with the provision of new kerb ramps on both sides of Bellevue Avenue for pedestrians to cross the road. Additional works would be required on the western side of Bellevue Avenue including retaining structures and footpath widening to enable the incorporation of the new kerb ramp on this*

side of the road. A new kerb ramp is also required at the corner of Bellevue Avenue and Sanders Lane for pedestrian access across the laneway. Insufficient information has been provided to show this can be achieved.

- f. A 1.5m footpath is required for the full frontage along Wickham Lane. Kerb ramps are required on both sides of Wickham Lane at the intersection with Sanders Lane for pedestrian access across the laneway. Insufficient information has been provided to show this can be achieved.
- g. The proposed pedestrian access through the basement garage to the footpath is unacceptable due to pedestrian and vehicular conflict. The lack of a separate pedestrian access from Apartments 1 and 2 would further result in conflicts between pedestrians and vehicles. As such the proposal does not meet the requirements of Clause B6.2 of the Pittwater DCP.
- h. The proposed car stackers do not provide a convenient or appropriate type of parking for this type of development.

PLANNING COMMENT

Contention 2 requires the applicant to provide sufficient evidence to demonstrate that compliance with the provisions of Clause 26 is achieved. As discussed in Part 2.2 of the Addendum SEE (above) the provision of both Clause 26(2)(a) and (b) are enlivened by the proposed development and will be verified by Survey information detailing distances and gradients to the services required in Clause 26(1) of SEPP Seniors.

Whilst it is appreciated that the burden of proof for Clause 26 rests with the applicant, the development application assessment report to NBLPP stated the following in relation to Clause 26:

The proposal provides appropriate access to the provisions through bus access which complies with the requirements under Clause 26(2), being bus stops along Old Barrenjoey Road. The site also has access to Avalon Beach village Centre which is within 400m.

Therefore Council had previously reached a level of satisfaction that the proposed development complied with the requirements of Clause 26. To remove any doubt, raw survey data is provided with this Addendum SEE which indicates the subject site is within the following distances of services and facilities under Clause 26:

- Avalon Post Office – 395m
- General Medical Practitioner – 382.9m
- Woolworth and associated shops – 367m
- Park on the eastern side of Old Barrenjoey Road – 160m
- Bus Stop of Old Barrenjoey Road – 108m

In regard to Contention 2, the following points are noted:

- The original Civil Plans demonstrate the accessible pathway is on the northern side of Sanders Lane (not on the southern side as alleged in the SOFAC) and re-grading of the footpath is required as detailed on the amended plans;
- The survey plans and civil plans both demonstrate that the footpath on the northern side of Sanders Lane is a minimum of 1.53m wide;
- A number of public domain works are required in the Contentions that extend beyond the boundaries of the subject site on Bellevue Avenue and Wickham Lane and provide pathways which are not relied upon to provide access to the bus stop of Avalon Beach Town Centre in accordance with Clause 26 of SEPP Seniors. The applicant does not need to rely on these footpaths to access facilities or services.

- The pedestrians and vehicles in the parking spaces off Wickham Lane will be adequately separated and the risk of potential conflict is minimal given only two cars utilise the car parking area; and
- The car stackers have been deleted from the amended application.

The responses to Contention 2 are detailed in the following reports:

- Site and Street Survey prepared by Bee & Lethbridge Pty Ltd;
- Access Report prepared by ABE Consulting;
- Civil Plans prepared by M+G Consulting; and
- Clause 26 Compliance Report prepared by SHED Architects.

3.3 CONTENTION 3 – NATURAL ENVIRONMENT AND LANDSCAPE

The proposed development involves substantial tree removal and lack of integration of landscape features.

Particulars

- The proposed development seeks removal of 14 trees.*
- The built form is not softened by landscaping and the proposal does not comply with cl.32 and cl.33 of SEPP 2004.*
- The proposal is inconsistent with cl. 33(e) of the SEPP 2004 as the limited deep soil area would only permit the establishment of small and possibly medium sized trees and not the large tall-trunk canopy trees that exist upon the site and in the locality, including large Turpentine, Stringy Barks, and Spotted Gums, which require substantial surface areas.*
- The proposed development does not provide an adequate front setback area (to Wickham Lane) which would permit the planting of appropriate vegetation which could offer visual screening. The proposed development is inconsistent with cl. 33 of SEPP 2004.*
- The front setback planting opportunities within deep soil are limited to one tree in the south west area. The front setback does not provide suitable area or deep soil to meet the requirements of Clause 33 of the SEPP 2004, C1.1 Landscaping of the DCP 21, and C1.21 Seniors Housing of the DCP 21.*
- Excavation works and the proximity of existing trees to proposed building and structures will place ongoing issues with the arboricultural preservation of existing trees in the long term, as opposed to arboricultural construction methods near the existing trees, as follows:*
- T21 (Sydney Red Gum): the updated arboricultural impact assessment provides construction recommendations including the use of permeable pavers for the proposed new driveway which is contrary to Council's engineering standards requiring concrete driveways, and hence the advantages of permeable paving to providing moisture and aeration to the existing root system is not available, thus restricting the available area for future root growth deemed necessary where the area lost to an encroachment should be compensated elsewhere and contiguous with the tree protection zone. The amount of built elements around T21 including driveway and pavement, and building reduces the natural ground area available for future growth,*
- T23 (Sydney Red Gum), T25 (Cheese Tree), and T26 (Sydney Red Gum): the existing tree trunks are suitably located approximately 3 metres and more away from buildings to be able to construct the development works, but are located against the proposed walkway, and in close proximity to the lift and pool, such that the long term preservation of these trees is at risk from resident safety concerns and requests for removal based on proximity to building, structures and the loss of solar access to the building internal areas and the pool.*

- i. T33 (Sydney Red Gum): the existing tree trunk is located approximately 1 metre from the lower parking level and the building line / terrace/ lounge of Apartment 3 at the lower ground level, and whilst the updated arboricultural impact assessment determines construction in close proximity is feasible, the long term preservation of this tree is at risk from resident safety concerns and requests for removal based on proximity to building and the loss of solar access to the building internal areas.

PLANNING COMMENT

As discussed in Part 2.3 (above), Tree Application TA2021/0378 was approved on 4 June 2021 which permitted the removal of six (6) trees on the site being Trees 16, 22, 31, 32, 36 and 38. Part 2 of that approval required the planning of six (6) replacement trees characteristic of the Pittwater Spotted Gum Forest are to be planted in suitable locations on the site. These additional six (6) replacement trees are detailed on the amended Landscape Plan.

The approval of Tree Application TA2021/0378 results in the required number of trees being removed being reduced to three (3); being Trees 30, 34 and 35. The remaining trees (30) on and around the subject site will be retained, relocated on the site (Trees 18 and 19) or are exempt species and will be removed (Trees 17, 20, 40 and 41).

The amended Landscape Plan indicates that six (6) replacement trees required by TA2021/0378 will be provided in the Landscape Plan with a height greater than 6m. The amended Landscape Plans also detail that for the 3 trees to be removed (Trees 30, 34 and 35) and the 4 exempt trees to be removed (Trees 17, 20, 40 and 41), and additional 25 trees (excluding the replacement trees under TA2021/0378) with heights varying between 3-25m are provided to offset the loss of canopy trees and enhance the landscaped character of the site.

In summary, the amended proposal will:

- remove and replace six trees on the site under TA2021/0378;
- retain 30 trees in and around the site;
- remove 7 trees from the site; and
- provide 25 additional trees with heights varying between 3-25m on the site.

The amended proposal therefore results in a net increase of 18 trees ranging in height between 3-25m which is supplemented by various shrubs, hedges and low ground covers on the site. The proposed planting detailed on the amended Landscape Plan embody planting that is in sympathy with other planting in the streetscape in accordance with Clause 33.

Contention 3(d) details that the proposed development does not provide adequate front setback areas to Wickham Lane which would permit the planting of screening which could offer visual screening which is inconsistent with Clause 33 of the SEPP Seniors. Clause 33 of SEPP Seniors does not require visual screening but notwithstanding this, the front setback area to Wickham Lane will retain Tree 33 and provide numerous other plantings as detailed in the amended Landscape Plan including NSW Christmas Bush trees and Cascade Lilly Pilly trees which grow to a height of 3m or more to provide screening. The removal of the existing high brick fence to be replaced with a high quality and open landscaped area is considered to be a superior outcome and will enhance the landscaped character of the locality.

Contention 3(e) states that front setback planting opportunities in the southwest area are limited to one tree and the Bellevue Avenue frontage does not provide suitable deep soil landscaped areas in accordance with the planning controls. As discussed above, the amended proposal significantly exceeds both the deep soil and landscaped area requirements under Clause 50 of SEPP Seniors. In any event, the amended Landscape Plan details a Black She Oak and Scentless Rosewood tree will be located in the Bellevue Avenue front setback area which is supplemented by numerous other trees, shrubs and ground covers above the proposed garage in the deep soil landscaped area or within the street verge. The proposed landscaping will enhance the landscaped character of the locality and satisfy the requirements of Clause 33 of SEPP Seniors.

Contentions 3 (f)-(i) details issues with excavation and Trees 21, 23, 25, 26 and 33. Consideration of these issues are provided in the amended Arborist Report and amended Landscape Plan. However, the following points are noted:

- As discussed in Part 2 of this Addendum SEE (above), the extent of excavation around Tree 21 is reduced and “Stoneset” permeable paving is provided for the internal driveway. The “Stoneset” permeable paving will allow for water penetration and aeration of any tree roots below the surface and the Technical Data is provided in Annexure 1.
- The proposed “Stoneset” permeable paved internal driveway is a superior result to the Council required concrete driveway (refer to Part 2.5 of this Addendum SEE above) and also a superior result to the existing concrete and brick driveway which does not provide for permeable paving;
- The amended proposal has redesigned the pedestrian walkway and flipped the swimming pool to the northern side to increase setbacks and reduce incursion into the TPZ of Trees 21, 25 and 26. The proposed walkway will also include “Stoneset” permeable paving to maximise water penetration and aeration for Trees 23-29
- The excavation for the Lower Ground Parking area is now setback approximately 2.5m from the base of Tree 33 with intervening soil levels retained. Tree 33 will be retained and maintained as detailed in the amended Arborist Report and Landscape Plan;
- Council contends that the long term preservation of the existing trees is of concern. Any future application to remove trees should be determined on its own merits. Para 79-80 of *Lawrence v Sutherland Shire Council [2020] NSWLEC 1656* noted a similar situation arose with regard to long term preservation of a tree. Bish C found as follows:

79. *I do not agree with Ms Plummer that the location of the proposed exertion of the dwelling necessitates in the future, the removal of T7, pursuant to cl 4.10 of Chapter 39 of the SSDCP. I accept that this clause provides for the removal of trees located within 3 m of a building structure, however I also note that this clause states that removal of a tree is required to be assessed by Council upon application. I consider that tree removal could be granted for any number of reasons, irrespective of the location of the dwelling to this tree, including because of the dropping of large branches from a significant height potentially causing harm to persons in the rear yard. I accept that the applicant has designed the dwelling extension in an effort to retain this tree.*

80 *Therefore, I find that T7 is adequately protected by the proposed development, including in the amended plans and proposed conditions of consent.*

The applicant seeks to retain the existing trees detailed on the amended Architectural and Landscape Plans and also seeks to minimise the impacts which is supported by the amended Arborist Report. To provide the respondent with sufficient comfort, the applicant is prepared to accept a condition of consent that requires a positive covenant on title to retain the trees in addition to the standard tree retention conditions of consent.

3.4 CONTENTION 4 – SETBACKS

The proposed development does not provide appropriate front or side setbacks. This leads to inconsistency with the character of the area and unreasonable privacy impacts.

Particulars

- a. Clause D1.8 requires built structures to be setback 6.5 metres from the front boundary. The setback to Sanders Lane is non-compliant with the elevated walkways and parking area for apartments 1 and 2 within the required setback zone.*
- b. The proposed front setbacks Wickham lane is insufficient due to the lack of Landscaping required in accordance with Clause C1.1 Landscaping.*

PLANNING COMMENT

Whilst not specifically mentioned in the contentions, the amended proposal introduces a tandem car parking area with a nil setback to the Bellevue Avenue frontage. This is considered in Part 2.1 of the Addendum SEE (above).

The site has three frontages, the primary frontage to which the front setback of 6.5m is applicable is the Bellevue Avenue frontage. Part D1.8 of the PDCP contemplates variations to the front setbacks for secondary frontages and states as follows:

Where the outcomes of this control are achieved, Council may accept a minimum building setback to a secondary street of half the front building line.

Therefore, the front setback requirement for Sanders Lane and Wickham Street (secondary and tertiary frontages) is 3.25m as detailed in the development application assessment report to the Northern Beaches Local Planning Panel.

In relation to Sanders Lane, the original proposal comprised of encroachments into the 3.25m setback from Sanders Lane for the stacker (2m) and the elevated walkway (0.8m). The amended proposal will retain the existing encroachment for the tandem car parking area (2m) but redesign and increase the setback of the walkway to a minimum of 2.5m from the Sanders Lane boundary.

Variations to Part D1.8 of PDCP are considered where the outcomes of the control are achieved. The outcomes of D1.8 are as follows:

- *To achieve the desired future character of the Locality.*
- *The amenity of residential development adjoining a main road is maintained.*
- *Vegetation is retained and enhanced to visually reduce the built form.*
- *Vehicle manoeuvring in a forward direction is facilitated.*
- *To encourage attractive street frontages and improve pedestrian amenity.*
- *To ensure new development responds to, reinforces and sensitively relates to the spatial characteristics of the existing urban environment.*

In this instance, the amended proposal satisfies the outcomes of the front building line control for the following reasons:

- The variations to the tandem parking area (2m setback) will be predominantly below ground, behind landscaping and will not be readily discernible from Sanders Lane;
- The variations for the walkway will similarly be predominantly below or at ground level, behind landscaping and will not be readily discernible from Sanders Lane. Furthermore, the lowering and increased setback (2.5m minimum for the walkway) in the amended proposal represents a significant visual improvement over the original elevated walkway that was setback a minimum of 0.8m from the Sanders Lane boundary;
- The subject site is located on a corner block and is surrounded by E4, SP2 and B2 zoned land with a variety of setbacks and built forms. That is, there is no consistency to the front setbacks on Sanders Lane and in any event, the built form is setback at least 3.5m from the Sanders Lane boundary and only ancillary elements of car parking and walkways encroach within the front setback requirement;
- The variation of the car parking will allow vehicles to enter and exit in a forward direction in the proximate location of the existing driveway; and
- The location of the car parking and walkway will not have an adverse impact on the existing trees and allow for their long term retention to enhance the landscaped character of the locality.

In relation to Wickham Lane, the amended proposal will retain the original setback of 3.25m for the rear module. This complies with the requirements of Part D1.8 of PDCP. Contention 4(b) considers the setback to be insufficient due to



the lack of landscaping in accordance with C1.1 Landscaping. The amended proposal will provide a 2.5m setback to the base of Tree 33 to ensure its retention and longevity whilst providing new landscaping in the form of NSW Christmas Bush trees which grow to 3-5m and a number of Cascade Lilly Pilly trees (3m) which will be supplemented by lower shrubs and ground coverings. The proposed setback to Wickham Lane is entirely appropriate, complies with the requirements of D1.8 of PDCP and will provide landscaping to enhance and soften the visual appearance of the building.

The amended proposal is considered a superior solution to the original walkway and mechanical stacked parking arrangement. The amended proposal is considered to provide a reasonable alternative solution to compliance with the planning controls in accordance with Part 4.15(3A) of the EPA Act and given the amended proposal satisfies the above-mentioned outcomes is considered entirely appropriate in this instance.

3.5 CONTENTION 5 – WASTE

The proposal does not provide appropriate amenity to occupants of the development and adjoining properties

Particulars

- a. *The bin storage area within the lower level basement, is located a significant distance from apartments 1 and 2 and would result in poor amenity for these apartments. Such an arrangement is not acceptable for this type of development.*
- b. *The proposed collection point on the southern side of Sanders Lane is not acceptable as residents would be required to cross the public road to place bins.*
- c. *The waste storage area does not comply with Council's waste management guidelines or cl. 1.12 of DCP 21. The area is not within 6.5 metres walking distance from the property boundary with the street.*

PLANNING COMMENT

The amended plans detail that occupants of Apartments 1 and 2 will need to walk approximately 37m to the bins in the Lower Ground Level parking area fronting Wickham Lane to dispose of rubbish. The garbage storage area is in an accessible location and there are no planning controls or contentions that state this distance is non-compliant. In any event, Clause 26 contemplates services and facilities within 400m of the site is an accessible location and therefore it must follow that the provision of a waste room approximately 37m from the entrance to apartments 1 and 2 is also an accessible location.

The amended plans and documents detail the waste will be collected from Wickham Lane which is setback approximately 3.5m from the Wickham Lane boundary in accordance with the PDCP.

3.6 CONTENTION 6 – STORMWATER

The design for Stormwater including On-Site Stormwater Detention is unacceptable.

Particulars

- a. *The location of the On-Site Detention tank under habitable area is unacceptable.*

PLANNING COMMENT

The amended Civil Plans detail the relation of the OSD tank below the terrace for Apartment 2 which is not a habitable area. Refer to the amended Civil Plans prepared by M+G Consulting.



3.7 CONTENTION 7 – LACK OF INFORMATION

Contention 2 partly relates to a lack of information being provided to show compliant access to services as required by Clause 26 of the SEPP.

The plans are not consistent.

Particulars

- a. The photomontages are inconsistent with the architectural and landscape plans.*
- b. The architectural plans are not consistent with the landscape plans.*
- c. The ongoing waste management plan is not consistent with the ground floor plan.*


The plans do not comply with Schedule A of the Court's Practice Note for Development Appeals:

Particulars

- a. The survey plan does not show topography and spot levels of the adjoining properties, and does not show the spread of significant vegetation*
- b. The site plan does not show the outline of existing buildings*
- c. The floor plans do not show room names, areas and dimensions, the level of terraces and spot levels of natural ground to AHD.*
- d. Elevations do not show the outline of existing buildings, materials and finishes, the location of adjoining buildings, window height and location or the height of all eaves rides and floor levels to AHD.*
- e. An inappropriate number of sections is provided. The plans does not show room names.*
- f. Landscape plans do not show location of trees proposed to be removed*

PLANNING COMMENT

The amended plans and documentation detailed in Table 1 correct and inconsistencies on the plans and documentation and also provide additional information as required above.



Mr David Waghorn

Consultant Planner



ANNEXURE 1

Technical Data for “Stoneset” permeable paving



Technical Data Sheet

The process StoneSet is a thermosetting aliphatic polyurethane system, the curing reaction is mildly exothermic and is ideally catalysed using selected tin compounds.

StoneSet can be designed for a wide range of applications from tree surrounds, pathways, light vehicular areas and heavier trafficked access roads.

The exact recipe is varied to suit each project and the conditions pertaining to each site so that flexibility can be adjusted depending on construction, traffic and weather conditions. The exact proportion of resin also varies from job to job to account for expected wear and the grading (particle size distribution) absorbency and particle shape of the selected aggregate.

Resin bound surface course consisting of aggregate particles, fully coated with a chemically curing polyurethane binder that must be:

- UV stable
- Flexible
- Crystal Clear
- High tensile strength

The aggregates used must be:

- Clean <2.0% smaller than 75micron
- Hard, wet strength .100kn
- Durable Water Absorption <3.0%
- Los Angeles Abrasion <20%
- Na2 SO4 Soundness
- Consistent, quality controlled process to monitor grading and shape. Attractive, colour and particle shapes selected and blended to specific design.

Mixing

The aggregate and resin must be thoroughly combined in a forced-action mixer immediately before spreading so that each aggregate particle is fully coated with resin before laying. The resin must also include a suitable adhesion agent to ensure complete adhesion with the aggregate and the setting time must be controlled by the use of a catalyst so that the timing of the cure ensures a) sufficient trawling time, b) adequate time to allow the application of glass/sand dusting to ensure early life grip.

StoneSet recipes are all laboratory determined to establish the correct:

- Density, crucial to establish spread rates, porosity values and resin ratios. Texture, to satisfy visual and grip characteristics by blending suitable sizes using ANZ asphalt specifications guidelines.
- Appearance, the correct colour and texture to suit specific project design criteria. Durability, calculate the resin percentage for each project taking into account the traffic type, application and aggregate type.
- Curing time, controlled using a catalyst, meaning we can lay in varying temperatures without concern.

StoneSet Characteristics:

- Compressive Strength 7.7-8.6N/mm²
- Thermal Conductivity 0.75-5.0 W/m.k
- Flexural Strength 1.4-1.8 N/mm²
- Secant Modulus of elasticity 0.2-0.4GN/mm/mm²
- Tensile Adhesion 0.2-1.5N/mm²
- Permeability 54-103 L/m² /sec Tensile Stiffness (NAT) 800-3500 Mpa

Properties in relation to fire The reactively low fire risk properties of StoneSet paving are principally derived from two factors. The very high proportion of inert aggregate and fillers normally used (around 95% by weight) which serves to suppress ignition and development of fire. The high ignition point of the resin film due to the particular grades of resin used and the absence of any solvents.

Flexibility

Flexibility testing of several typical StoneSet blends has been carried out to the standard test method specified in BS 6319-3 1990 "Testing of resin and polymer/cement compositions for use in construction".

The test method entails a four point bending beam test of a 25mm by 25mm cross sectional bar of StoneSet between 300mm centres. The flexural strength is first determined by loading the beam until it breaks and then duplicate specimens are repeatedly loaded to much lower levels and the deflections measured. The average ratio of the applied load against deflection is then calculated as the "mean secant modulus of elasticity in flexure", which gives a comparative indication of the flexibility, i.e ease of bending, the StoneSet surfacing.

The values determined were: Mean secant modulus of elasticity 0.2-0.2 GN/m² Mean flexural strength 1.4-1.8 N/mm² For comparison please find below typical values for other common building materials. Mean secant of modulus of elasticity in flexure GN/m² Rubber 0.007-0.004 Polypropylene 1.5-2.0 Stone 20-150 Concrete 20-40 Steel 210

Permeability

StoneSet mixes are permeable and this can be varied to suit the requirements of the specific application, for example to maximise permeability in the case of tree surrounds. Another application might require extensive turning traffic to be tolerated in which case a carefully selected blend of different sizes of aggregate will be preferred. In this instance the ratio of resin will be adjusted using StoneSet's long established Optimum Resin Content system to allow for variations in surface area of the aggregate particles.

A 10mm aggregate size can achieve flow rates of 78litres/m²/second, this in turn can be reduced down to just 16litres/m²/second when using a 3mm aggregate size.

Slip Resistance

StoneSet provides a smooth yet slip resistant surface. The exact results for slip testing vary between mixes however 90% of our range will show a very low risk of slipping in the wet. For product specific testing please place a request with the sales team. To ensure instant on slip resistance we specify a light application of a sand is sprinkled over the surface.

History

The StoneSet system was developed during the mid-nineties in England by SureSet UK Ltd, the first areas being laid in London in 1997. Since then over 1 million square metres have been laid including areas in Russia, Spain, Greece, USA, Scandinavia, Holland, UAE and more. SureSet launched in Australia in 2008 and rebranded as StoneSet.

Over the years there have been numerous imitations where the SureSet/StoneSet technology has been mimicked. Some of the variants have proved to be quite successful whereas some have failed badly. There are many types of resin available (including aromatics) and these have varying degrees of success. It is easy to use cheaper resins but it will never give the value for money enjoyed by using the ingredients designed to give the best performance.

StoneSet has what we believe to be a unique system to enhance the resistance to damage by UV light and this is applied to all of our mixes except when laid as base, for which it would be clearly unnecessary. This together with our design procedure to arrive at a job by job formulation makes StoneSet the obvious choice. It is our belief that none of the alternative systems have an equivalent or are aware that StoneSet has this advantage.