ENTUITIVE

750 LOCKHART ROAD, BARRIE
RAIL SAFETY REPORT
APRIL 2023

For Ballymore Homes

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Our Project Number:
EN023.00152

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INTRODUCTION

Entuitive was retained by Ballymore Homes to review the site-specific safety of the development being proposed at 750 Lockhart Road, in Barrie. Immediately west of the site lands is a rail corridor which is owned and operated by Metrolinx.

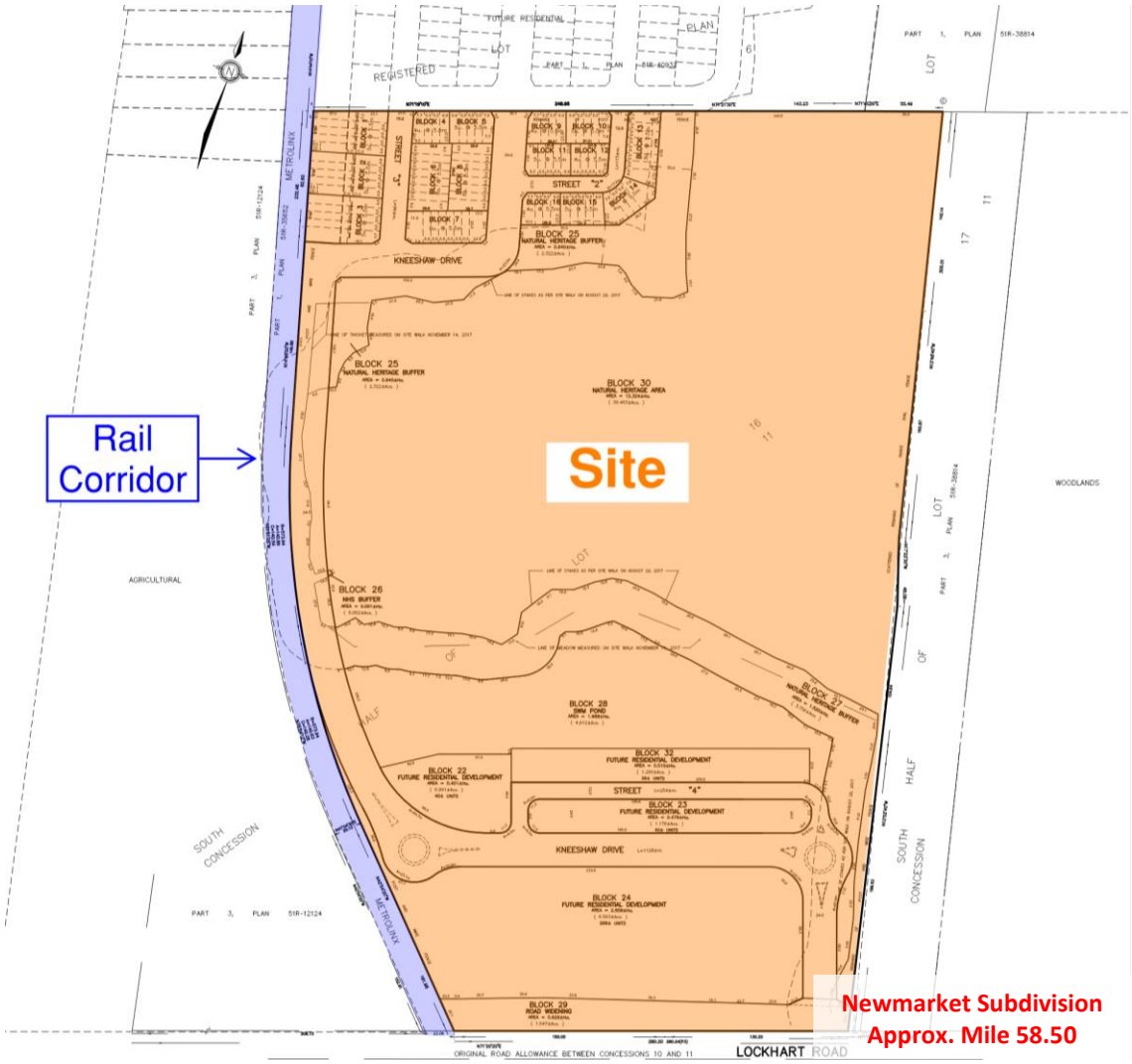
This report is limited to the safety aspects associated with the proximity of the development to rail activity and does not address ground-borne and/or airborne (acoustic) vibration and stormwater which are all dealt with separately.

This rail safety report will review the site-specific safety risks for the development which are associated with the nearby rail corridor. While the purpose of our report is to identify and mitigate the rail safety risks, there remains a residual risk to persons and property. The proposed mitigating measures are limited to the development on the subject site; the mitigating measures do not consider the safety of people or property beyond the subject site or on the rail corridor. The authors of this report assume that the mitigation measures will be competently constructed and adequately maintained.

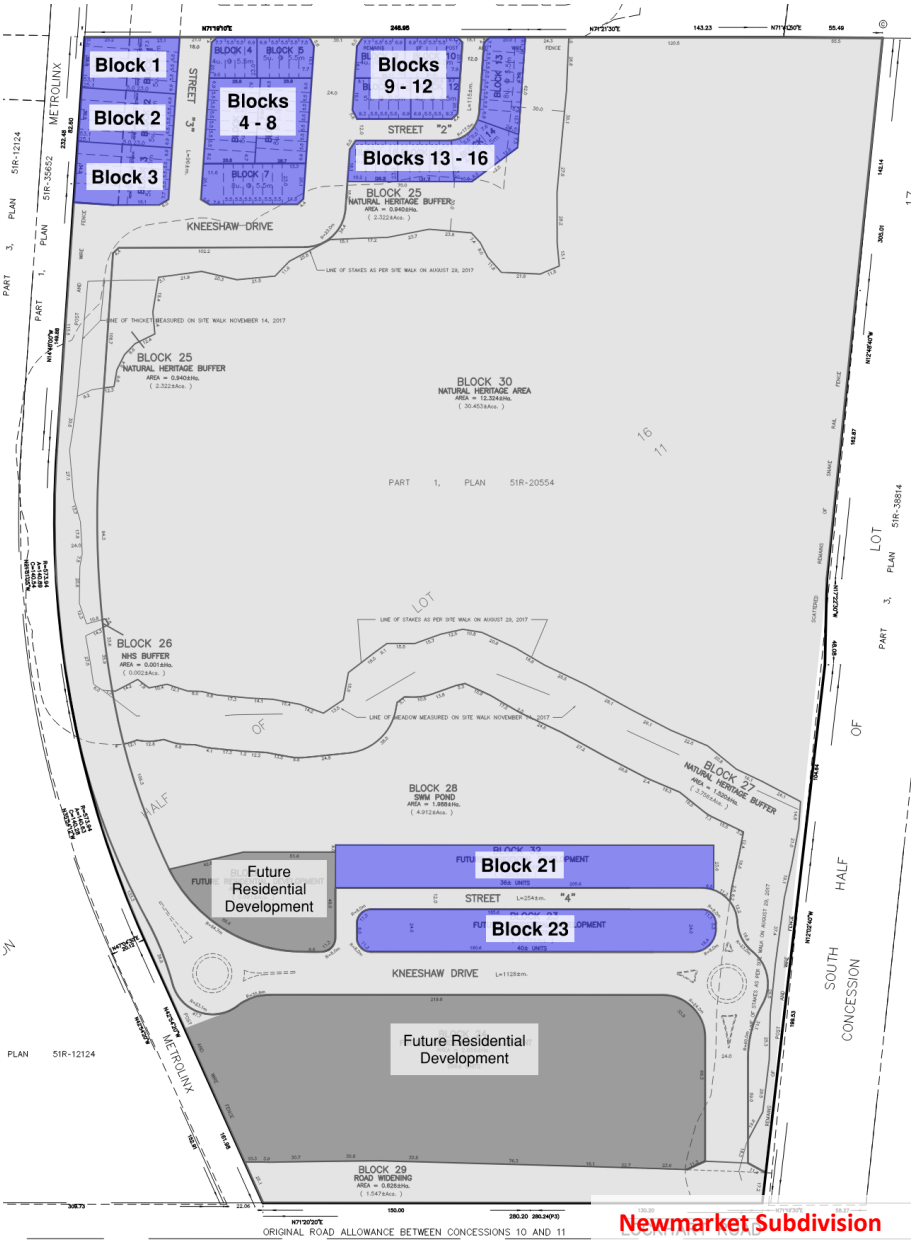
Focus Area

SITE

The site of the proposed development lies immediately east of the Newmarket Subdivision rail corridor. The proposed development is a large residential subdivision. For the purposes of this rail safety report, Blocks 1-16, 21, and 23 will be analyzed. All other blocks within the site are future developments and will require separate rail safety analysis and reporting. The image below shows the site boundary in orange and the rail corridor in blue. The following page shows the block plan with the Blocks covered in the rail safety report highlighted in blue.



Site Plan


Block 1
Block 2
Block 3
Blocks 4 - 8
Blocks 9 - 12
Blocks 13 - 16
Block 21
Block 23
Future Residential Development
Future Residential Development
Newmarket Subdivision
Approx. Mile 58.50
METROLINX
KNEESHAW DRIVE
STREET "2"
STREET "3"
STREET "4"
BLOCK 25
NATURAL HERITAGE BUFFER
BLOCK 30
NATURAL HERITAGE AREA
BLOCK 26
NHS BUFFER
BLOCK 28
SWM POND
BLOCK 27
NATURAL HERITAGE BUFFER
BLOCK 29
ROAD WIDENING
PART 1, PLAN 51R-20554
PLAN 51R-12124
PLAN 51R-35652
PLAN 51R-38814
SOUTH HALF OF LOT
CONCESSION
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 10 AND 11

Block Plan

Relationship to the Rail

The site is located adjacent to a rail corridor. All rail information is shown in Appendix A.

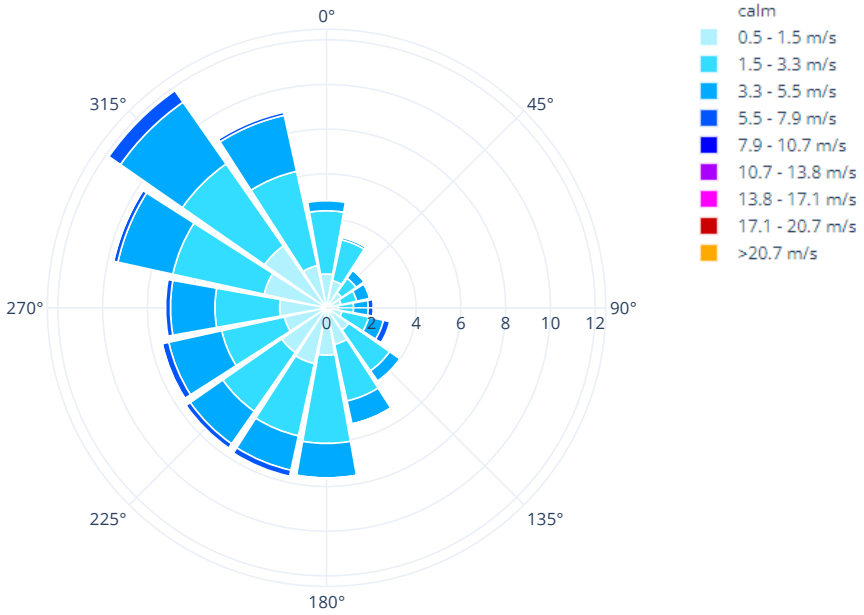
Rail	
Rail Corridor	Newmarket Subdivision
Classification	Main Line
Mileage at Site Location	58.50
No of Tracks	1 main line track (currently)
Speed	Max passenger: 80mph Max freight: 60mph
Alignment	Curved in the immediate vicinity Site located on the inside of the curve
Elevation	The proposed elevation of the development varies across the site in relation to the rail corridor. The rail corridor is approximately 1.5 – 2.7m above the proposed grade of the site.
Proposed Development	Residential subdivision

Safety Record of Rail Corridor

In the past 10 years, there has not been any rail incidents or accidents within 30 miles of the development site location. Looking back further, in the past 20 years, there was one rail accident, and the cause was trespassing.

Weather

Based on the Wind Rose diagram for the years 2005-2021 shown below, the site location experiences winds mostly from the northwest direction. The data shown below was collected in Egbert, Ontario which is approximately 17km from the development site.



Wind Rose Diagram for Site Location

FCM/RAC PROXIMITY BASELINE REQUIREMENTS

New developments along the rail corridor should be designed and built to provide reasonable protection to the development against rail activities and accidents. The FCM (Federation of Canadian Municipalities)/RAC (Railway Association of Canada) guidelines set out requirements for:

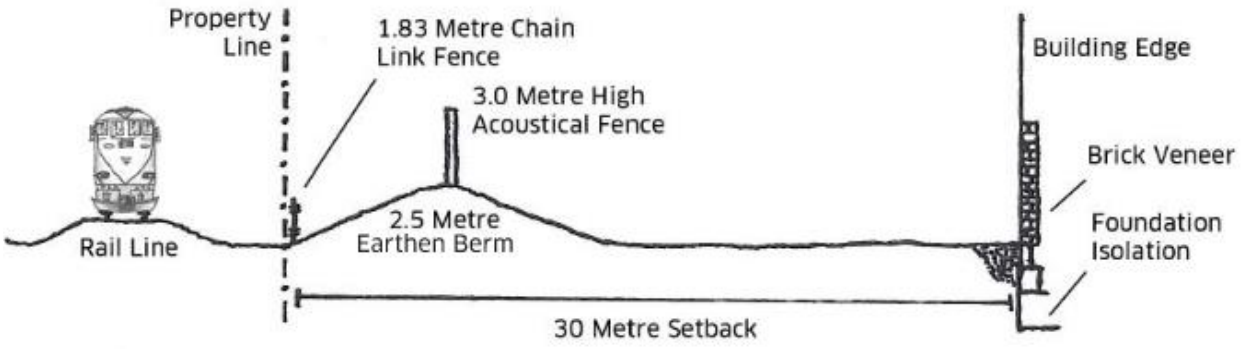
- Safety: Impact from a derailed train, fire, projectile elements, smoke
- Comfort: Noise and Vibration

This report deals primarily with Safety Issues.

The FCM/RAC Guidelines recommend the following setbacks:

Classification of line	Setback	Berm Height	Berm Slope
Freight Rail Yard	300m		
Principal Main Line	30m	2.5m	<= 2.5:1
Secondary Main Line	30m	2.0m	<= 2.5:1
Principal Branch Line	15m	2.0m	<= 2.5:1
Secondary Branch Line	15m	2.0m	<= 2.5:1
Spur Line	15m	0	

As stated in the FCM/RAC Guidelines (Section 3.3): “Setback distances must be measured from the mutual property line to the building face. This will ensure that the entire railway right-of-way is protected for potential rail expansion in the future.”



FCM/RAC Baseline Guideline

The FCM/RAC Guidelines (Section 3.3) indicate that “Appropriate uses within the setback area include public and private roads; parkland and other outdoor recreational space including backyards, swimming pools, and tennis courts; unenclosed gazebos; garages and other parking structures; and storage sheds.”

Chain Link Fence

To mitigate against the threat of trespasser incidents on the rail corridor the FCM/RAC Guidelines recommend a 1.83m high chain-link fence along the mutual property line entirely on the private side of the property line running continuously for the full width of the property. Metrolinx has different fence requirements which are explained further in this report.

Options to Protect Development

In cases where a full setback can be provided, a berm may be constructed to protect the site. Setbacks and berms are typically provided together to achieve the maximum mitigation level. If the space required for a full berm cannot be provided, a crash berm can be considered. Crash berms are highly effective in terms of protecting developments.

The FCM/RAC Guidelines (Section 3.3) note that the "Horizontal setback requirements may be substantially reduced with the construction of a crash wall". So, if the site-specific conditions do not allow for both a 30m setback and 2.5m high berm adjacent to a rail line the development can be protected instead by a robust crash wall.

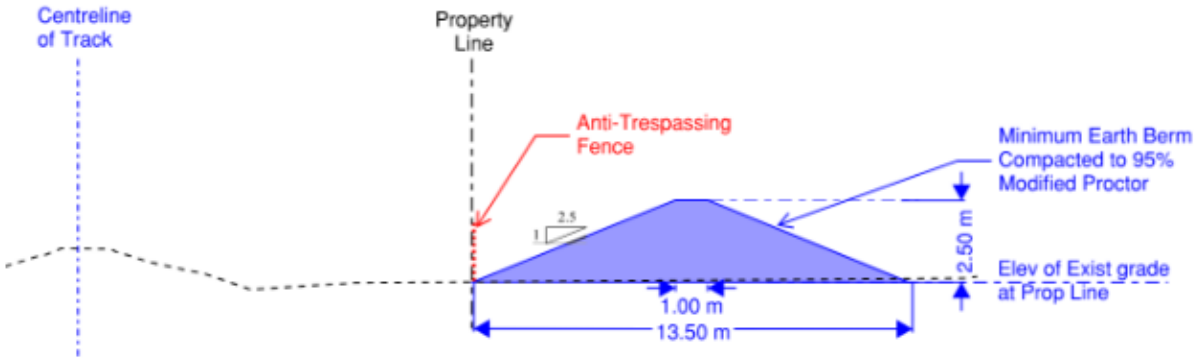
Importantly, there is a reasonableness criterion in the FCM/RAC Guidelines suggesting that the risk-mitigating measures need not be disproportional to the development. The Third Principle for mitigation design is "All mitigation measures should be designed to the highest possible urban design standards. Mitigation solutions, as developed through the Development Viability Assessment process, should not create an onerous, highly engineered condition that overwhelms the aesthetic quality of an environment." (FCM/RAC Guidelines Section 3.1).

Berm Requirements

Berms should be constructed parallel to the railway corridor and to the following specifications:

- Principal Main Line: 2.5m above grade with side slopes not steeper than 2.5 to 1.
- Secondary Main Line: 2.0m above grade with side slopes not steeper than 2.5 to 1.
- Principal Branch Line: 2.0m above grade with side slopes not steeper than 2.5 to 1.
- Secondary Branch Line: 2.0m above grade with side slopes not steeper than 2.5 to 1.
- Spur Line: not required.

The berm shall be laid down in layers and compacted to 95% modified proctor. It should be noted that the berm can be expanded in height and/or width beyond the minimums outlined above to suit aesthetic and/or landscaping requirements. The height of the berm is to be measured from the existing grade at the property line. See example image below.



Berm Section View

ANALYSIS: ENERGY BALANCE METHOD

Per the AECOM guidelines (Development of Crash Wall Design Loads from Theoretical Train Impact and CWguide Rev 2), an energy balance was performed to study the travelling length in case of derailment. There are four loading cases as shown below:

1. Freight Train Load Case #1: derailment of nine freight train cars weighing 129,700 kg each.

> Freight Train Load Case 1 - Glancing Blow: nine cars weighing 143 tons (129 700 kg) each, impacting the wall at an angle, θ_G. The angle of impact will be a function of track curvature, and for tangent track may be taken as 3.5 degrees.

2. Freight Single Car Load Case #2: assuming only one car is derailed weighing 129,700 kg.

> Freight Train Load Case 2 - Single Car Impact: single car weighing 143 tons (129 700 kg) impacting the wall as it undergoes rotation about its center. The angle of rotation at impact is defined in [9]:
>
> $$\theta_f = \text{asin}\left(\frac{d_{CL}}{8.5}\right) \qquad \text{(metric)}$$
>
> Where d_{CL} is in feet (m). Where d_{CL} is greater than 28 feet (8.5 m), this load case need not be considered.

This loading case assumes a single car will be rotating around its center and should the clear distance d_{CL} exceed 8.5m then there is no need to include this loading case as the train car will not make contact with the safety barrier in this derailment scenario.

3. Passenger Train Load Case #3: derailment of eight passenger cars weighing 67,120kg each.

> Passenger Train Load Case 3 - Glancing Blow: eight cars weighing 74 tons (67120 kg) each impacting the wall at an angle, θ_G. The angle of impact will be a function of track curvature, and for tangent track may be taken as 3.5 degrees.

4. Passenger Single Car Load Case #4: assuming one fully loaded bilevel coach is derailed weighing 79,510 kg.

> Passenger Train Load Case 4 - Single Car Impact: single car weighing 74 tons (67120 kg) impacting the wall as it undergoes rotation about its center. The angle of rotation at impact is defined in [10]:
>
> Where d_{CL} is in feet (m). Where d_{CL} is greater than 42'-6" (13 m), this load case need not be considered.

Similarly, this load case assumes a single car rotates around its center and should the clear distance d_{CL} exceed 13m then there is no need to include this loading case as the train car will not make contact with the safety barrier in this derailment scenario.

The angle of impact can be calculated as shown:

$$\theta_f = \text{asin}\left(\frac{d_{CL}}{13.0}\right) \qquad \text{(metric)}$$

Where d_{CL} is in feet (m). Where d_{CL} is greater than 42'-6" (13 m), this load case need not be considered.

Changing the train weight due to different rail services is permissible as per the AECOM Guideline.

Where a track is designed for dedicated service by a particular train consist, variations to the design trains may be permitted by the Railway.

The speed after derailment for glancing blow load cases can be calculated as shown:

$$v_G = \sqrt{v_o^2 + 2a\left(\frac{d_{CL}-1.625}{\sin\theta_G}\right)} \text{ [m/s]}$$

Where d_{CL} is the distance from the crash wall to the centerline of track in feet (m).
v_o is the track speed in ft/s (m/s)
a is the acceleration in ft/s^2, calculated as $-32(.25 + G)$
(in metric, acceleration is in m/s^2, calculated as $-9.8(.25 + G)$)
θ_G is the angle of impact defined in [4] or [5]
G is the grade in decimal unit of the groundline in the direction of travel defined by the angle of impact relative to the centerline of track; calculated as $\frac{Groundline\ at\ wall - Base\ of\ Rail}{d_{CL}/\sin\theta_G}$.

obtained from the above equation with $R = 0.25$.

The design force for the glancing blow load cases is:

$$F_G = \frac{\frac{1}{2}m(v_G \sin\theta_G)^2}{d_G} \qquad \text{(metric)}$$

Where m is the mass of the derailed cars in lbm (kg).
v_G is the impact speed in ft/s (m/s), defined in [3]
θ_G is the angle of impact defined in [4] or [5]
d_G is the deformation of the consist in the direction of the applied force, and $d_G = 10 \sin\theta_G$, in feet ($d_G = 3.048 \sin\theta_G$, in m)

Results of the Energy Balance Method Evaluation of Derailment Scenarios

The table below shows the derailment scenarios set out in the guidelines and the maximum distance from the centreline of track where derailed trains come to an at-rest state. This analysis includes freight trains running at a maximum speed of 60mph and passenger trains running at a maximum speed of 80mph. For this analysis, a derailment angle of 3.5^{o} was used; since the track is slightly curved, the angle is taken from a tangent line at the point of derailment. Additionally, since the site experiences differing elevations relative to the rail corridor, the worst-case elevation has been used for the ease of calculation. The largest elevation difference is approximately 2.7m (rail corridor higher than the proposed site).

Scenario	Max. distance perpendicular to the track at which the train comes to rest
1. Freight Train Multi-Car Glancing Blow	< 12m
2. Freight Train Single Car Direct Impact	< 8.5m
3. Passenger Train Multi-Car Glancing Blow	< 19m
4. Passenger Train Single Car Direct Impact	< 13m

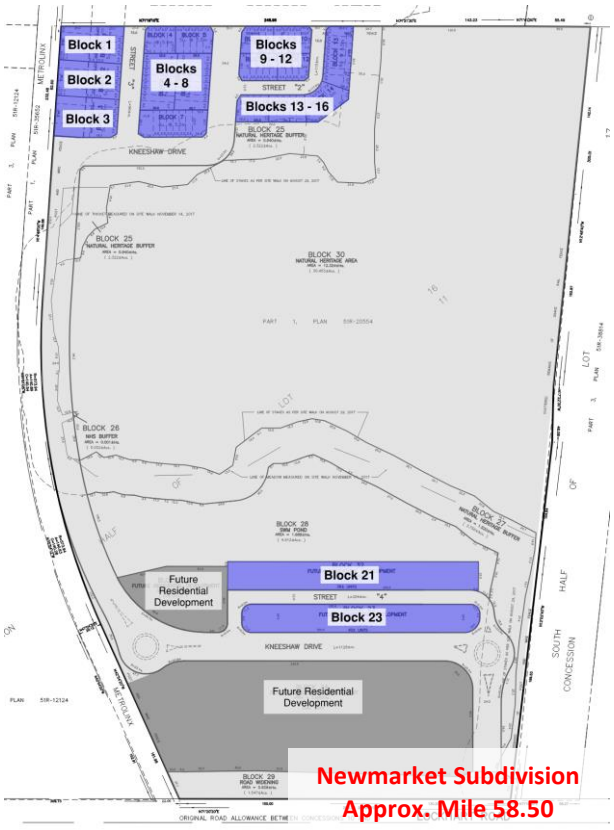
From the calculations and results shown above, a derailed train would not reach the residences of this proposed development. Setback details will be provided in the sections that follow. If we consider a more extreme derailment scenario where a train is travelling 20mph over the posted speed limits (80mph for freight and 100mph for passenger), the furthest a derailed train would travel is 28m from the centreline track. In this extreme derailment scenario, the derailed train would still not reach the residential buildings.

EVALUATION AND MITIGATING MEASURES

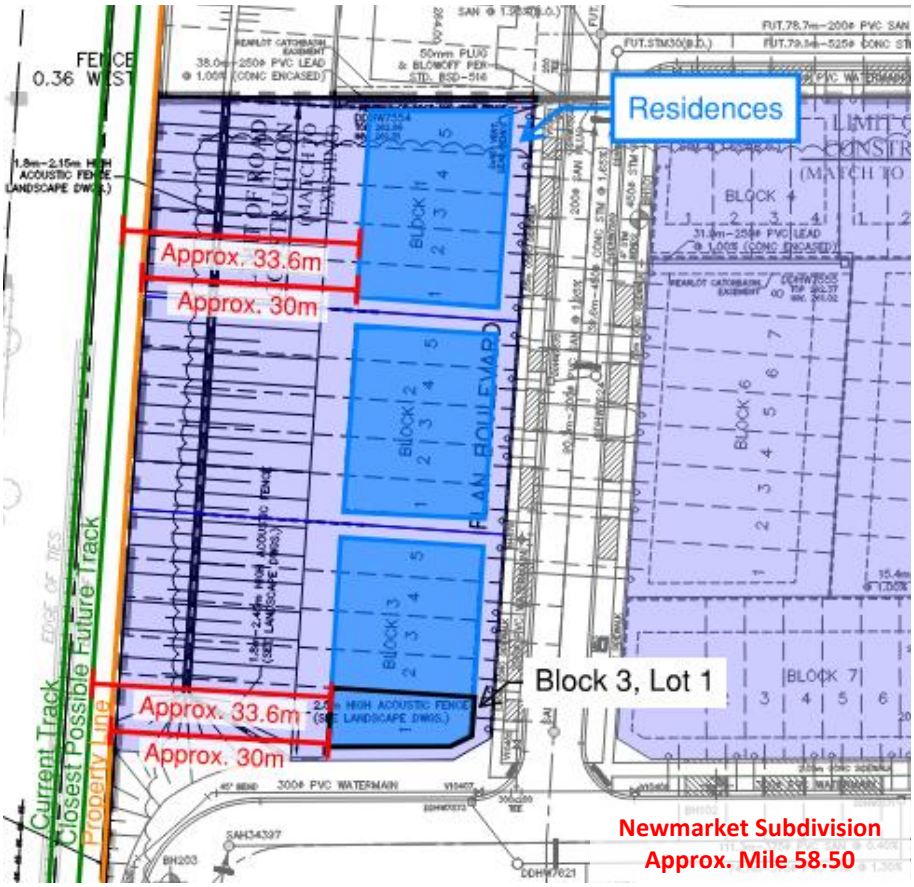
Setbacks

The setbacks to the sensitive-use areas of this site have been measured and are shown in the table and images that follow. Setback distances have been measured to Blocks 1-3, 21, and 23. Blocks 4-16 are further setback from the rail corridor in comparison. As stated previously, all future development blocks are not considered in this report and will need to be analyzed in the future.

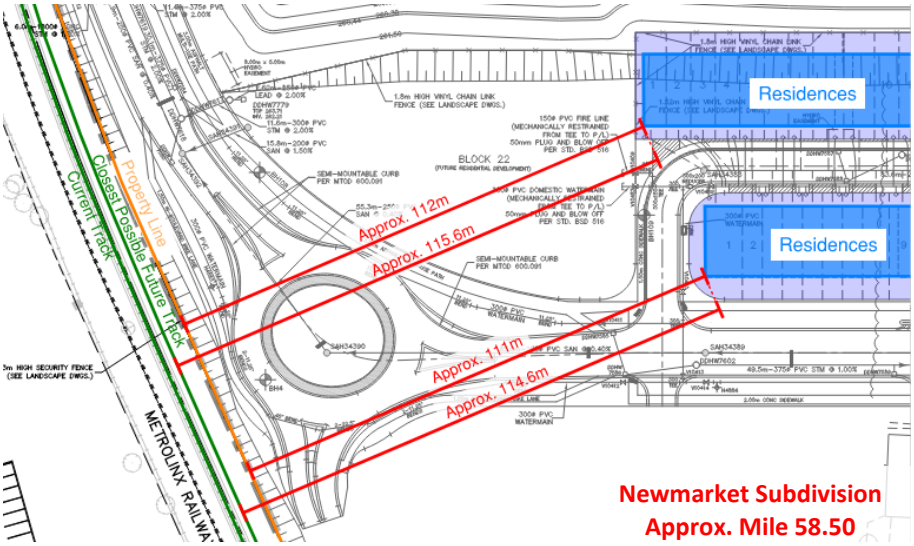
Block	Setback Description	Distance (approximate)
Block 1, 2 & 3	Horizontal setback from the residences to the property line	30m
	Horizontal setback from the residences to the closest possible future track.	33.6m
Block 21	Horizontal setback from the residences to the property line	111m
	Horizontal setback from the residences to the closest possible future track.	114.6m
Block 23	Horizontal setback from the residences to the property line	112m
	Horizontal setback from the residences to the closest possible future track.	115.6m



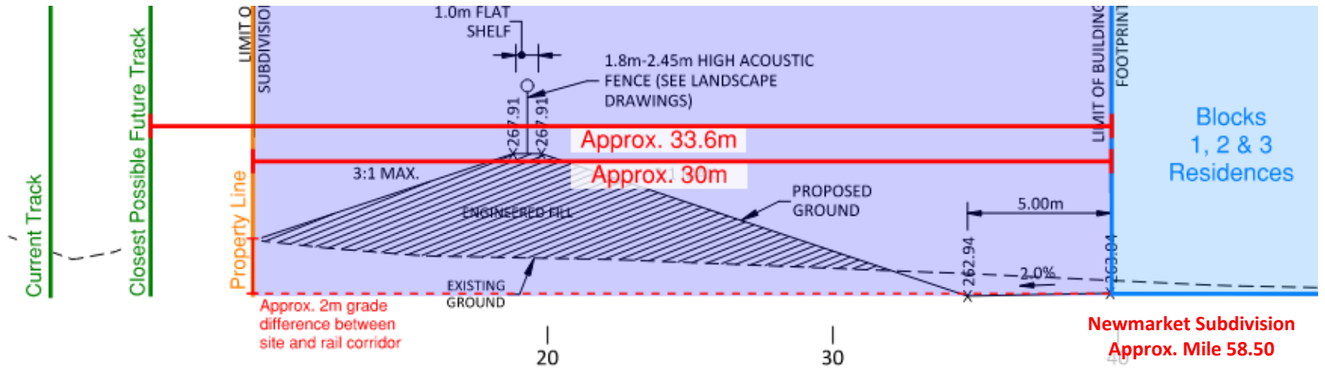
Block Site Plan



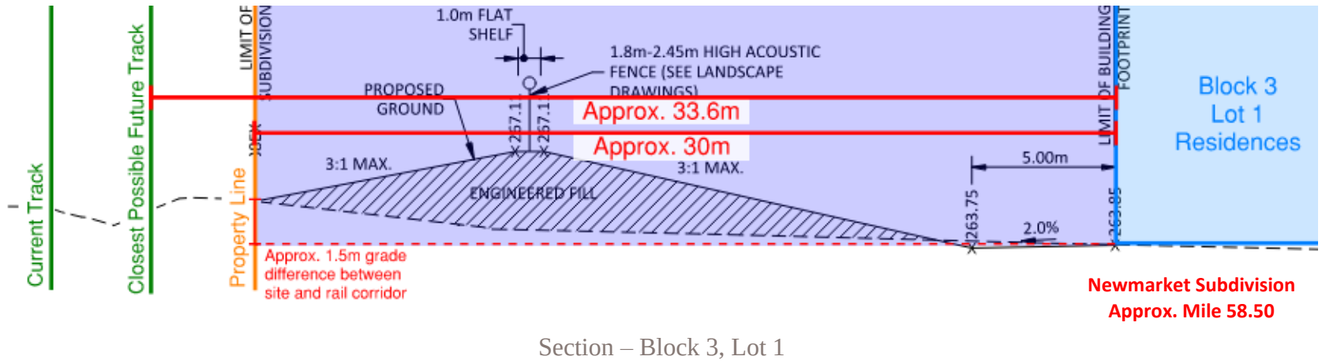
Site Plan – Blocks 1, 2 & 3



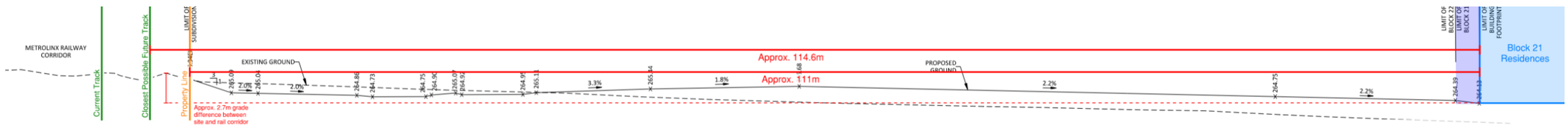
Site Plan – Blocks 21 & 23



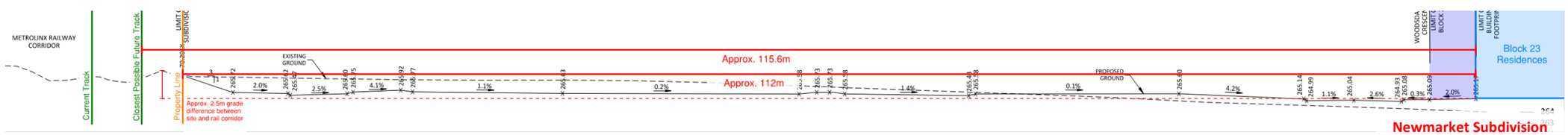
Section – Blocks 1, 2 & 3



Section – Block 3, Lot 1



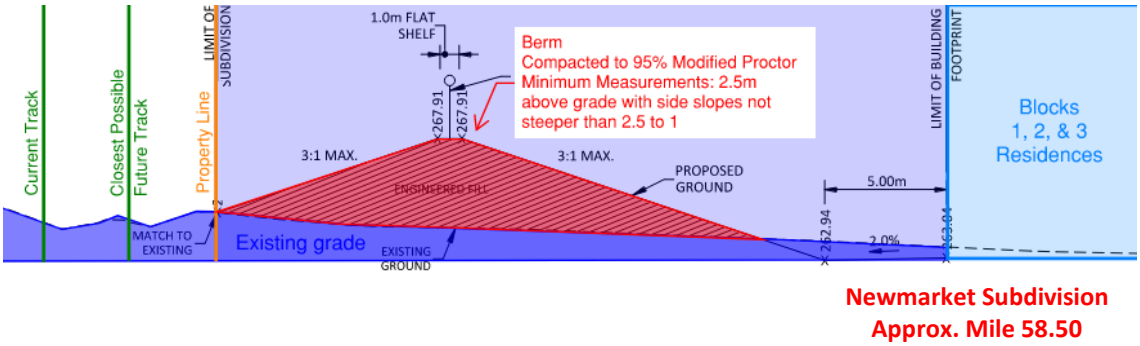
Section – Block 21



Section – Block 23

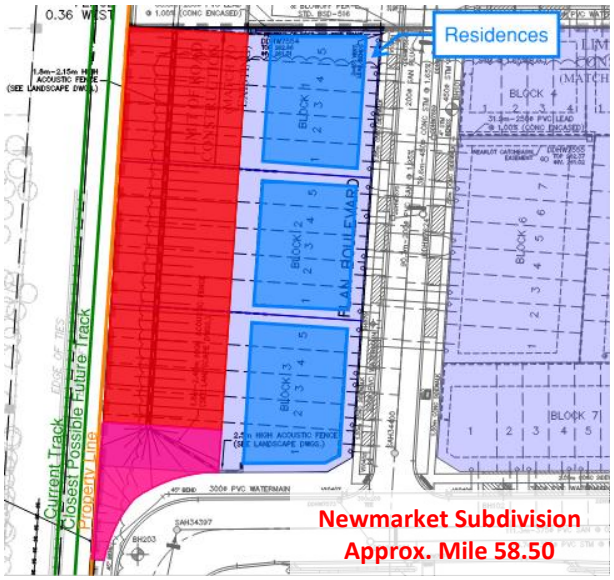
Berm

Since the proposed site has ample setback distance to the residences, we recommend a 2.5m high berm within the 30m setback distance where needed to meet the FCM/RAC Guidelines. Considering the derailment distances calculated and the setback distances measured, it is our recommendation that a berm be constructed at Blocks 1-3. Blocks 21 and 23 do not need a berm for protection since the setback distances are so large (more than 5x the maximum distance from the centreline of track) and will serve as a mitigating measure. The suggested berms are shown below.



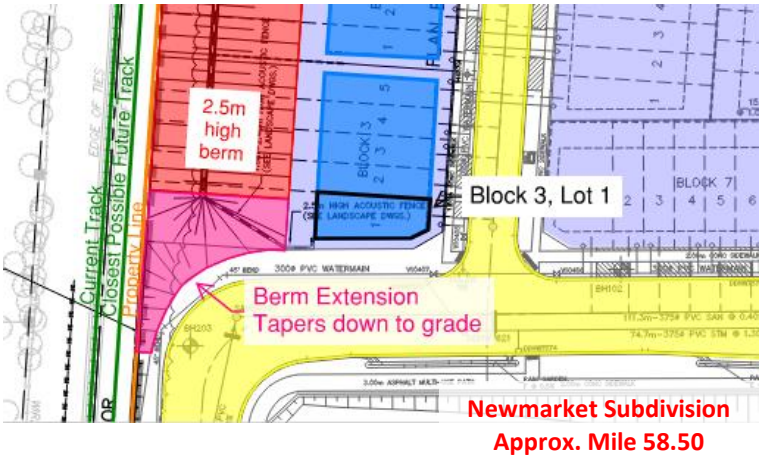
Suggested Berm – Blocks 1, 2 & 3

The berm will be located at the rail corridor boundary, outside of Blocks 1, 2 & 3. To the north of the site, is an existing berm. The new berm, belonging to this development site, will connect to the existing berm and taper down to grade south of Block 3. The proposed berm will mitigate the risk of derailment for Blocks 1-16 and the setback distance will mitigate the risk of derailment for Blocks 21 and 23. The berm will be compacted to 95% modified proctor and will be at minimum 2.5m high (measured from the grade of the site) with side slopes not exceeding 2.5 to 1. The image below shows the berm in red and the berm extension in pink.



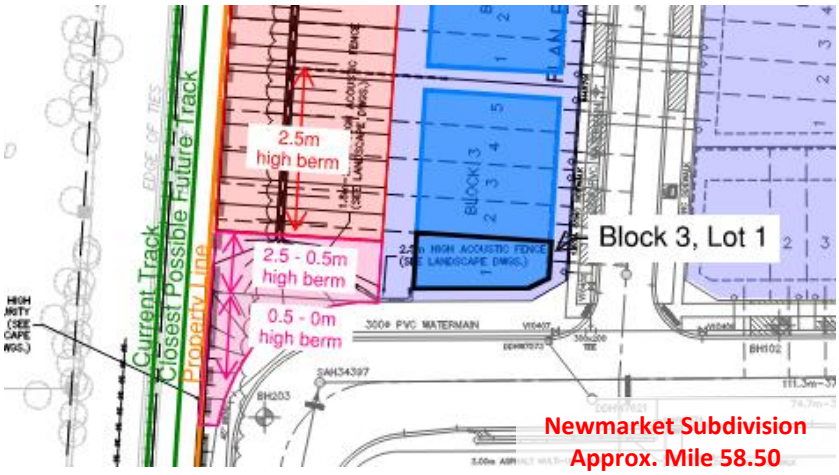
Berm Location

The berm located at the southern end of Block 3 is constrained by the planned road (highlighted in yellow below). Due to the ample setback from the rail corridor and the calculated derailment distance, we recommend a slightly shorter berm extension in this area. The combination of berm, berm extension, setback distance, and curved track will continue to mitigate the risks associated with derailment for all Blocks and Lots analyzed in this report. Again, it is important to remember the reasonableness criterion of the FCM/RAC Guidelines "All mitigation measures should be designed to the highest possible urban design standards. Mitigation solutions, as developed through the Development Viability Assessment process, should not create an onerous, highly engineered condition that overwhelms the aesthetic quality of an environment." (FCM/RAC Guidelines Section 3.1).



Planned Road Through Development

The berm extension will range in height. The berm will be between 2.5 and 0.5m high at Block 3, Lot 1, and taper down to grade outside of the Block 3, Lot 1, plot lines. All berm measurements have been taken from the grade of the site at the property line. We believe this height will mitigate the risks associated with derailment to tolerable levels. Details of the berm extension are shown below.



Berm Height

Debris

With the provision of the setback and the berm extent and height, the risk of debris is sufficiently mitigated to reasonable levels.

Fire

Given the height of the berm and the horizontal setback to the closest residence, there are no additional restrictions to the proposed development beyond Fire Code requirements associated with the construction materials or detailing for fire.

Smoke

Per the wind rose diagram, the wind may blow smoke towards the development. The setback from the tracks to the residences will mitigate the risk due to smoke.

Construction

Any construction considerations will be dealt with separately with the contractor's input.

Vegetation

Metrolinx requires a 3.5m vegetation buffer as part of the Metrolinx GO Expansion Program. We recommend low lying vegetation, if any, within this area such as shrubs and grasses.

Barrier Lifespan

The berm will be located on the development site. For this reason, any maintenance or inspection is the responsibility of the developer/future property owners. The berm is to remain intact for the lifespan of the development.

Trespassing/Fence Requirements

Adequate provisions to prevent the public from entering the rail corridor lands are recommended.

Metrolinx has an enhanced Fence standard High-Security Fencing:

The height of the fence is to be 2.4m. The fence construction shall be anti-trespass and tamperproof:

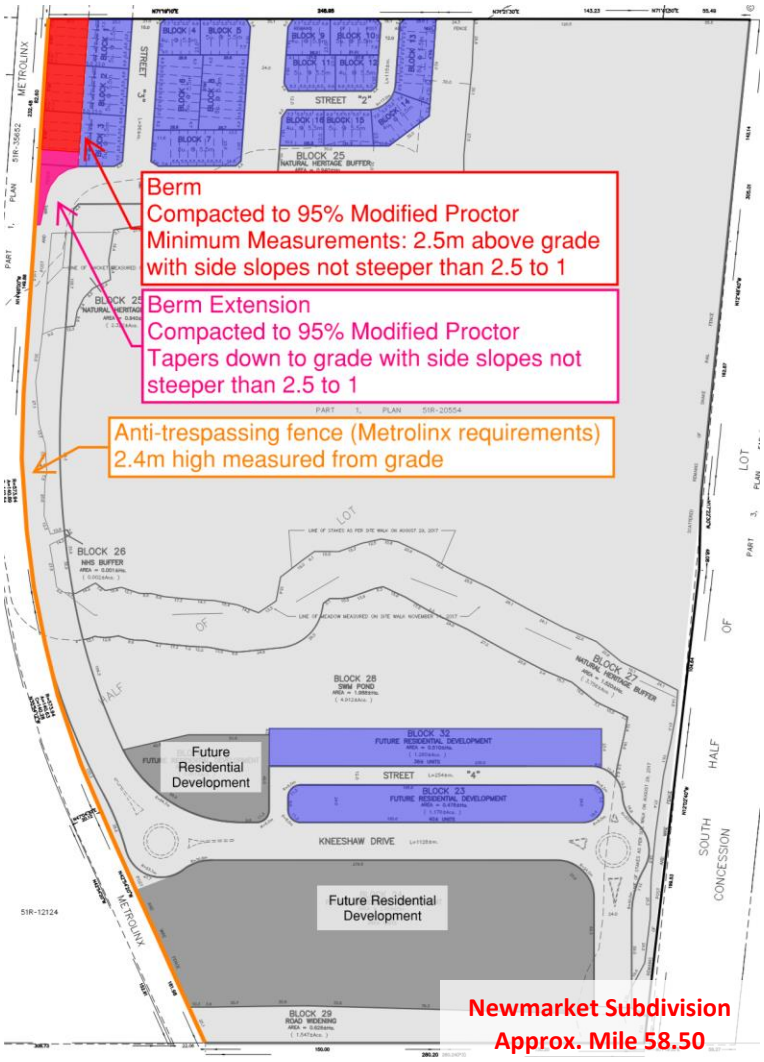
a. The high-security fence height above ground shall be 2.4 m
b. The panel mesh shall consist of a minimum 4mm diameter high tensile wire, with aperture sizes (openings) 76.2 x 12.7 mm centers or smaller fastened to suitable posts that allow for a minimum foundation depth of 1200 mm
c. The fence panels shall be strengthened with factory-formed undulations within each mesh panel. Mechanical Fasteners – Shall be tamper-proof and mechanically galvanized. Fastening Hardware shall be concealed from the non-rail side of each panel and post
d. Mesh to be galvanized with an exterior finish coating capable of withstanding typical climate variances within Southern Ontario
e. Specification sheets and breach testing results for any proposed alternate products and materials shall be submitted to Metrolinx staff for approval
f. Mechanical Fasteners shall be tamperproof and factory galvanized. Fastening hardware shall be concealed from the face of each panel and post.
g. The mesh, posts, clamps and associated hardware are to be galvanized with an exterior finish coating capable of withstanding repeat climate variances within Southern Ontario
h. A list of approved High-Security fencing manufacturers include:
    a. Cochrane–ClearVu
    b. BETAFENCE- Securifor 3D
    c. CLD- Securus Profiled
    d. Bear Mountain – Bear SecuriMesh Barrier

The fence will be located at the property line shared with the rail corridor.

CONCLUSION

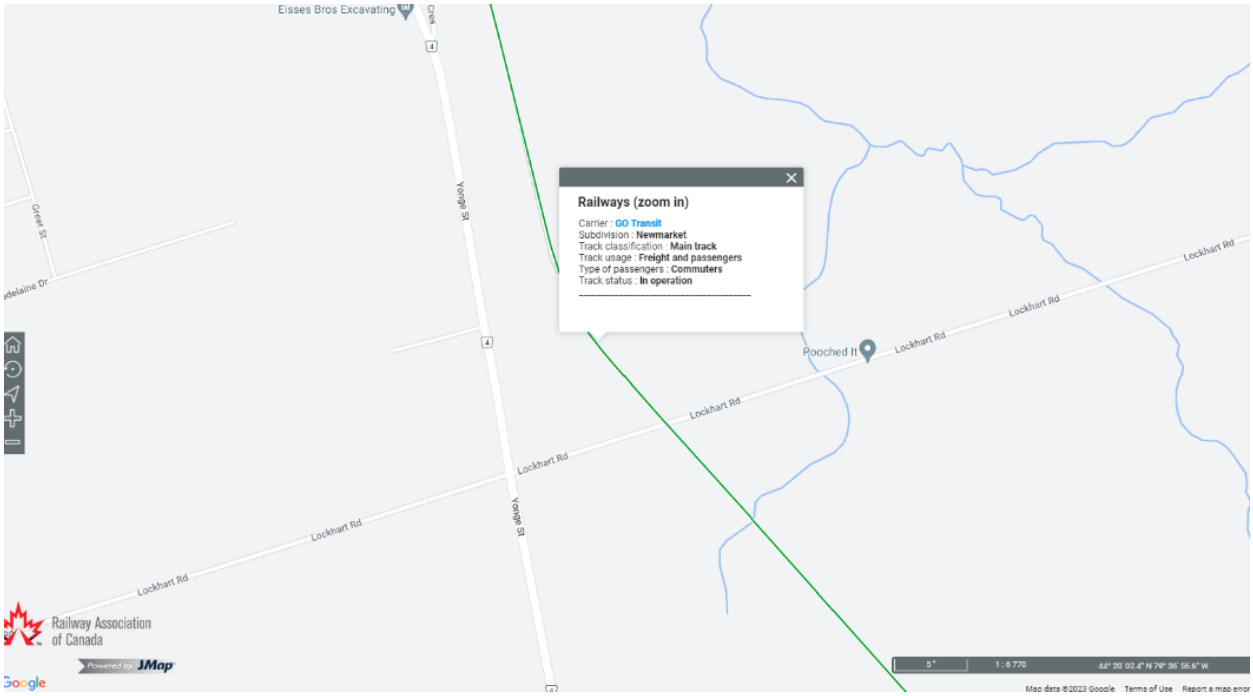
We have reviewed the site-specific safety aspects relating to the proposed development's proximity to the existing rail corridor and believe that the measures proposed above reasonably and appropriately mitigate the risks. The risk-mitigating measures include:

- Blocks 1-3: horizontal setback from residences to the property line is approximately 30m.
- Blocks 21 & 23: horizontal setback from residences to the property line is greater than 100m.
- Berm adjacent to Blocks 1-3 per the FCM/RAC requirements. The berm will be compacted to 95% modified proctor, be at minimum 2.5m high measured from grade, and side slopes will not be steeper than 2.5 to 1 (shown below in red).
- The berm will be connected to an existing berm north of the site and will taper down to grade south of Block 3. Within the Block 3, Lot 1 plot, the berm extension will begin (shown in pink).
- The berm will be built entirely on the development site.
- An anti-trespassing fence will run the length of the site at the property line. This fence will follow Metrolinx requirements.

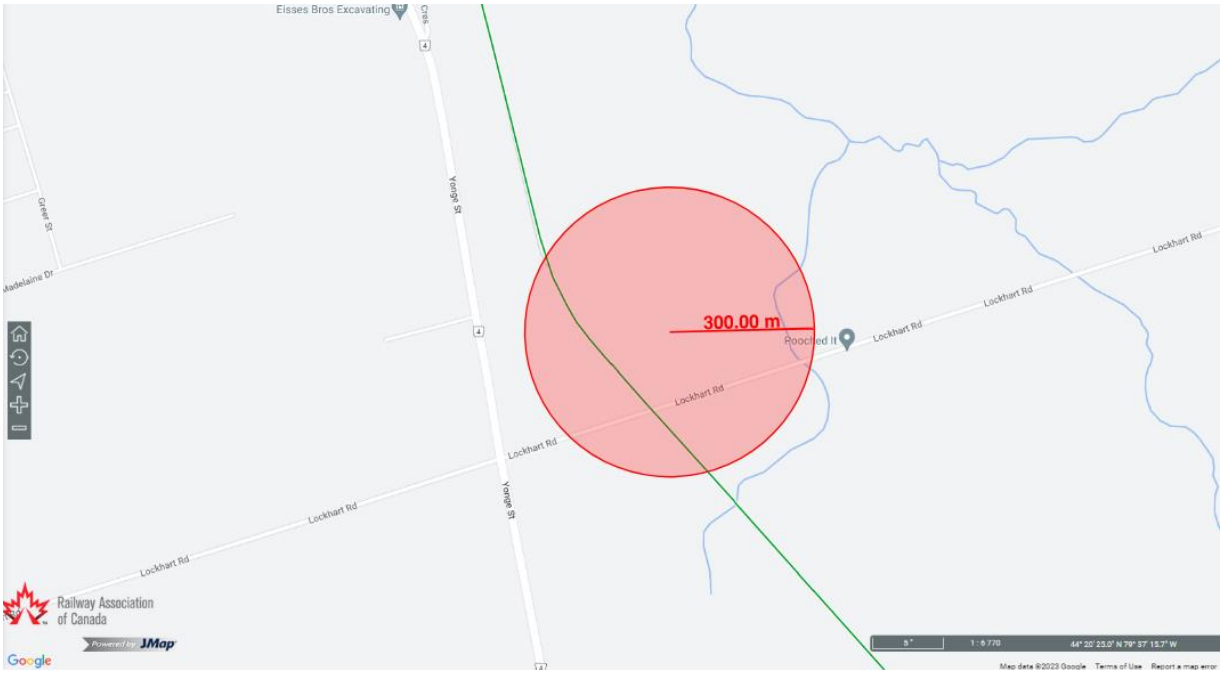


APPENDIX A: RAIL INFORMATION

Railway Association of Canada Track Information:



No rail yards within 300m radius of site location:



APPENDIX B: RISK ASSESSMENT MATRIX

Rail Safety Risk Assessment

No.	Hazard	Without Mitigating Measures				With Proposed Mitigating Measures				Net change of Risk Classification	Comments
		Frequency	Severity	Residual Risk	Risk Classification	Frequency	Severity	Residual Risk	Risk Classification		
1	Derailment Freight - Flammable or Hazardous materials *Derailment of frieght train transporting flammable/hazardous material*	2	5	10	Intolerable	2	4	8	Tolerable	-2	Berm and setback mitigates the risk of fire and explosion.
2	Derailment Freight - Inert Glancing Blow *Multicar derailment of freight train adjacent to site*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of derailment.
3	Derailment Freight - Inert Direct Impact *Single freight car impact due to accordian style derailment*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of derailment.
4	Derailment Passenger - Glancing Blow *Multicar derailment of passenger train adjacent to site*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of derailment.
5	Derailment Passenger - Direct Impact *Single freight car impact due to accordian style derailment*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of derailment.
6	Excess Speed - Freight *Derailment of freight train travelling at speed in excess of track design speed*	2	3	6	Tolerable	2	2	4	Acceptable	-2	We have tested for the risk of excess speed. The berm and setback continue to mitigate the risk.
7	Excess Speed - Passenger *Derailment of passenger train travelling at speed in excess of track design speed*	2	3	6	Tolerable	2	2	4	Acceptable	-2	We have tested for the risk of excess speed. The berm and setback continue to mitigate the risk.
8	Airborn Debris - Freight *Top level sea-can of a double stacked intermodal freight car is launched due to a derailment*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of debris.
9	Groundborn Debris - Freight *As a result of derailment a sea-can or a part of the freight train become rolling or sliding debris along the ground*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of debris.
10	Airborn Debris - Passenger *During a derailment, parts of the passenger train become airborn projectiles*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of debris.
11	Groundborn Debris - Passenger *As a result of derailment a part of the passenger train become rolling or sliding debris along the ground*	2	3	6	Tolerable	2	2	4	Acceptable	-2	Berm and setback mitigates the risk of debris.
12	Smoke/Exhaust *Ingestion of smoke or diesel exhaust into a building's HVAC systems*	2	2	4	Acceptable	2	2	4	Acceptable	0	Due to the prevailing winds,smoke may be blown towards the site. The setback distance will mitigate the risk.
13	Trespassing *Ingress of non-authorised personel onto railway*	2	4	8	Tolerable	1	4	4	Acceptable	-4	Anti-trespassing fence will extend the full length of the development to prevent trespassing.
	Total Assessed Risk Score			82				56			

Risk Event Classification

Frequency of Event	Class	Severity of Event				
		Negligible	Marginal	Serious	Critical	Catastrophic
		1	2	3	4	5
Improbable	1	1	2	3	4	5
Remote	2	2	4	6	8	10
Occasional	3	3	6	9	12	15
Probable	4	4	8	12	16	20
Frequent	5	5	10	15	20	25

Risk Category

Risk *(Frequency Class x Severity Class)*		Risk Assessment Category	Mitigation Measures Approach
Low	1 to 4	Acceptable	No further mitigation is required
Medium	6 to 9	Tolerable	Tolerable if ALARP* - mitigate to level that is reasonable
High	10 to 25	Intolerable	Risk shall be eliminated / reduced

*ALARP = As Low As Reasonably Practicable

Definition of Frequency Criteria

Fraquency Rating	Description
1. Improbable	Extremely unlikely to occur
2. Remote	Unlikely to occur in rail lifecycle
3. Occasional	Likley to occur several times in rail lifecycle
4. Probable	Expected to occur
5. Frequent	Expected to occur continuous

Definition of Severity Criteria

Severity Rating	Consequence to Person/Public	Consequence to Environment
1. Negligible	Non-reportable injury	None
2. Marginal	Single minor injury	Reversible minor environmental impact
3. Serious	Single permanent partial or tempory total disabling injury; multiple minor injury	Reversible moderate environmental impact
4. Critical	Single fatality; Single permanent total disability; Multiple permanent partial or temporay total disabling injury	Reversible significant environmental impact
5. Catastrophic	Multiple fatalities: Multiple permanent total disabling injuries	rreversible significant environmental impac

APPENDIX C: CORRESPONDENCE

Hi Julia,

Further to your request dated March 2, 2023, the subject lands (750 Lockhart Rd, Innisfil) are located within 300 metres of the Metrolinx Newmarket Subdivision (which carries Barrie GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 120 trains. The planned detailed trip breakdown is listed below:

	1 Electric Locomotive	2 Electric Locomotives		1 Electric Locomotive	2 Electric Locomotives
Day (0700-2300)	94	0	Night (2300-0700)	26	0

The current track design speed near the subject lands is 80 mph (129 km/h).

There are at *anti-whistling by-laws* in affect near the subject lands Mapleview Dr East.
With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.
Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams have submitted their bids to Infrastructure Ontario and Metrolinx for evaluation and contract award. GO Expansion construction will get underway in late 2023.
However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.
Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected. Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.
Regards,

Tara

Tara Kamal Ahmadi
Junior Analyst
Third Party Projects Review, Capital Projects Group
Metrolinx | 20 Bay Street | Suite 600 | Toronto | Ontario | M5J 2W3

METROLINX

From: Julia Pannolino <julia.pannolino@entuitive.com>
Sent: March 1, 2023 3:28 PM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Subject: Rail Information - Newmarket Mile 58.5

Hi,

Entuitive has been retained by Ballymore Homes to prepare a rail safety report for the proposed development at 750 Lockhart Rd, Innisfil. The site is located at approximately Mile 58.5 of the Metrolinx Newmarket Subdivision.

To properly review the safety aspects of the development, can you let us know any information Metrolinx can share on the following:

1. Number of current Metrolinx trains per day,
2. Number of current GO cars per train,
3. Number of current GO locomotives per train,
4. Current design speed for GO trains,
5. Typology of operation (Type A, B, C, D or E),
6. Physical characteristics of Type (elevated, at grade, below grade; straight vs. curved alignment),
7. Primary rail operation (freight, passenger, both),
8. Other operators with ownership rights to track (CN, CP, Via, etc.),
9. Operating characteristics (presence of switches, signals, track type (continuously welded, jointed), proximity to nearest station),
10. Rail corridor service expansion plans by all operators (10-Year Forecast),
11. Planned changes – any known upcoming planned changes to the above information?

12. Any other information relevant for rail safety.

Thank you,

Julia Pannolino P.Eng.
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(She/Her)
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At Entuitive we are purpose-driven to build a better world. Watch here.

Aligning with the values of Entuitive and in the spirit of reconciliation, I acknowledge that I live, work, and play on the traditional territories of the Mississaugas of the Credit, Anishnabeg Chippewa, Iroquois, and the Wyandot peoples.

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