REPORT ON ISSUES RELATED TO CONCORD OVAL BY THE PROPOSED LFD ACCOMMODATION DEVELOPMENT ON THE CORNER OF LOFTUS AND GIPPS STREET, CONCORD.

PREPARED BY

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FOR

L.F.D. DEVELOPMENTS

Dated
20 October 2025

EXECUTIVE SUMMARY

- The evidence indicates that the reduction in solar energy resulting from the LFD development is minimal and is not expected to have any meaningful impact on field performance, other than a minor localised effect in the north-east corner (Section A2).
- the affected hours in Section A2 occur in the least productive part of the day when energy input is declining, 24 days either side of the winter solstice.
- Resolution of the minor and localised overshadowing is best addressed via management techniques rather than the blunt approach of denying development.
- There exists and an opportunity to significantly improve the playing surface of Concord Oval, irrespective of the effects of the LFD development, if measures outlined are implemented.
- Changes to current management techniques is the most appropriate method to deal with the effect of overshadowing caused by both the LFD development and the oval's own buildings.
- Should the recommended measures be implemented, the effect of the minor overshadowing in a localised (section A2) area can easily be alleviated.

Table of Contents

The Brief

LFD has commissioned Turfgrass Scientific Services Pty Ltd to provide a report on the possible negative effects of shade from the LFD proposed development on the corner of Gipps Street and Loftus Street, Concord will have on the playing surface of Concord Oval.

Setting the Scene

I visited the Oval on 28 August 2025 and conferred with the staff, Mr Peter Sheehan and Mr Cameron Speechley as to the current maintenance practices on the Oval. I would especially like to thank Mr Sheehan for making the time during sick leave to attend this meeting.
This meeting discussed:

- The construction of the field
- Its drainage rate
- Its surface quality
- The oversowing programme of Perennial Rye grass into the Santa ana couch base
- The irrigation system
- The general maintenance programme

An inspection of the Oval surface was conducted after the meeting.

This study takes cognisance of the City of Canada Bay Council (CCBC) concerns about the possible adverse effects of the extra shade on the viability, resilience, playability and carrying capacity of Concord Oval.

Concord Oval already has significant shade problems at the northern end and the Grandstand edge. The northern end is morning shade and is total. The Grandstand edge comes into play at roughly 1pm in midwinter.

Concord Oval is an ‘open venue’. While nominally ‘open’ it is defacto a closed venue. It is unlit.

The logical conclusion from the above is that the current state of Concord Oval must be the starting and reference point for this report.

The base grass of the Oval, Santa ana couch, has very little to do with any repair of the Oval surface after winter sport. It provides some help in wear capacity but **essentially the grass surface is a sole cool season Perennial Rye grass field for the purposes of this report.**

The Santa ana component is irrelevant to the discussion of energy needs at this time of the year.

The surface of the Oval as it exists now, 2025 has an adequate cover of Perennial Rye grass across the whole surface, which is **'FIT FOR PURPOSE'** for use for Rugby Union games and for training for Rugby League.

This is despite various areas of the ground receiving different inputs of solar energy at different times of the day.

DEFINITIONS

Shade is a flexible concept which has no definitive meaning unless it is put in definitive context. It is a nebulous concept which really means the exclusion of Solar Energy. Approaching the problem from an energy perspective allows for definitive quantitative data to be collected. In the context of shadows from buildings this means zero energy reaching the affected areas.

Radiant Solar Energy

The energy spectrum that is relevant to this study includes:

- infra-red, far red, which influence soil heating and the visible light spectrum which influences Photosynthesis.
- The Ultra Violet spectrum which is active in Photosynthesis and disease prevention.

For this report the two most important effects are on the soil heating and photosynthesis.

Peak Energy

This is the maximum total energy level reached on any given day.

This will vary with the relevant time of the year. It will vary for both of the major drivers from the delivery of total spectrum. In this study it is expressed as

- The peak energy level per day for the relevant time of the year.

AIMS

1. To define the current performance of the surface under the current council management plan.
2. To define clearly the time period when major environmental changes will take place as a result of the shadows cast by the proposed LFD development, using shadow diagrams provided by the architectural firm Rothelowman.
3. Define clearly the changes in Energy fluxes on the grass surface of the Oval.
4. Draw conclusions from the data of the study which will give a factual picture of the environmental changes.
5. Look at any remedial actions that can alter the environmental changes for the benefit of a better playing surface.

METHODOLOGY

The most useful scientific approach to a study of this kind is to look at it through the lens of Energy, i.e. the energy component of the solar radiation which brings us visible light. Using this approach, which I adopt in this report, establishes a defined starting point from which to carry out data collection and from which to draw conclusions.

This study used computer generated shade graphics produced by Rothelowman architects at my request.

The most relevant diagrams are attached as Appendices to this document.

The diagrams covered the following

1) The mid-winter solstice.
2) The window of 49 days with the winter solstice being in the centre of that period to ascertain the degree and timing of the impingement of shade onto the Oval, at various times of the day.
3) A second window of 214 days which was much wider, identifying when shade from LFD's proposal first impinges on the Oval but at different times and different solar energy inputs.
4) An all-year study including the summer period which would effect the performance of the Santa ana couch grass.

- The methodology established a factual numerical base to study the ENERGY component of the spectrum for this time of the year – i.e. midwinter.
- Using this approach a scientifically verifiable conclusion can be reached
- The Oval was divided into 12 compartments and the hours of energy available estimated for 1 hour periods. A numerical value of 1 was given for 1 hour of peak energy at the appropriate time of the day. From this a total figure can be assigned to any given part of the ground for that day.
- Each zone was assessed on this basis from sunrise to full shade at 3pm on June 21.

THE RESULTS

- Starting with the winter solstice as the worst possible scenario, the time window (see Appendix 6) for the start of the impingement of shade showed a 49 day (7 Week) window beginning on June 19 and ending on July 7 (see Appendix 4).
- A second wider window of 214 days of overshadowing was identified starting on 18 March going through to 18 October. The start of the impingement of shade on the Oval begins at 2pm (see Appendix 5 and 6). The shadows will not fully cover the Oval surface in March. This will incrementally come back to the impingement time of 1pm starting on 19 May with full total shade covering the whole playing surface of the Oval.
- As expected the hours of energy were variable over the site.
- The allocation of numerical hours allowed an assessment of whether the hours were sufficient to support healthy perennial Rye grass in mid-winter.
- This assessment was made using as a guide the published literature from worldwide studies which accepts 6-7 hours of peak energy in mid-winter as providing adequate energy for regenerative growth. A minimum of 4.5-5 hours is required for healthy grass but is not sufficient for regenerative growth.
- **In midwinter the energy value of visible light begins to decline at 1.45pm and by 2.30pm there is minimal useful fuel energy for photosynthesis available to the plant.**
- Overarching this is the understanding that the energy values in the early morning and later afternoon cannot be ascribed a nominal quantum of 1. In this study values of hours between 7am to 9am were rated as 0.33 and 0.66 respectively for some of the worst affected areas. <u>These values derive from early morning shadow which is independent of the LFD component</u>. Both must be taken into account for a meaningful total for the day.

CONCORD OVAL

All numbers are expressed as hours of peak energy equivalent for the time of year – Mid Winter.

Table 1. STUDY LAYOUT

C 1	A1	A2	Sections C1,2,3,4 are a special case where shade content does not change between scenarios.
C 2	B1	B2	Based on the international understanding that 6 – 7hrs is adequate for replacement growth and 4.5 – 5hrs is adequate for holding growth
C 3	D1	D2	status.
C 4	D3	D4	The results are assigned a status value of adequate or inadequate.

Table 2. CURRENT STATUS

Zone	Hrs	Status	
A1	5.0	Adequate	The current status for Concord Oval is 'fit for purpose' comparing
A2	4.23	Inadequate	this with the acceptable international guide lines for Perennial
B1	6.25	Adequate	Rye grass turf we see that A2 sector is described as inadequate.
B2	6.3	Adequate	Given the current condition of that sector, then its rating maybe,
D1	6.85	Adequate	should be 'just adequate'.
D2	6.3	Adequate	
D3	7.25	Adequate	
D4	7.33	Adequate	

Table 3. STATUS WITH LFD'S SHADE

Zone	Hrs	Status	
A1	4.75	Adequate	When we look at these numbers in the light of the accepted
A2	3.3	Inadequate	International standards, A2 is well off target as is B2. But when you
B1	5.1	Adequate	compare it with A2 in the Current Status, B2 is higher and like A2
B2	4.3	Inadequate	in that context, here it probably deserves the same status value as
D1	5.1	Adequate	'just adequate'. While none of the sectors reach the top level
D2	5.6	Adequate	of 7hrs the D sectors are still more than adequate.
D3	6.25	Adequate	
D4	5.83	Adequate	

Table 4. DIFFERENCES

Zone	Hrs	Impact	Comparing the differences for each sector.
A1	0.25	Low	Based on the numerical differences we have assigned an impact level which can be used as a guide for remedial action.
A2	0.89	High	
B1	1.16	Medium	Both of the A sectors come off a low base.
B2	2.0	High	The base for all other sectors is adequate.
D1	1.75	High	The biggest differences occur in the B1, B2 and the D1,2,3,4 sectors.
D2	1.19	Medium	But in all of these the difference comes after 1pm, By 2pm the solar
D3	1.00	Low/Med	energy has begun to decline.
D4	1.5	Medium	

DISCUSSION

The guiding principle for this discussion is

- Understanding and accepting that ENERGY value of the visible and near visible spectrum varies during any given day and varies with time of the year.
- Acceptance that the literature's guideline figure of 6 – 7 hours of peak energy equivalent in midwinter is adequate for regenerative growth of Perennial Rye grass at this time of year.
- Acceptance that while 4.5 - 5 hours of peak energy equivalent may be adequate to keep a Perennial Rye grass sward healthy but is inadequate for regenerative growth.

The existing condition of the playing surface needs to be the starting point.

It is described as being **'fit for purpose'**. The actual hours of sunlight for the worst-case scenario are adequate to achieve this under current management. These hours are detailed in Table 2. This is without any influence of shading from the proposed LFD construction.

It is obvious that the most vulnerable areas of the Oval are in the north and north western edges i.e. areas A1, A2, B1 and B2. This is not a new situation and is due to the heavy morning shade from the existing building on the northern boundary, which is separate from the influence of the LFD shade.

Under the existing conditions the area receiving the least energy at 4.23 hours is area A2. While this is at the lower than the 4.5 hours minimum it may be much less if the weather is cloudy. The evidence from the current condition of the Oval surface indicates it should probably carry a label of <u>just adequate</u> rather than <u>inadequate</u>.

This highlights the need for greater focus on management practices and programmes and the appreciation of the science behind them, once the LFD proposal kicks in.

When the shadows from the LFD construction are introduced, the values for A2 change, with energy hours reducing to 3.34 of total solar energy. While this reduction warrants attention, it is critical to note that the affected hours occur in the **least productive part of the day when energy input is declining.** In context, the overall impact is far less significant than the percentage figures alone might suggest.

The maximum 31.755% change can appear considerable in relative terms, but when translated into actual hours, the effect is modest and well within a manageable range. Rather than indicating a major issue, the data shows a measurable but limited influence that does not materially compromise overall performance. We have to accept that there is insufficient energy delivered after 1pm in midwinter in area A2 to allow it to fulfil its role in providing the conditions for viable growth.

There will be some decline in density because of the way lower light energy levels are responded to by the plant.

The standard first response is for the plant to increase the stem height, growing taller to seek light. This is called the gibberellin response. It can be diminished by treatment with an antigibberellin chemical such as Paclobutrazol sold as PRIMO.

This chemical is already in use in the current maintenance programme.

The ability of the field to successfully carry normal traffic is reduced by any decline in density. Currently the ground staff use very high seeding rates to produce tiller density to counter any thinning. There are other ways of achieving this.

Extra damage due to loss of density will be made worse by wet surfaces. This year 2025, has been a very wet year but the ground staff have implemented a programme to successfully keep the surface in 'fit for purpose' condition.

This discussion has so far concerned itself with the single day of peak worst case June 21, the midwinter solstice (Appendix 3). We now need to discuss the 49 day period from 19 May to 7 July when the shadows from the proposed LFD buildings will begin to impinge on the field from 1pm (see Appendix 4).

While the actual hours of decline will vary from day to day the changes will be in small increments until June 20, a period of 24 days. After June 21 the decline will start to reverse for another period of 24 days.

The importance of this period of 49 days is that it will consolidate the negative effects that the reduced energy will have on soil temperature. Because of its nature as a slow conductor of heat it takes time for soil temperature changes to consolidate.

Lowering the soil temperatures has a big negative influence in how the rate of plant growth is expressed (see appendix 7). Where the LFD shading 5 hours a measurably but not significant change.

The combination of loss of energy for photosynthesis coupled with a lowering of soil temperature, especially at this time of the year, puts extra pressure on retention of plant density. Without remedial measures to reverse this situation, there would be considerable potential for loss of both above ground and below ground density.

These losses are natural and not ascribable to disease or pest damage.

Some seasonal variation in shading from the proposed LFD construction is expected. During midwinter, the field may experience a brief period of lower energy levels by 2.30-3pm in midwinter. This occurs late in the day when overall daylight is already limited and typically outside peak use periods. As such, the effect on both player activity and spectator experience is expected to be minimal and manageable with the remedial measures proposed.

The evidence indicates that the reduction in solar energy resulting from the LFD development is minimal and is not expected to have any meaningful impact on field performance, other than a minor localised effect in the north-west corner (Section A1 and A2).

That said there are alternative options open to counter the effects of this energy loss.

POSSIBLE REMEDIAL ACTIONS

1. Supplemental Energy.
   The major effect of energy reduction will be a lowering of soil temperature which has a large influence on the midwinter resilience of turf grasses.
   Answer -
   It is normal practice in the USA and Europe to install sub surface soil heating in playing fields to counter winter snow cover.
   While this procedure is not common in Australia it is available.
   Disadvantages.
   - Costly instillation
   - Costly to run
   - demands substantial changes to management practices

2. **Gro Light installation -**
   These are in common general use especially in enclosed stadiums. The light is generated by LEDs
   The contemporary versions of these are much lighter in construction than in the past and are readily moveable. There are multiple size options.
   They now produce a much more targeted light spectrum for plant growth and do not produce the heat effect that come with older sodium lights.
   They counter the excessive vertical growth of grass caused by shade and increase more robust plant growth.
   Down sides
   - Expensive to run. This could possibly be decreased by making the roof areas of the buildings on the northern and western edges, solar panel hubs. This needs evaluation by Council
   - Requires increased manpower to position and shift them

3. The use of higher rates of Primo to control the gibberellin effects of lower light on plants. This is in current use in the maintenance programme and is well understood by the staff.

4. **The introduction of Nano bubble oxygen to the water supply**.
   This is cutting edge technology. The recent adoption of state of the art injector membranes especially ones made from titanium, make this a very cheap system

to operate. The installation costs are relatively high but options do exist with the suppliers.
This technology introduces Nano sized bubbles of oxygen which are so small that they can't be seen visually. They are stabilised by having a double layer of negative charged electrons around the bubbles which prevents them coalescing. It is capable of raising the Dissolved Oxygen (DO) in the water from a maximum natural level of 8% to as high as 40% in a matter of minutes.
The most recent data of the effects of Nano bubbles on oversown perennial Rye grass into Santa ana couch shows an increase in root volume and depth by a factor of 2 over a ten week period. An even better result is seen when you look at tiller increase. This increases by a factor of 6 over the ten week period of the trial.
This has huge implications for the seeding rate currently in use with large savings in the cost of seed. A plant with a multi tillered crown is also much less susceptible to trampling damage than ones with lower tiller numbers.
If a growth pattern like this is combined with the appropriate level of Primo a very robust sward would be produced even under low light conditions.

5. The use of replacement hybrid turf in worst affected areas.
   The so called hybrid turfs are a thin carpet of synthetic fibres which have very upright tufts of synthetic grass blades filled with a sandy growing medium and over seeded with the appropriate grass for the conditions.
   The major benefit of this turf is that it increases the amount of wear that the turf can carry and remain fit for purpose. The natural turf gets protection from the plastic fibres.
   The downside of this turf is that it gives a very hard surface which causes early leg fatigue in players during games. It is also very expensive at upwards of $\$120/m^2$ installed. A special bedding material is required under the carpet. It also changes the maintenance requirements. It can be slippery when wet.
   This option will not change the energy requirements of the Perennial Rye grass for recovery.
   My recommendation is that this option should only be considered as a last resort.

RECOMMENDATIONS

Resolution of the minor and localised overshadowing is best addressed via management techniques rather than the blunt approach of denying development.

If addressed via management techniques, the effect of overshadowing caused by the Oval's own buildings will also be addressed.

I consider options 3 and 5 as essential if the LFD proposal goes ahead.

Option 3 being Gro Light installation is relatively simple to establish and is well tested, yielding excellent results.

Option 5 the introduction of Nano bubble Oxygen into the irrigation system. It provides a new tool that is multifaceted and is a huge technology leap forward in turf grass management.

I consider it the best option available to solve all of the shade problems at Concord Oval.

For further information see Appendix 2.

I would like to thank

- LFD for assigning me this brief, it has been a challenging and demanding project.
- Mr Barney Oros for his ready cooperation.
- Rothelowman architects for the provision of the shadow diagrams and their patience with frequent changes.
- Mr Peter Sheehan of CCBC for his generous and open assistance.

Peter McMaugh A.M.,B.Sc.Agr.FAIAST

APPENDIX 1

Critique of report from Greenspace 4D to the City of Canada Bay Council Dated 31 MARCH 2025

This report has been done as a comparison of 3 separate proposals regarding the shading of the Oval that they produce. The underlying assumption seems to be that any shading at any time of day will result in an unacceptable negative impact on the playing surface of Concord Oval.

As the largest producer of shade, the LFD proposal is considered in a way that lacks verifiable data, uses repeated 'anxiety' statements in place of data, and is derived from the bad assumption of a single day focus (the mid-winter solstice). It also approaches the discussion from the shade perspective which cannot be quantified, and not the correct scientific one of total solar radiation energy input on site.

As a consequence not only is the consideration of the LFD proposal begun with a biased presumption but it is treated with a most deplorable lack of scientific rigour. Its failures can be pin pointed as:

1) To consider the energy levels of Solar Radiation at the time of day the shadows impinge on the Oval surface.
2) The single day focus with assumptions rather than data regarding the time span of impingement.
3) The lack of verification of numerical estimates of supposed data given (e.g.>50%).
4) The failure to exclude Santa ana couch grass as irrelevant to the discussion.
5) Having investigated the referenced Scientific Literature source material through the university library system, these articles do not exist.

This presentation does not meet the standards demanded from a properly accredited, professional industry consultant. It creates a deep concern about the basis of the qualifications of the plethora of so called 'consultants' in the Sports Turf industry.

It seems to have been prepared with a 'Laissez-faire' attitude of no care and no responsibility, which is expressed also in the disclaimer on page 1.

The document is deeply scientifically flawed, and I would give it 9/10 for presentation but 1/10 for content.

APPENDIX 2

Concord Oval Watering System

1. The current watering system while currently adequate is an aging facility, and is well below current best practice design and performance. Its performance has not been assessed with a standard capture cup test for a long time.
2. My understanding of the current system is that it is directly connected to the mains potable water supply, without a storage and repump system. I may be ill informed on this.
   If it is a direct connection there are backflow safety issues which would need addressing.
3. It is highly probable that with the total redevelopment of the area for high-rise accommodation that the current permit for supply could be withdrawn at short notice.
4. There is a very good opportunity to investigate the collection of surface flow for the many high-rise venues planned as an alternative to the current mains option. Storage and clean up would be necessary.
5. There are also very large areas of roof surface on the existing site buildings from which rain water could be collected.
6. There is a strong case to be made to replace the existing aging systems with a state of the art system, using an alternative to the current town potable water supply.
7. Collection of water from whatever sources would have to be stored. Based on the use of 15mm of water per day the minimum storage would have to be 150KL. A more thorough analyses of this needs to be carried out by a qualified hydrology consultant.
8. A new system would also give the opportunity to introduce the cutting edge technology of Nano bubble Oxygen enhanced water. While it is a new addition to the current arsenal of tools for sports turf maintenance it has a very strong backing of scientific evidence of over 70 years. The delivery of commercial quantities has only become viable in the last 8 years due to an Australian invention and patent.
   This technology has the potential to revolutionise agricultural food production but it has already created a whole new way of managing sports turf.
9. A new system could have a Nano bubble oxygen system attached to it. This works best when the water is treated in the storage tank before delivery. The benefits of this would be:
   - Faster germination and very high germination percentages
   - Increased root rate development of new seed
   - Much higher tiller development per plant
   - This can lead to much reduced rates for over seeding
   - Much better growth at lower fertiliser rate

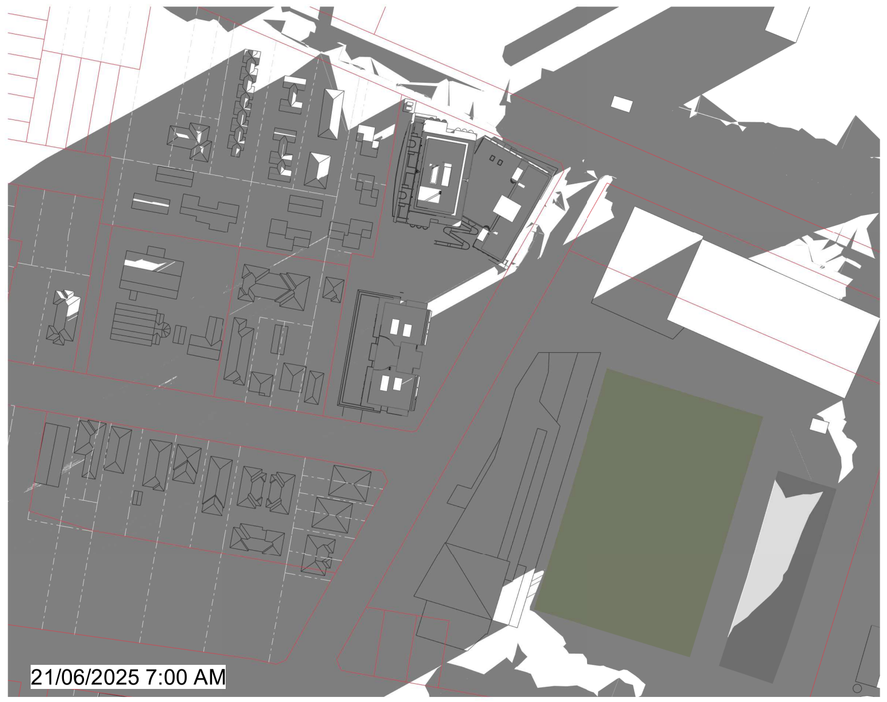
- A big decrease in the use of wetters to assist infiltration. NBT water has a lower surface tension than untreated water and enters the soil immediately on impact. There is no water pooling on the surface.
- A big decrease in disease control especially of the water borne diseases e.g. Pythium and Phytophthora.

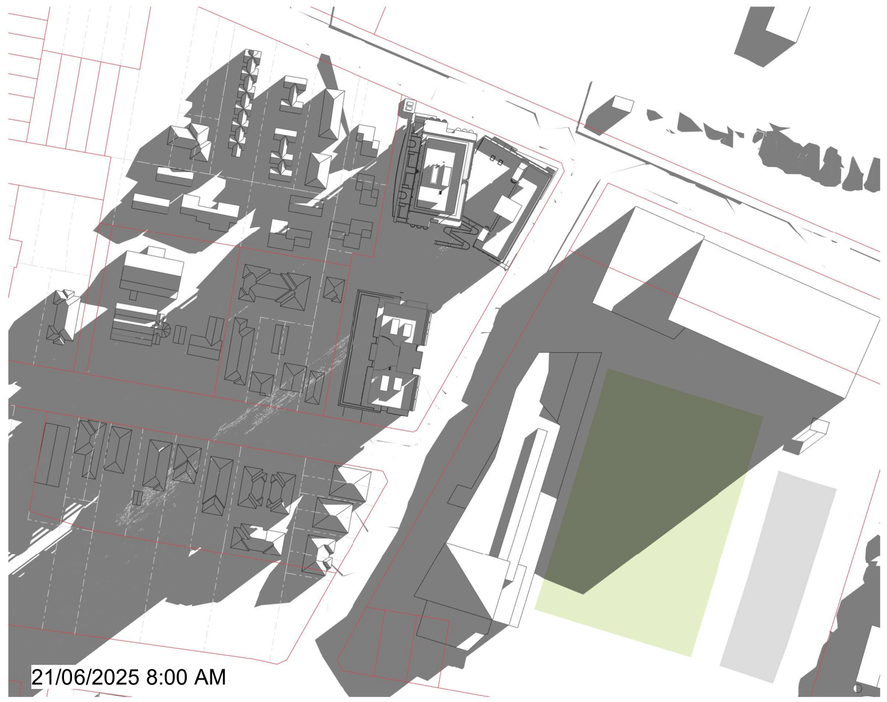
10. -A more expansive understanding of this should be undertaken by Council.

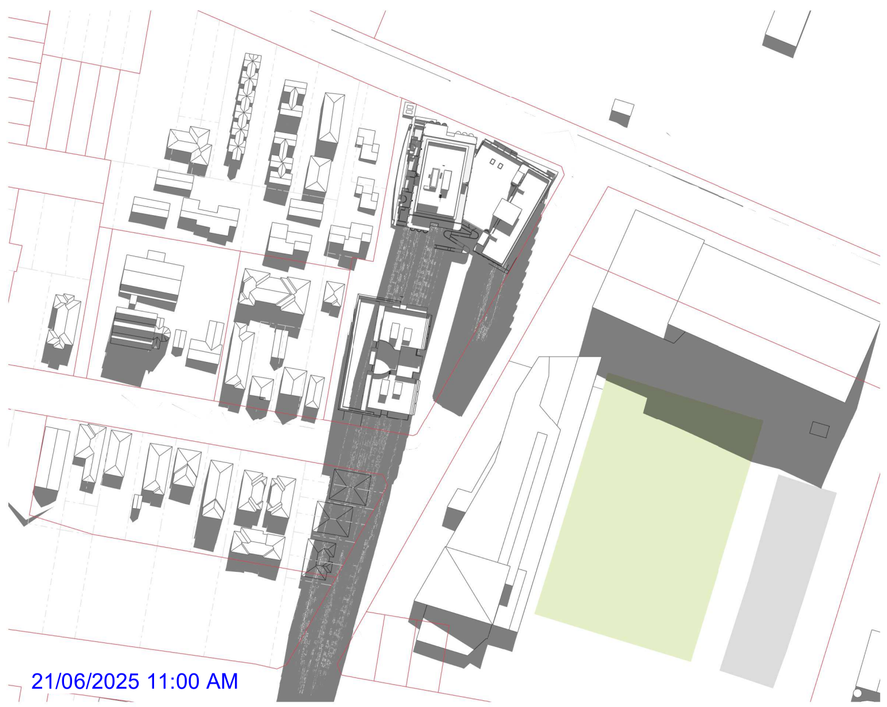
APPENDIX 3

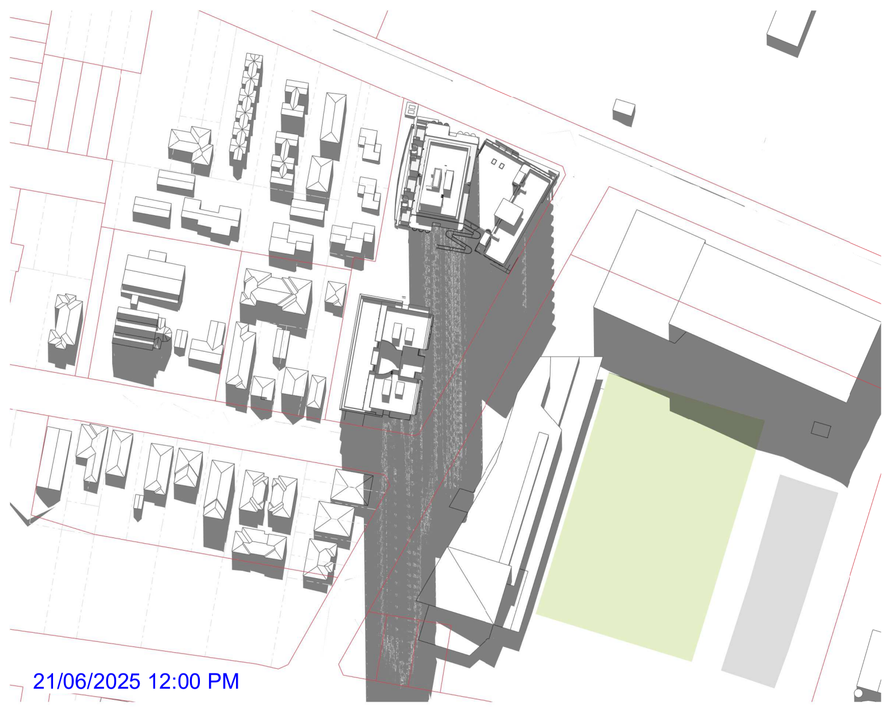
Shadow diagrams Winter Solstice June 21

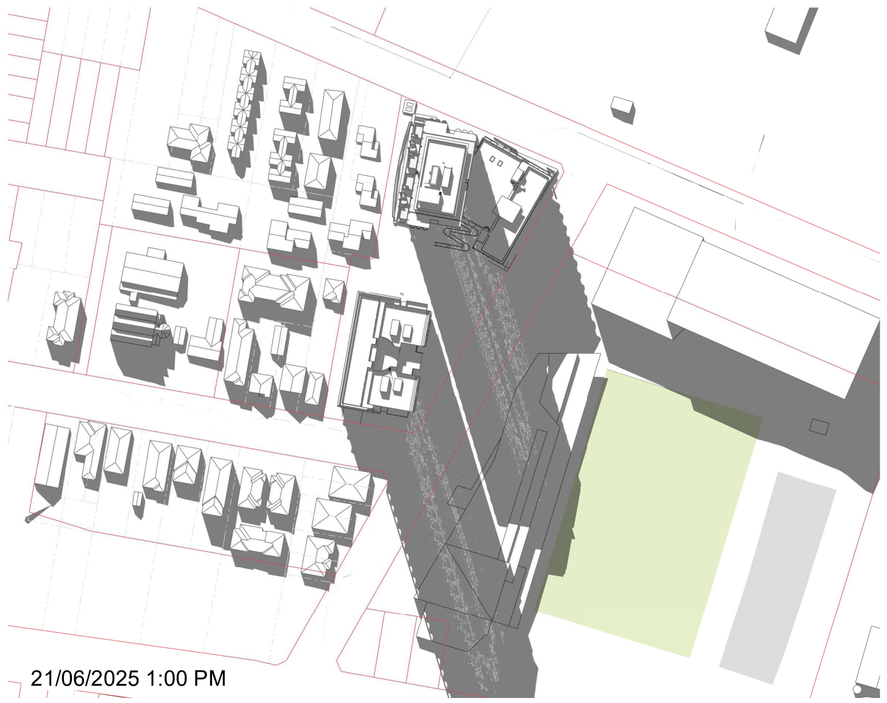
APPENDIX 3

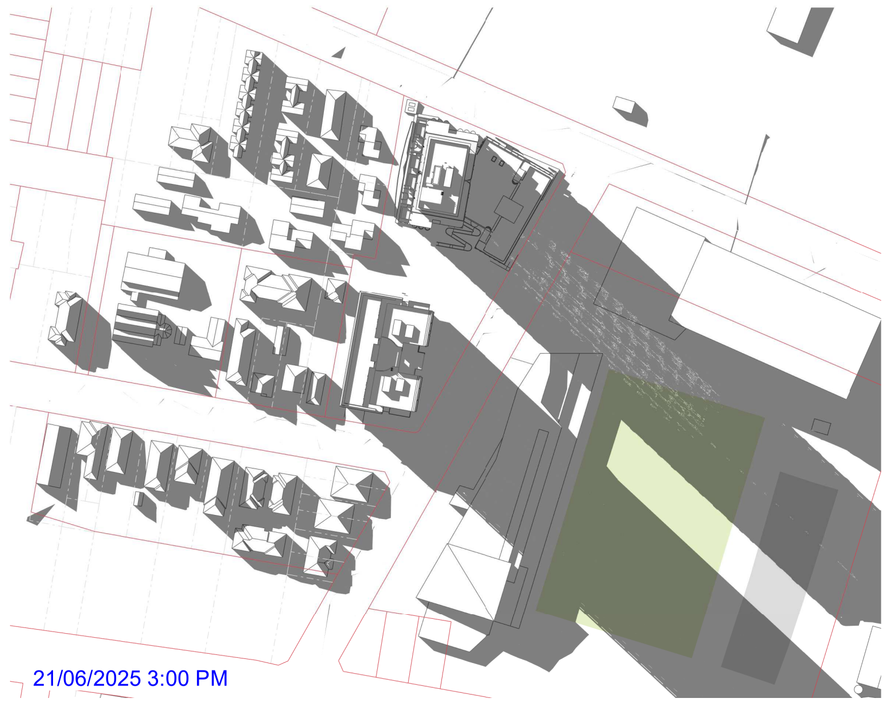












Revisions

Project: **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing: **Oval Overshadowing 21st June**

Project No: **223181**

Author: **AC**

Scale: @ A1 **1 : 2000**

Drawing No.: **SK-A05.100**

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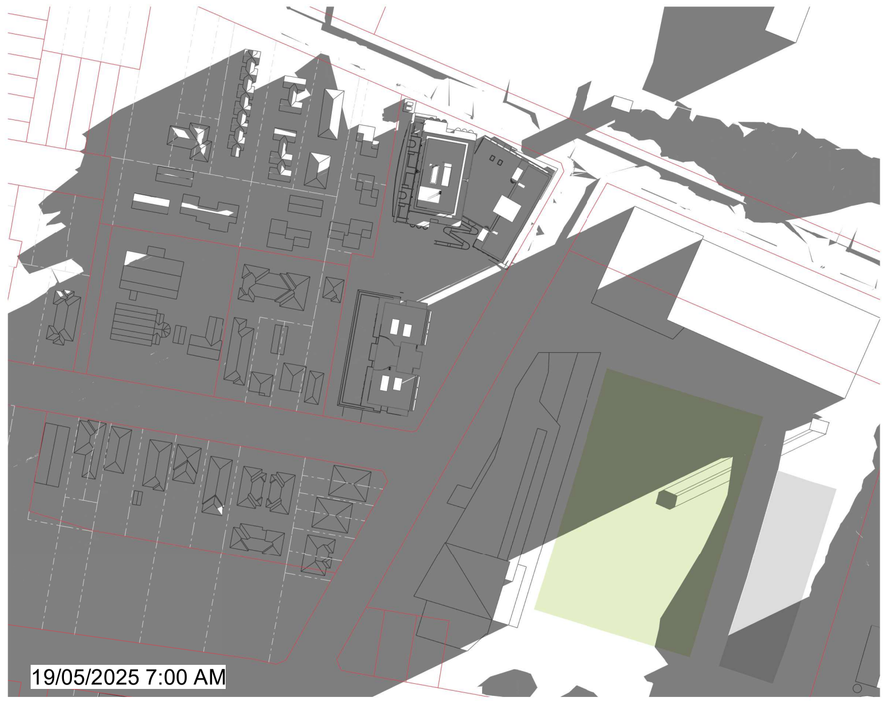
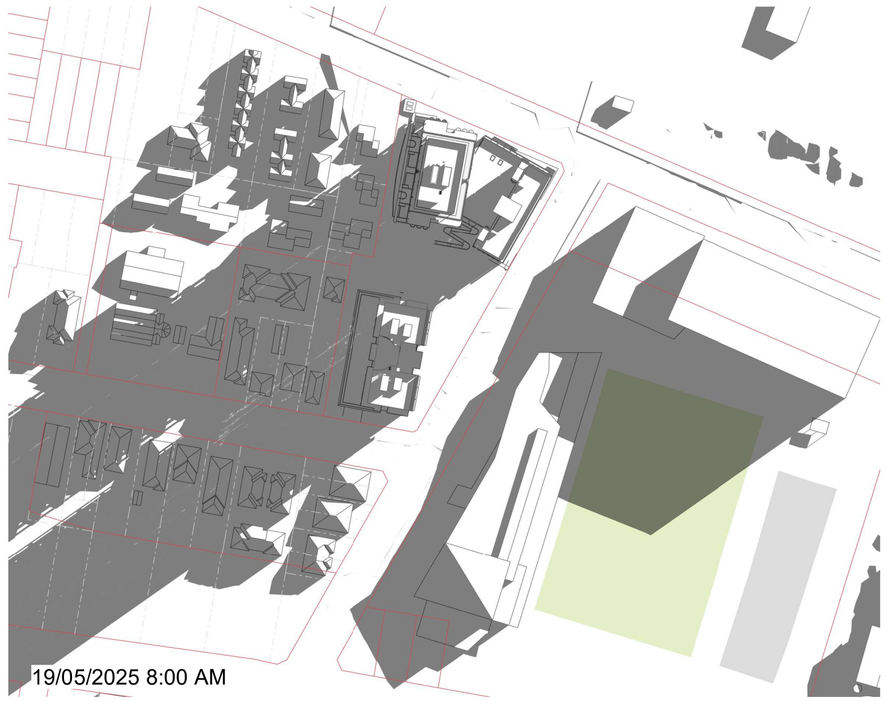
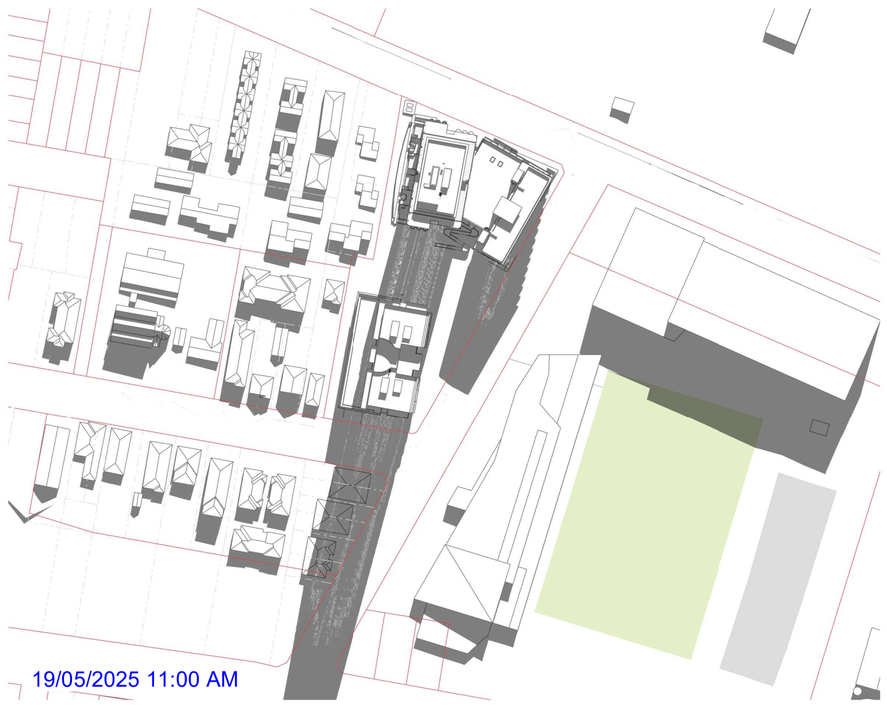
APPENDIX 4

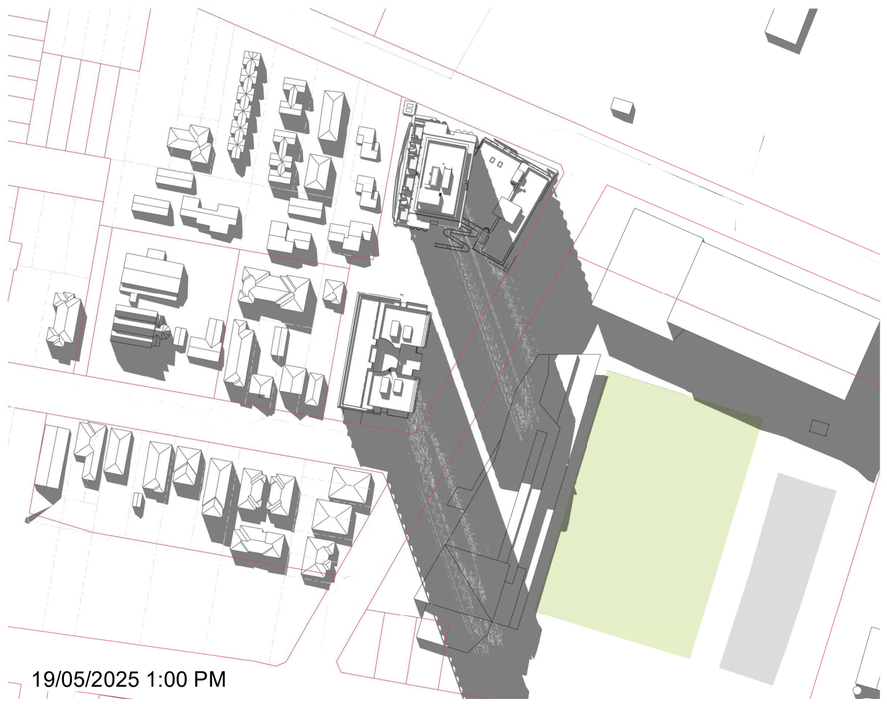
Shadow diagrams 19 May

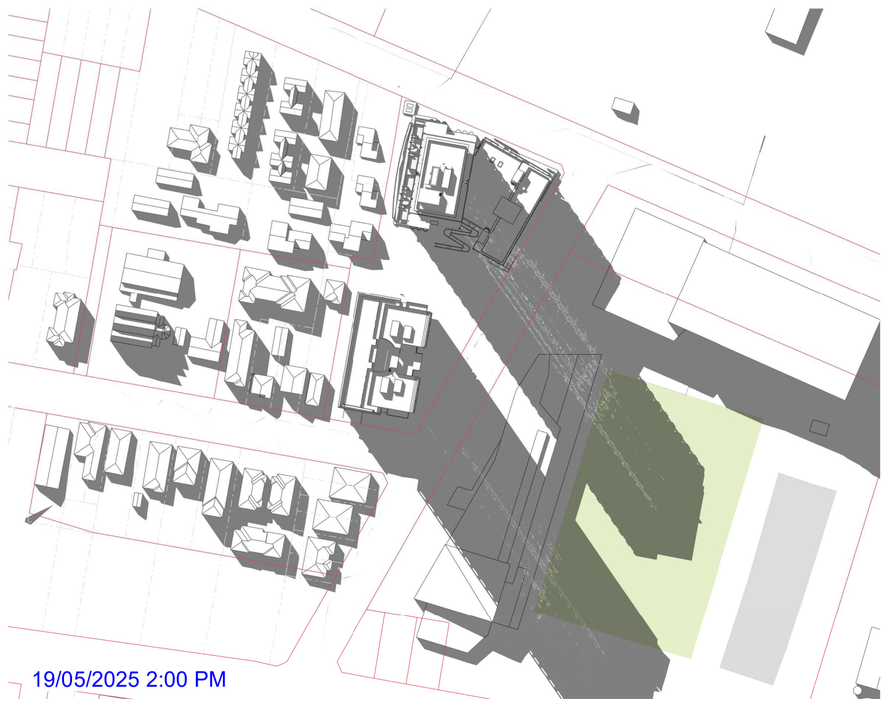
APPENDIX 4

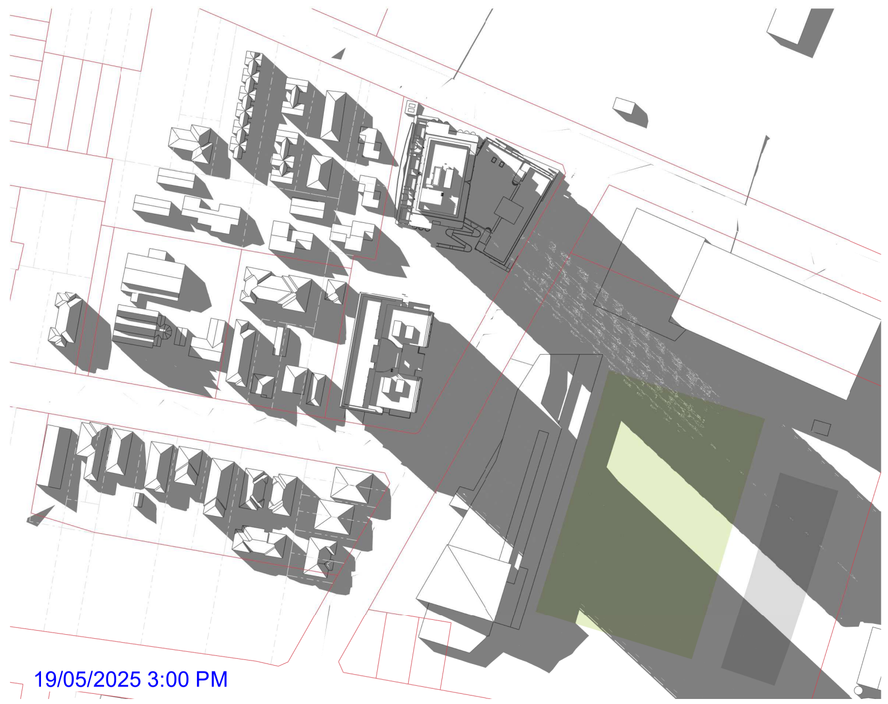












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Project / **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing / **Oval Overshadowing 19th May**

Project No / **223181**

Author / **AC**

Scale: @ A1 / **1 : 2000**

Drawing No. / **SK-A05.101** **1**

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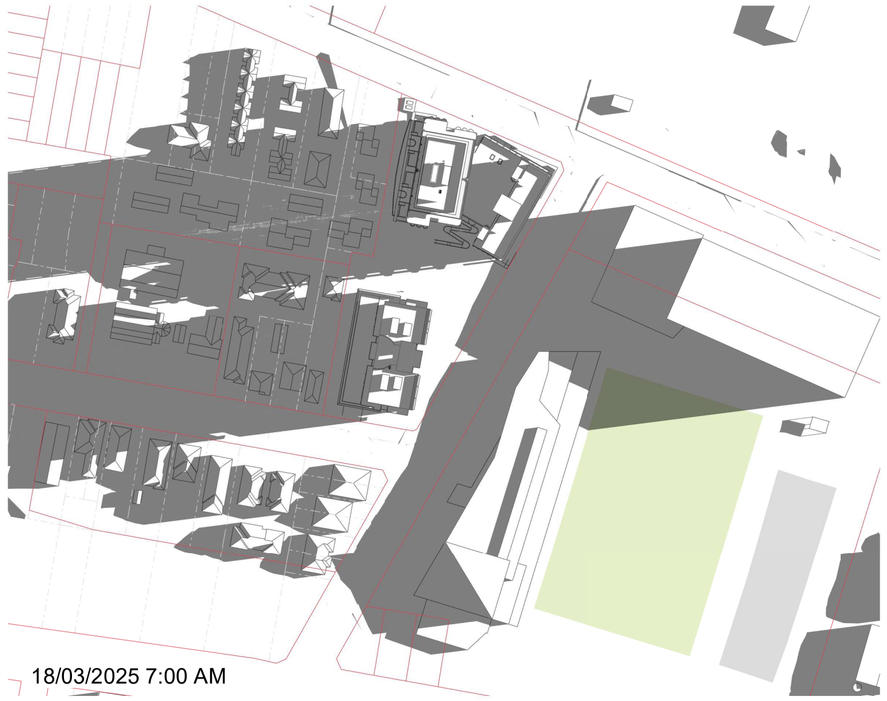
APPENDIX 5

Shadow diagrams 18 March

APPENDIX 5



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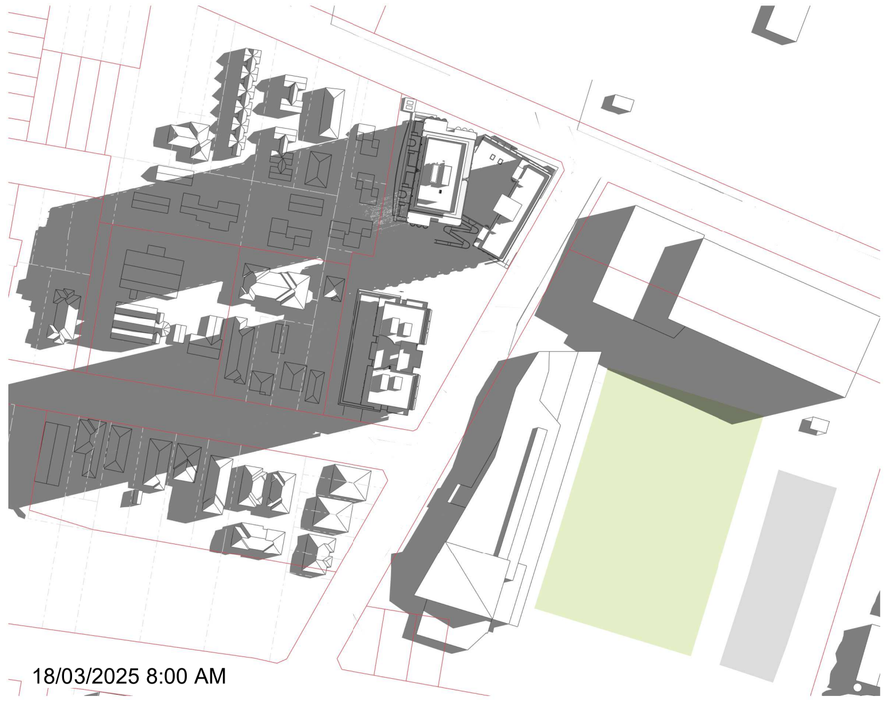

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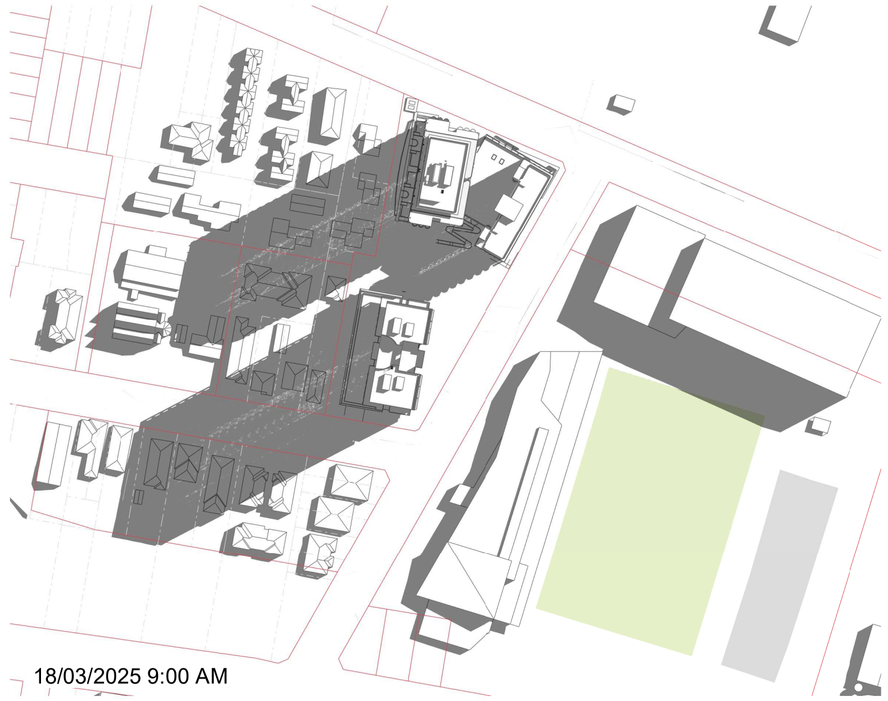

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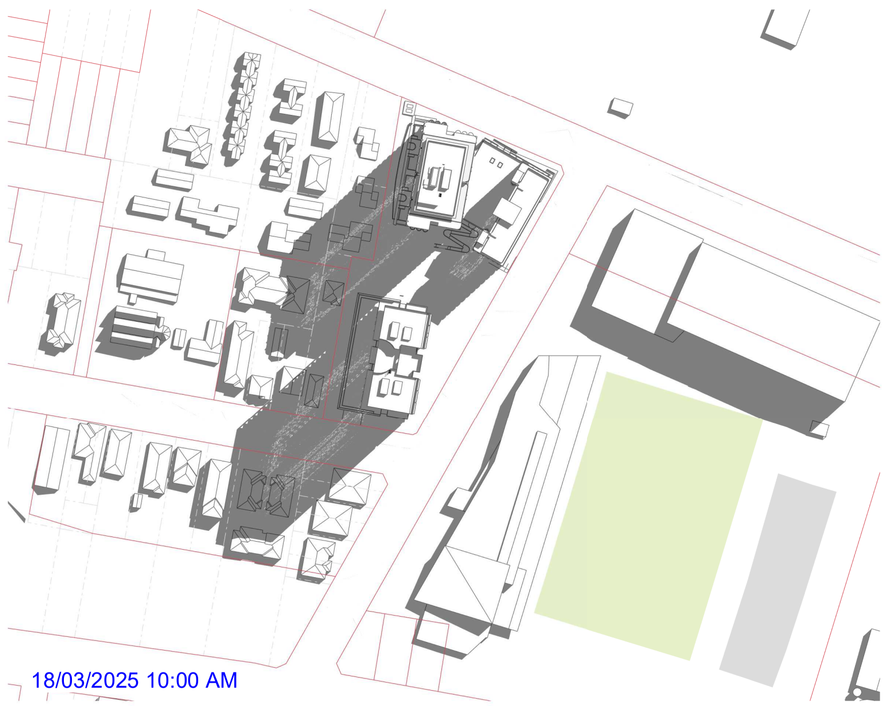

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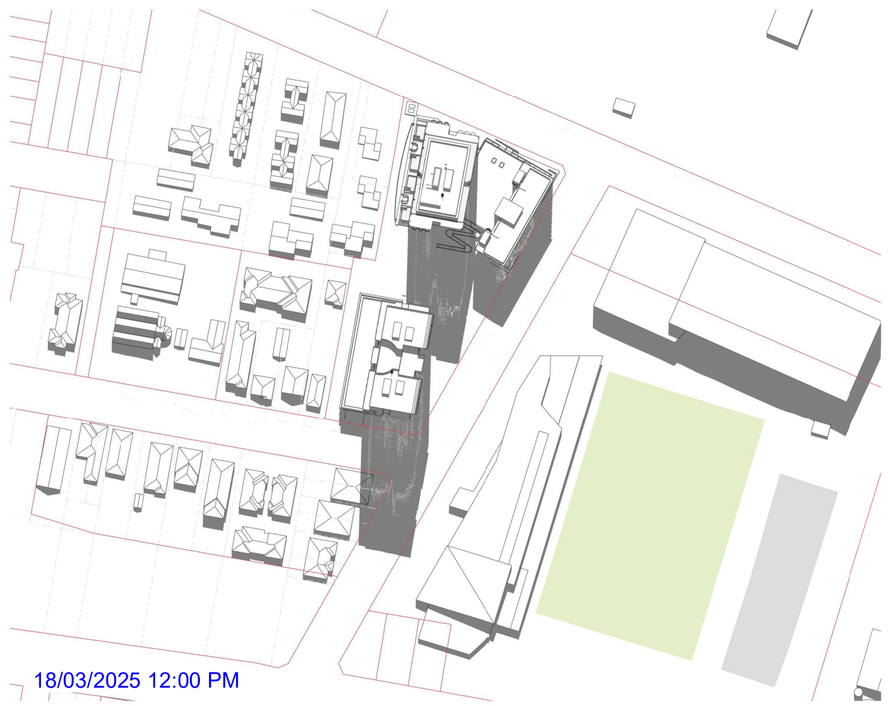

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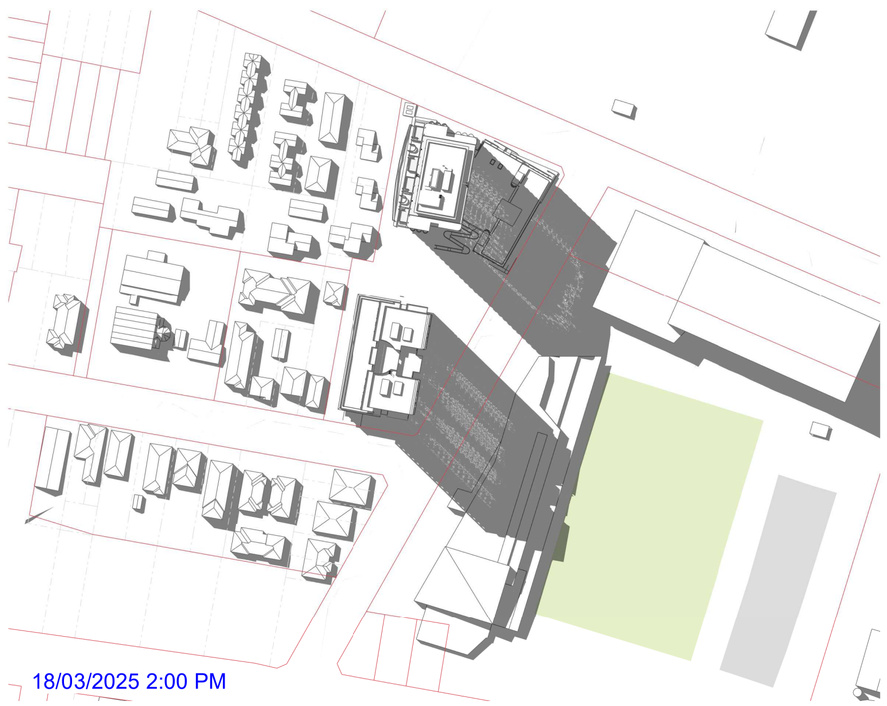
18/03/2025 1:00 PM



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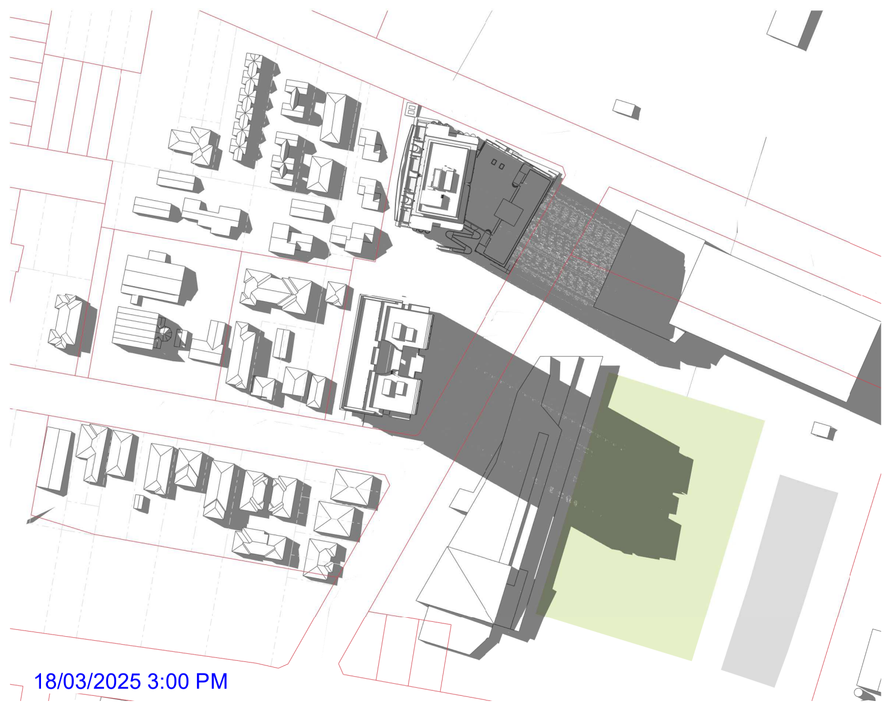

18/03/2025 3:00 PM

Revisions				
1	18.11.25	Consultant Issue		TD

25/11/2025 5:16:17 PM

Project: **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing: **Oval Overshadowing 18th March**

Project No: **223181** Author: **AC** Scale: @ A1 **1 : 2000** Drawing No. **SK-A05.102** **1**

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APPENDIX 6

Shadow diagrams

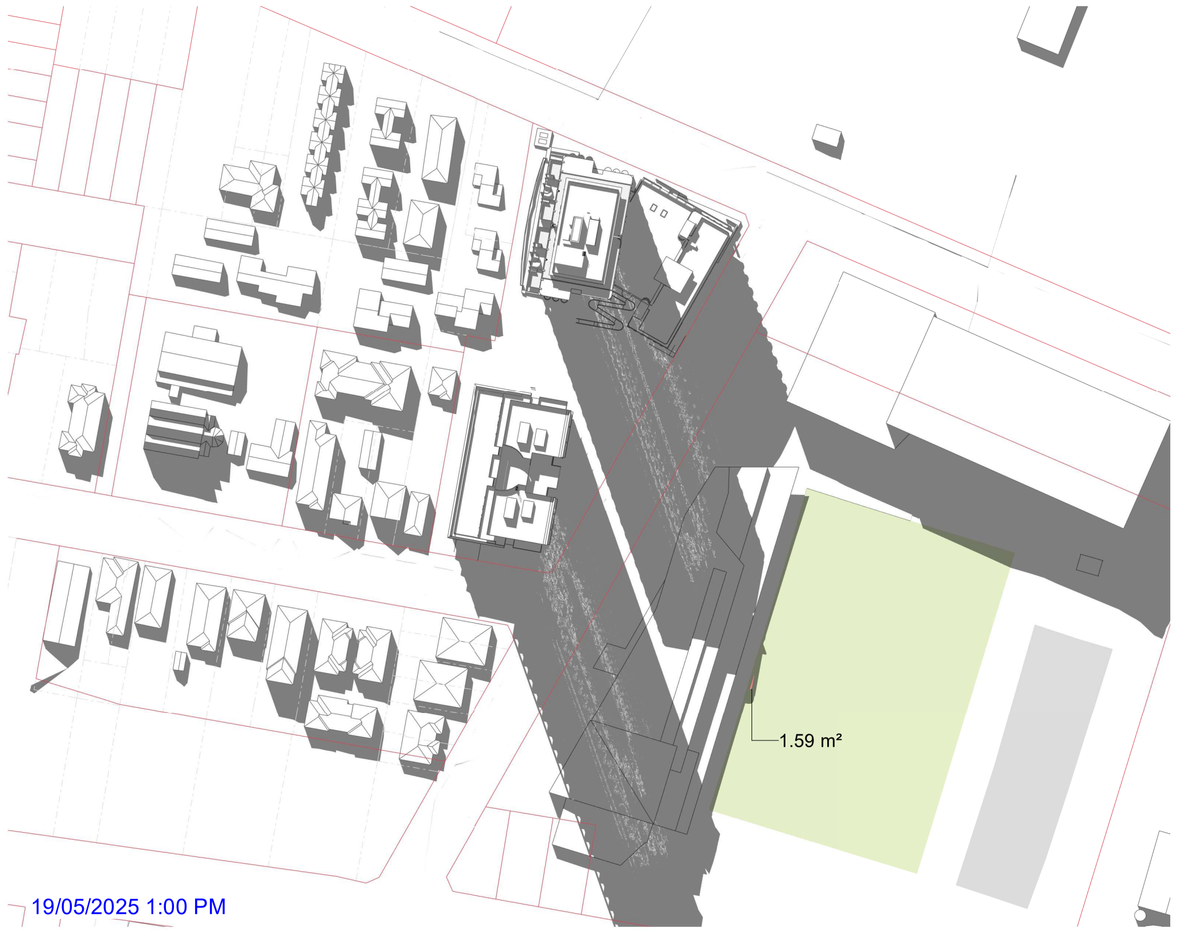
SK-SUN-PLAN-1pm

SK-SUN-PLAN-2pm

SK-SUN-PLAN-3pm

APPENDIX 6

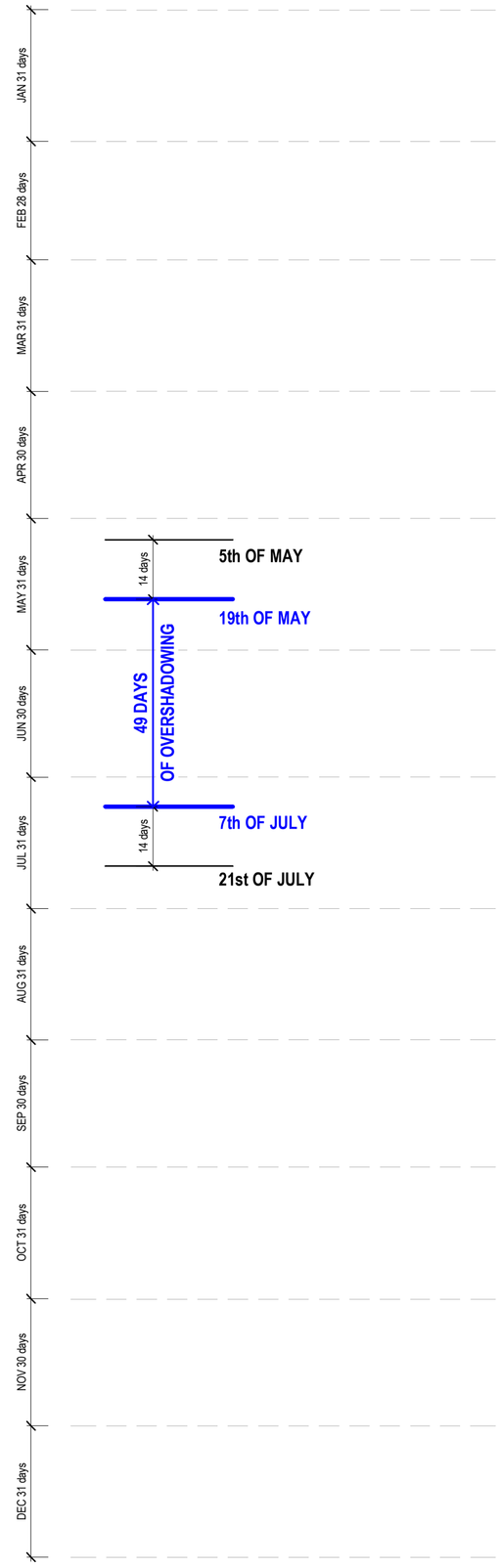
05/05/2025 1:00 PM



19/05/2025 1:00 PM

07/07/2025 1:00 PM

21/07/2025 1:00 PM



Revisions / 1 05.09.25 Consultant Issue TD

25/11/2025 5:19:23 PM

Project / **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing / **Oval Overshadowing Measured at 1pm**

Project No / **223181**

Author / **CM**

Scale: @ A1 / **1 : 1500**

Drawing No. / **SK-SUN-PLAN-1PM**

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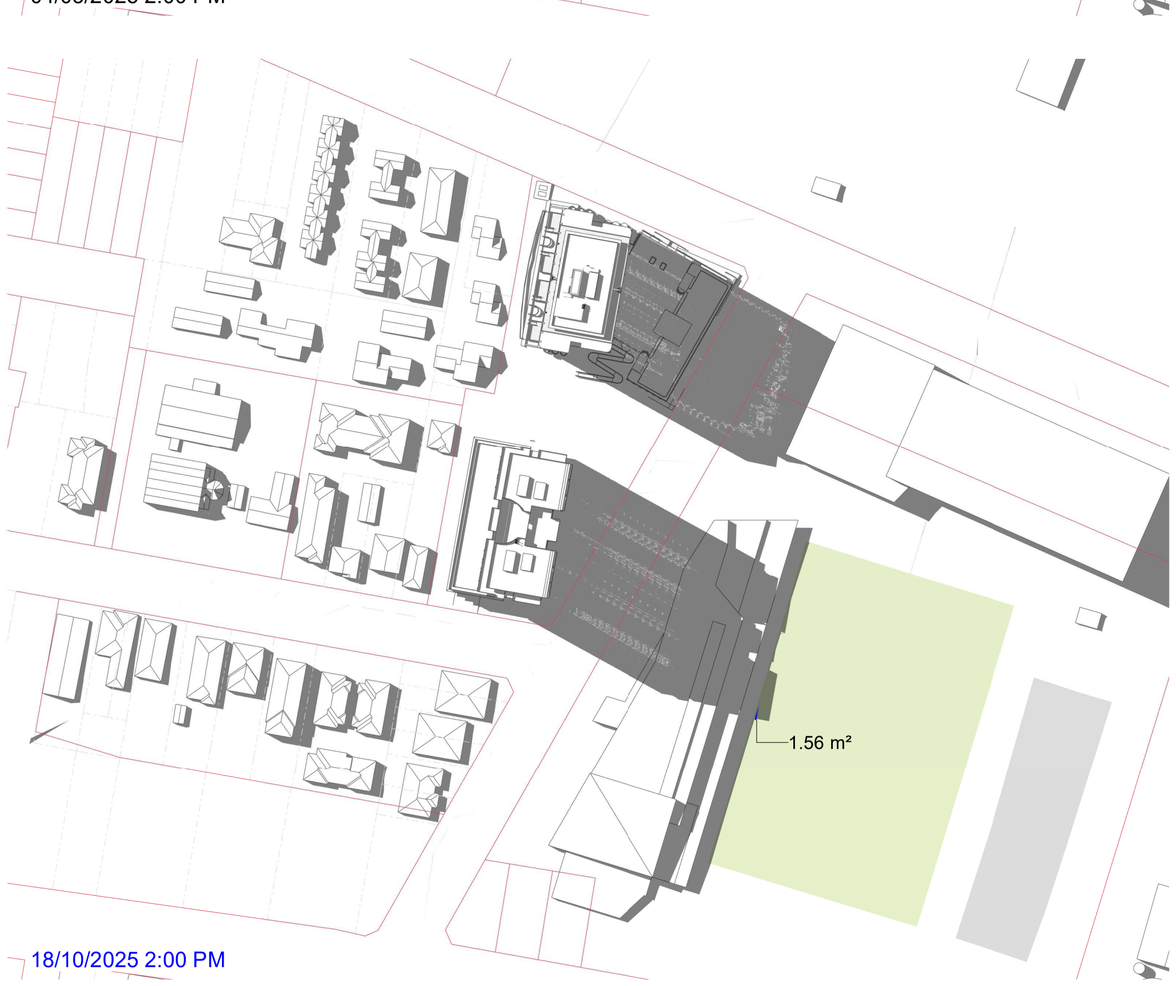
APPENDIX 6

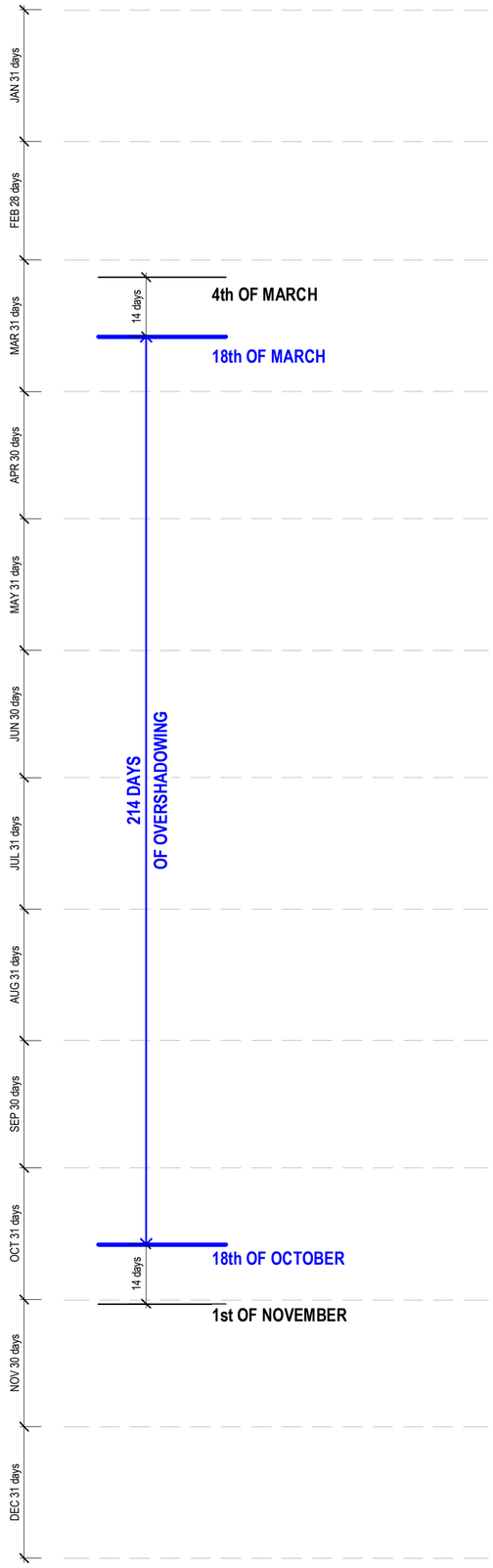
04/03/2025 2:00 PM

18/03/2025 2:00 PM



18/10/2025 2:00 PM

1/11/2025 2:00 PM



Revisions
1 05.09.25 Consultant Issue TD

25/11/2025 5:21:25 PM

Project **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing **Oval Overshadowing Measured at 2pm**

Project No **223181**

Author **CM**

Scale: @ A1 **1 : 1500**

Drawing No. **SK-SUN-PLAN-2PM**

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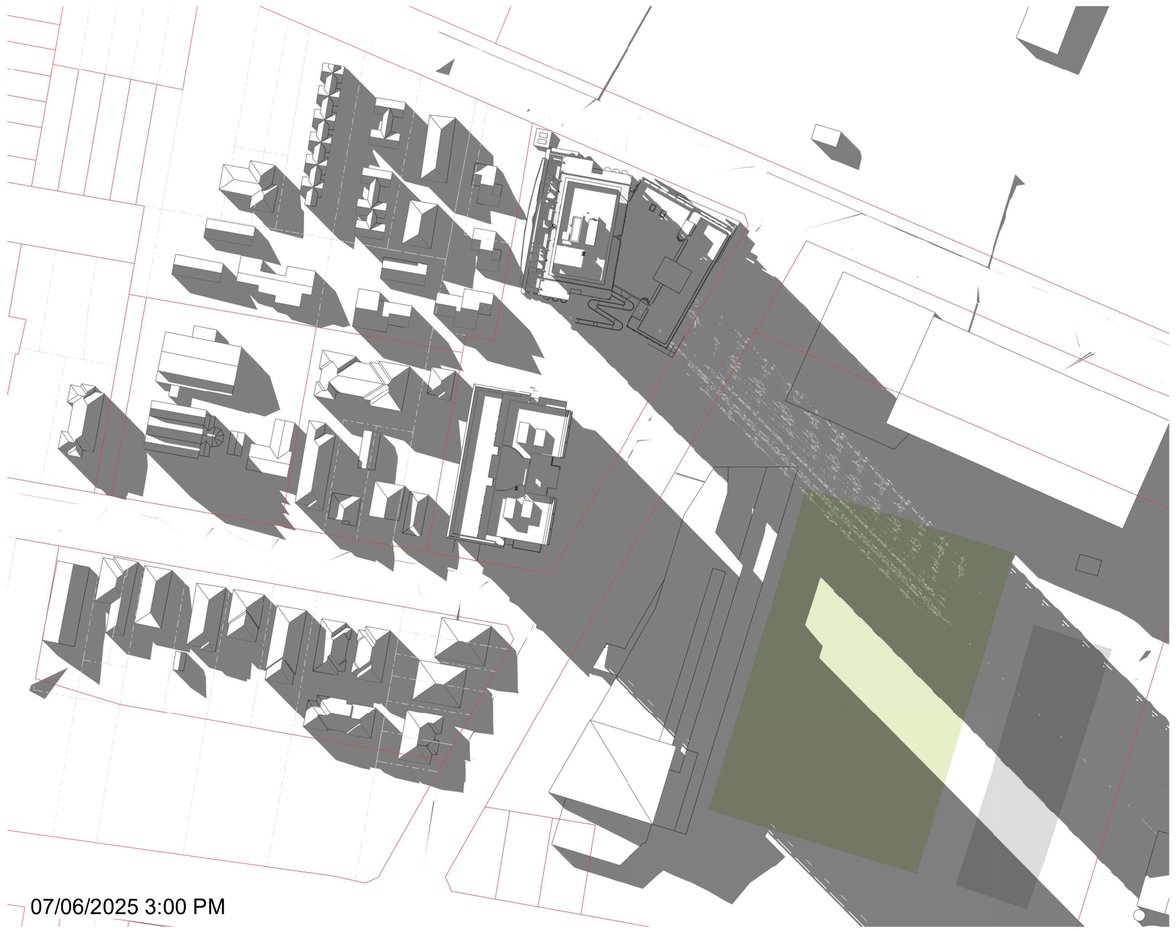
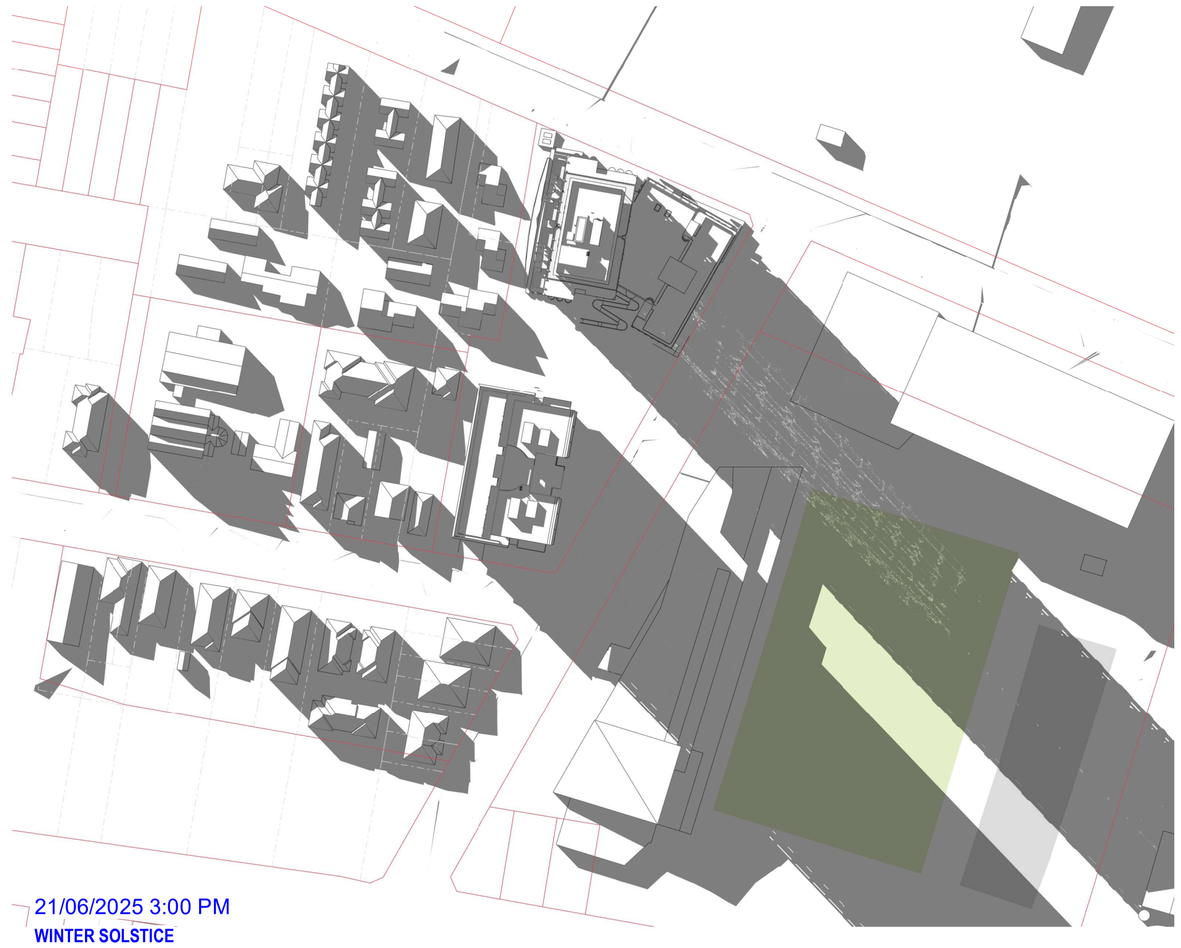
APPENDIX 6



07/06/2025 3:00 PM



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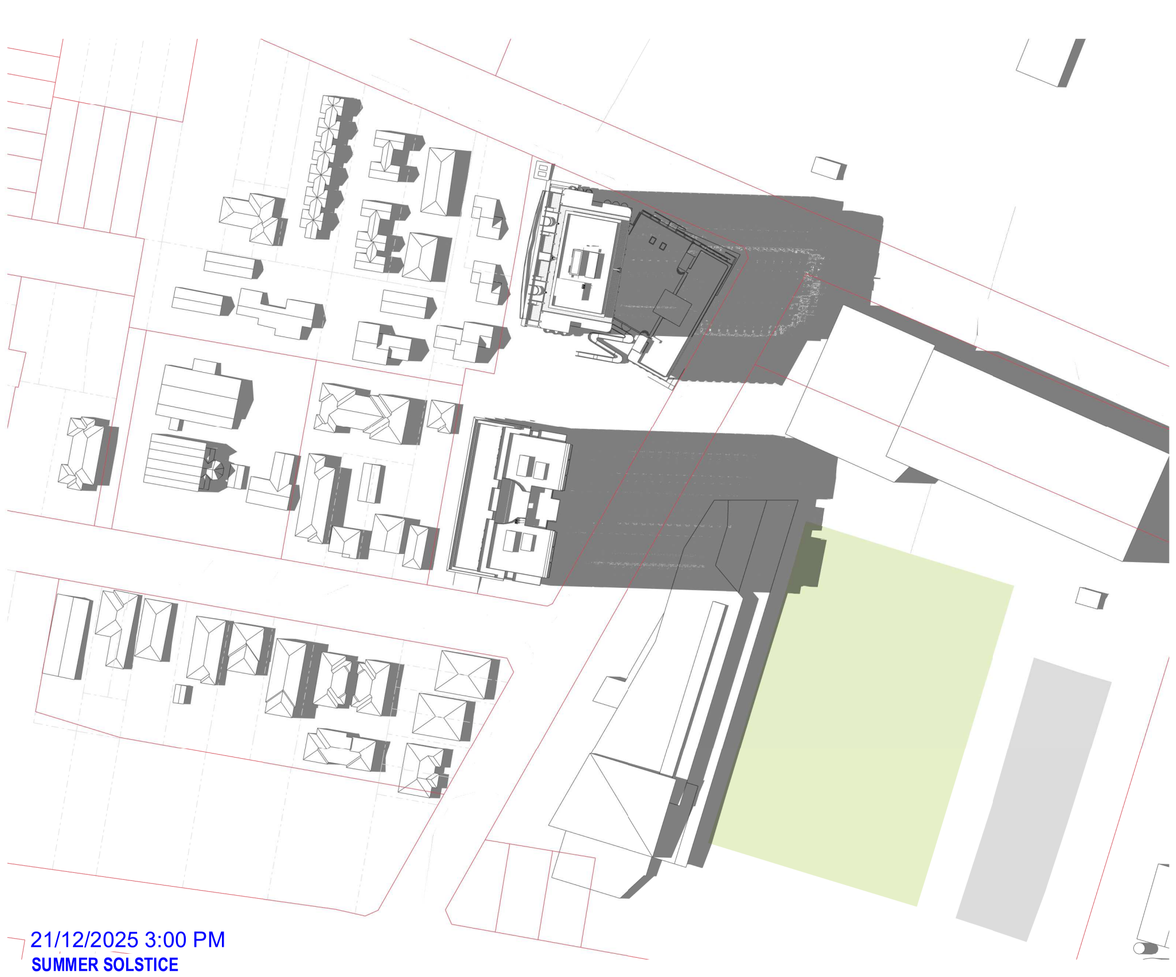
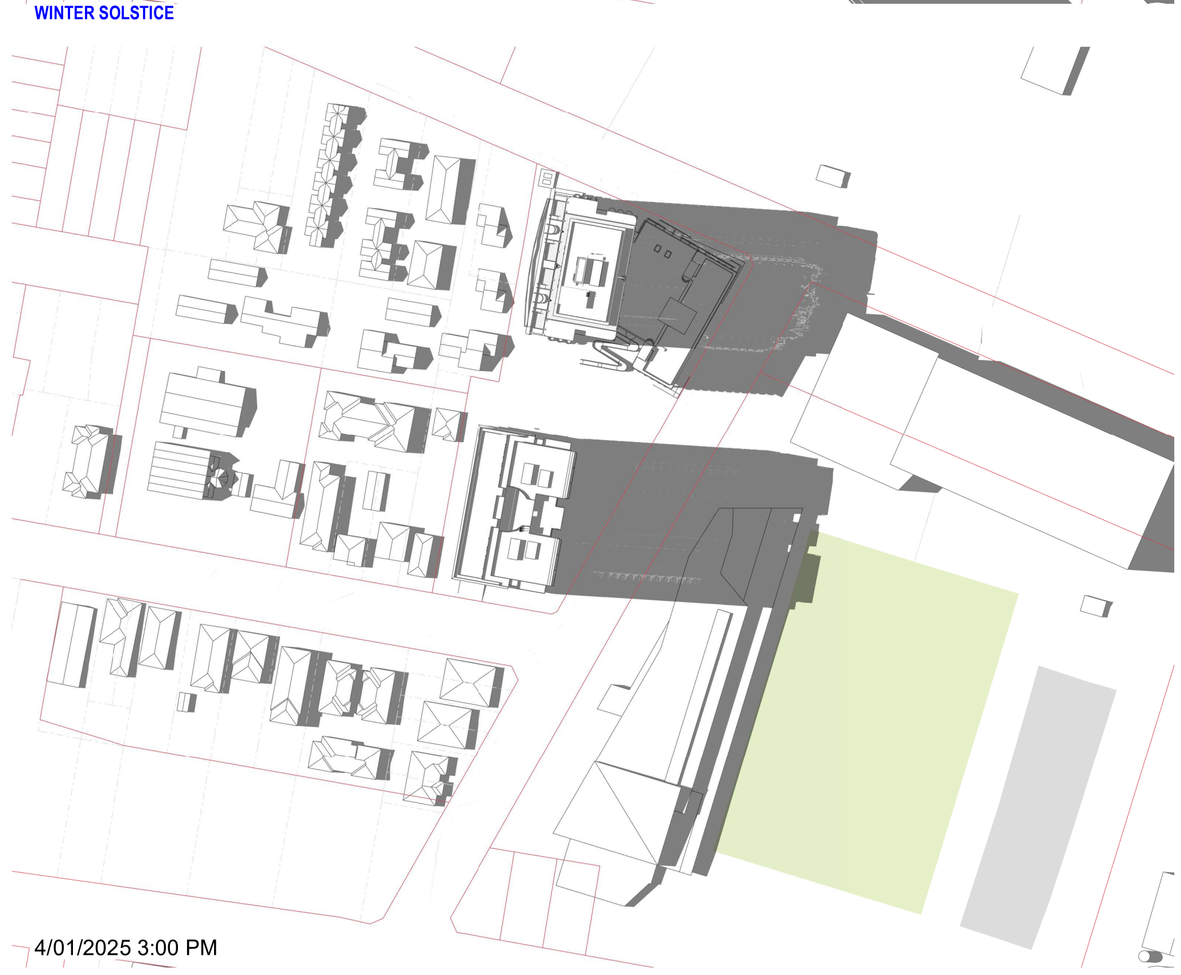
WINTER SOLSTICE



21/12/2025 3:00 PM
SUMMER SOLSTICE



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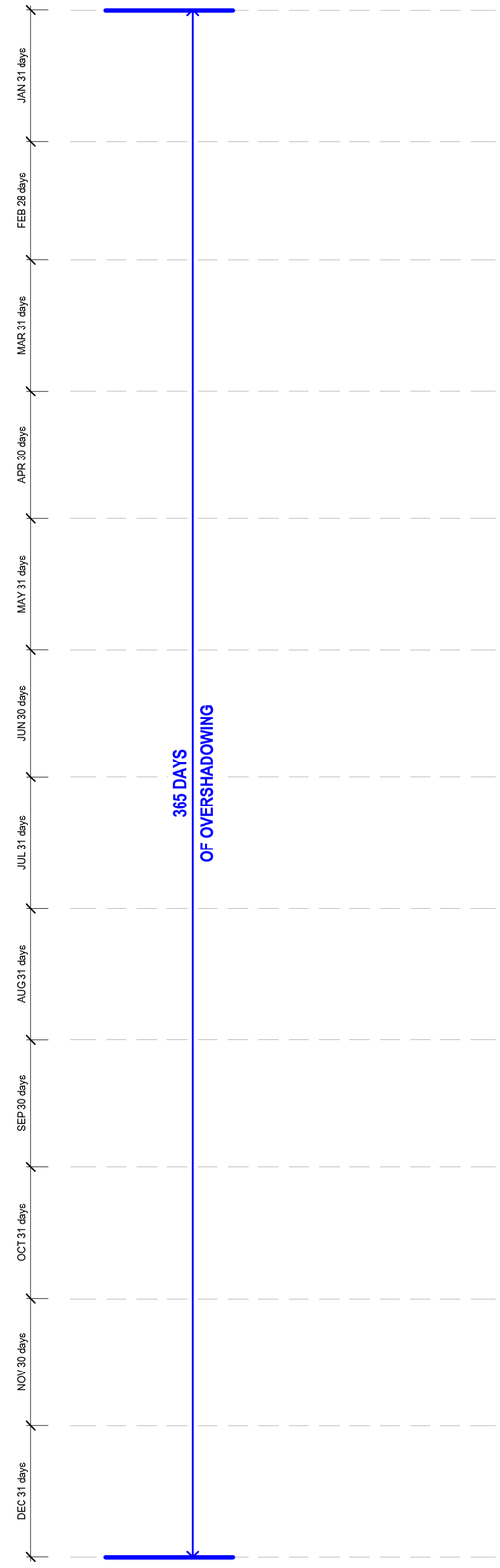

Revisions
1 05.09.25 Consultant Issue TD

25/11/2025 5:24:29 PM

Project
Loftus & Gipps St

Loftus & Gipps Street, Concord

Drawing
Oval Overshadowing Measured at 3pm

Project No
223181

Author
CM

Scale: @ A1
1 : 1500

Drawing No.
SK-SUN-PLAN-3PM

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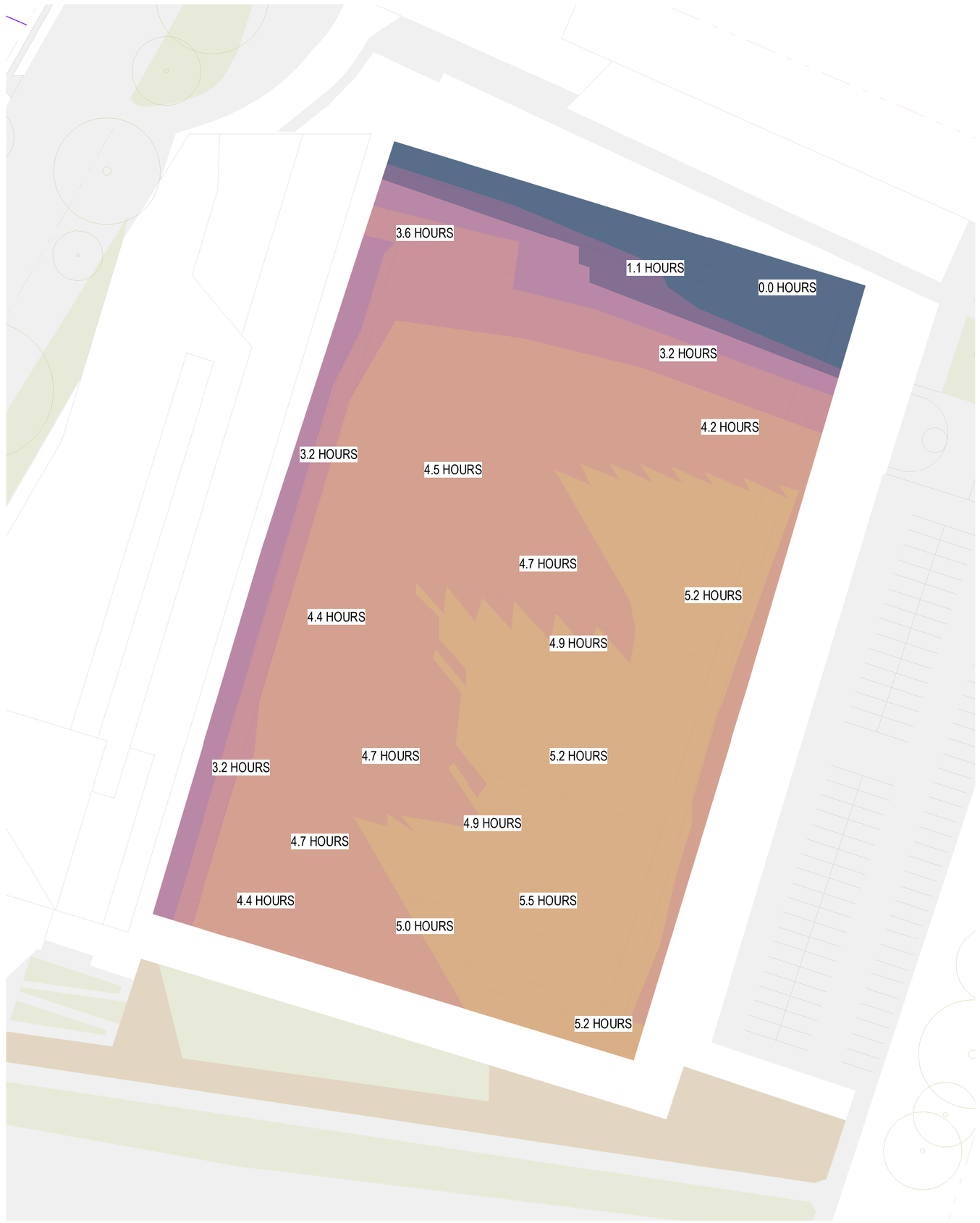
APPENDIX 7
Thermal images



No. Sun Hours on Oval
9am - 3pm

- 0+ hours
- 1+ hours
- 2+ hours
- 3+ hours
- 4+ hours
- 5+ hours

Revisions

25/11/2025 5:16:42 PM

Project: **Loftus & Gipps St**

Loftus & Gipps Street, Concord

Drawing: **Oval Sun Hours 21 June**

Project No: **223181**

Author: **TL**

Scale: @ A1: **1 : 500**

Drawing No.: **SK-A05.201**

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