

REPORT TO: Council
REPORT FROM: Community Planning & Sustainability
PRESENTED: November 7, 2023
SUBJECT: Development Permit DP000599 (WLNG)

FOR: Regular
FILE: DP000599

Recommendation:

THAT:

1. Council approve the Development Permit No. DP000599 for the properties described as LOT 1 DISTRICT LOTS 2802 AND 8294 PLAN EPP86842, DISTRICT LOT 5899, EXCEPT PART IN REFERENCE PLAN 5238, LOT A DISTRICT LOTS 2351 AND 8295 PLAN EPP86843 located at the Woodfibre Site subject to the Registration of a s.219 Wildfire covenant on Title.
2. Council authorize the Mayor and Corporate Officer to execute the Development Permit.

1. Objective:

To present Development Permit No. DP000599 for Council's decision. This development is proposing to construct and operate the Woodfibre Liquefied Natural Gas (WLNG) Project (the "Project"). The Project meets Development Permit Area 10 guidelines for intensive industrial development.

2. Background:

The WLNG project is located on the former Woodfibre Pulp Mill. The proposed development is subject to Development Permit Area 1 (DPA 1): Protection of the Environment, Development Permit Area 10 (DPA 10): Intensive + Restricted Industrial and Development Permit Area 11 (DPA 11): Protection from Wildfire Hazard. WLNG underwent an environmental assessment process from 2013 to 2015 and received:

- an environmental assessment certificate (EAC) for the Certified Project Area (CPA) under the *British Columbia Environmental Assessment Act* (EAC #E15-02) in 2015
- an environmental assessment approval from Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) through the Squamish Nation Environmental Assessment Agreement in 2015, and;
- a positive Federal Decision Statement (FDS) under the *Canadian Environmental Assessment Act*, 2012 in 2016.

Development Permit applications associated with larger projects are subject to Council approval. Once the project design meets relevant guidelines outlined in the Official Community Plan (OCP), approval of the permit is non-discretionary.

3. Project Information:

Once constructed, the WLNG facility will have a capacity to liquefy up to 2.1 million tonnes per year of natural gas, have a storage capacity of 250,000 cubic meters (m³), and will export the liquified natural gas via tankers. There is no road access and all personnel, equipment, and supplies for the Project will be ferried in by vessel. The Project will use electrical power sourced from BC Hydro and gas will be supplied to the facility for export by FortisBC.

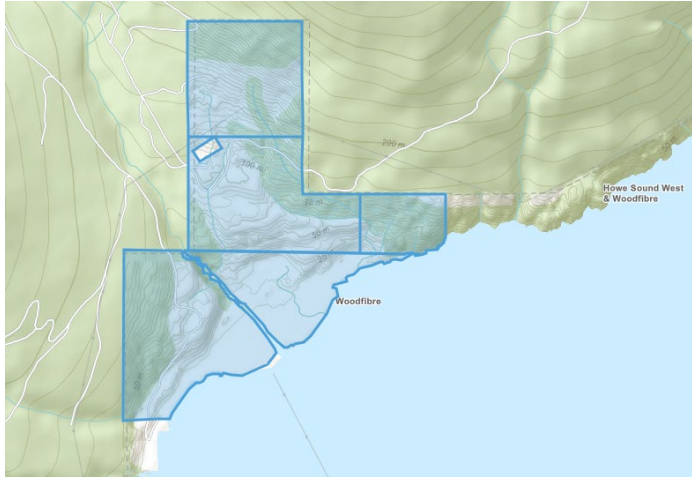


Figure 1: Site Location

Development Proposal

This DP application seeks to establish the form and character of 32 buildings and structures. Attachment 3 of this report includes the preliminary building list. These structures will range in the size from 9 m² to 1,050 m². Buildings to the west of Mill Creek will consist of primary administrative and operations buildings, while the east of Mill Creek will house the prefabricated modules required for the natural gas liquification.

Applicable DOS Regulations	Description
OCP Designation	Intensive Industrial
Zoning	I-3 General Industrial
Development Permit Areas	DPA 1, DPA 10, DPA 11
Flood Hazard Area	Yes
Wildfire Hazard Area	Yes
Environmentally Sensitive Area	Yes

The exterior building design aims to integrate the project into the natural landscape where possible. A green colour palette of RAL6010 Grass Green (Figure 2) will be applied to all exterior concrete walls of primary buildings, as well as other areas that are exposed and provide support to those facilities (roofs, posts, external engineering systems).

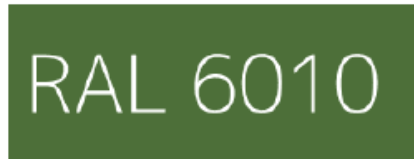


Figure 2 – Exterior Color Palette



Figure 3 – Shoreline Overview

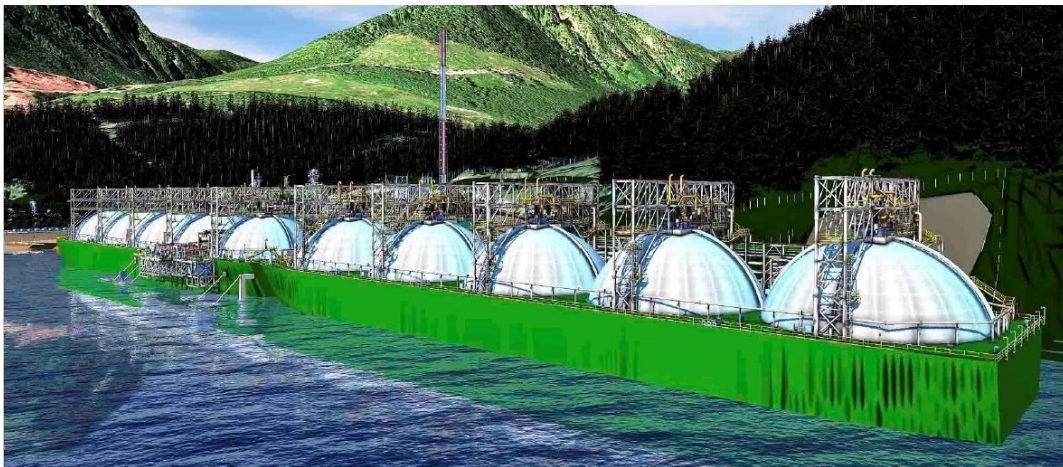


Figure 4 – Storage Facility



Figure 5 – Site Overview

Receptor Site 1: Xwekw'ále7em (Porteau Cove)



Figure 6 –Porteau Cove Viewpoint

Receptor Site 2: Hwy 99/Minaty Bay

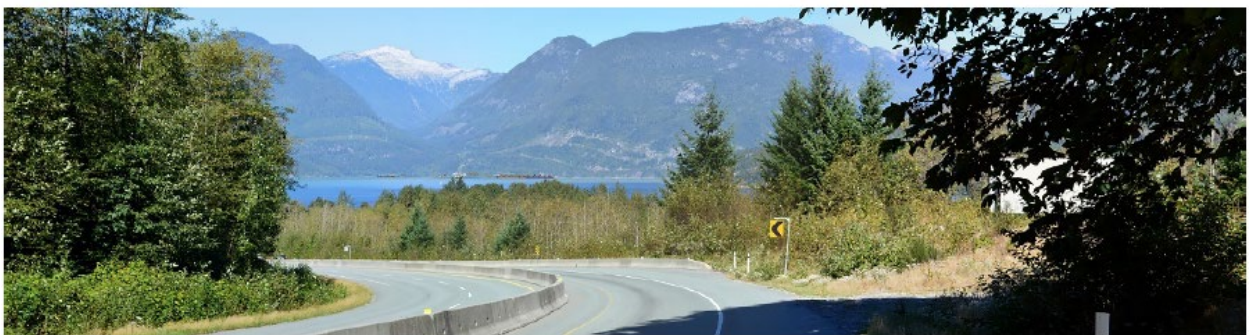


Figure 7 – Hwy99/Minaty Bay Viewpoint

Receptor Site 3: Furry Creek



Figure 8 – Furry Creek Viewpoint

Receptor Site 4: Stá7mes (Stawamus) Chief Parking Lot



Figure 9 – Stawamus Chief Parking Lot Viewpoint

Receptor Site 5: Átl'ka7tsem (Howe Sound) (Sts'its'a7kin [Watts Point])



Figure 10 – Watts Point Viewpoint

Flood Hazard

The site is outside of the Development Permit Area 2 – Natural Hazards. The applicants have provided preliminary flood hazard assessments and final hazard assessments are required to be registered on title prior to building permit issuance.

Development Permit Area 1 – Protection of the Environment

A DPA 1 application is proceeding concurrently with the DP 599 application to address habitat protection and compensation. DPA 1 application approval is delegated to Staff.

Development Permit Area 10 – Intensive + Restricted Industrial

The form and character of the development is to be reviewed against the DPA 10 as outlined in this report (this is the DPA subject to Council approval): Intensive and Restricted Industrial Guidelines. Development Permit Area 10 – Intensive + Restricted Industrial is subject to Council approval. The project design meets relevant guidelines outlined in the Official Community Plan (OCP), approval of the permit is non-discretionary.

DPA 10 is designated for the following purpose:

- i. Establishment of objectives for the form and character of industrial development

Attachment 1 to this report outlines DP 599 conformance to the DPA 10 guidelines.

Development Permit Area 11 – Protection from Wildfire Hazard

The proposed development will be registering a Section 219 Restrictive Covenant that is registered in favour of the District for the protection of development from wildfire hazard.

4. Implications:

a. Budget:

Issuance of DP000599 is required prior to Building Permit issuance, which will trigger building permit fees.

b. Policy:

9.2.e Despite Section 9.2.a, consider the following land uses for all lands outside the Growth Management Boundary:

- ii. industrial activities that requires minimal servicing

10.14.f Work with the development community to minimize potential wildlife conflicts through design and adherence to minimum standards and best practices (e.g. wildlife resistance landscape planting, waste facility design, and construction site management).

14.4.a Require development applications for new industrial activities to address associated impacts on existing adjacent or nearby uses. Land use impacts should be mitigated using the following screening and buffering strategies as appropriate: exterior lighting design, landscaping, berms, fencing, and setbacks.

c. Bylaws:

Key District Bylaws pertinent to this Development Permit include:

- District of Squamish Zoning Bylaw No. 2200, 2011

- District of Squamish Official Community Plan Bylaw 2500, 2017

6. Engagement:

To inform the community, per policy, the Project was posted to the District's Development Showcase. A development sign was not posted due to the remote nature of the site. As this application is for non-discretionary permit approval, no additional public engagement was triggered.

7. Next Implementation Steps:

Staff will issue Development Permit No. DP000599 following fulfillment of all noted permit issuance conditions.

8. Attachments:

1. Development Permit Area 10 – Industrial Lands
2. [Architectural Plans](#)
3. [Building List](#)
4. [Renderings](#)
5. [Visual Quality Management Plan](#)

9. Alternatives to Staff Recommendation:

THAT Council refer Development Permit No. DP000599 back to Staff.

10. Staff Review

Prepared By:

Vrish Prahalad, Planner

Reviewed By:

Jonas Velaniskis, Senior Director of Community Development
Julie Wengi, General Manager of Community Planning and Sustainability
Robin Arthurs, General Manager of Corporate Services

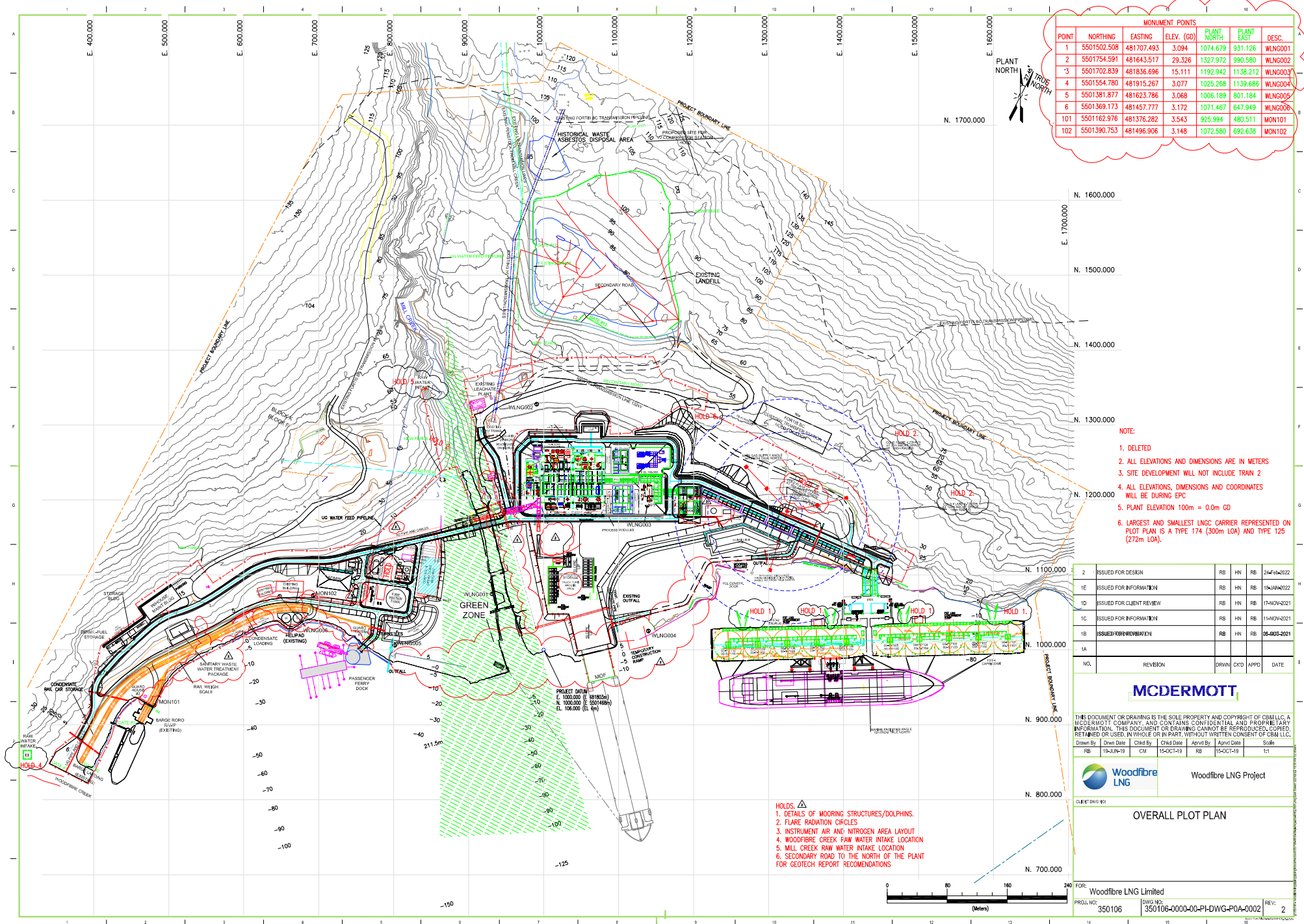
CAO Recommendation:

That the recommendation of the Community Planning Department be approved.

Linda Glenday, CAO

Attachment 1 – Development Permit Area 10 Guidelines Table Conformance

DPA10: Intensive + Restricted Industrial	Project Alignment
43.4 BUILDING FORM + MASSING	
(a) The siting, massing, shape, pattern, and roof line should be sufficiently varied to reduce the visual impact and apparent massing of structures visible from the adjacent properties and public areas, including major road rights-of-way	Meets Guideline where appropriate
43.5 EXTERIOR LIGHTS	
(a) Lighting of facilities visible from the public realm, including major road rights-of way, should be kept to the minimum necessary for safety and visibility. Lighting equipment should be carefully chosen to focus light on the area to be illuminated and avoid spillage of light into other areas. Fixtures with a full cut-off angle should be used. Lighting should be directed and shielded away from the public realm to prevent light pollution.	Meets Guideline
43.6 BUILDING COLOURS	
(a) Facilities visible from the public realm, including major road rights-of-way, should utilize colours that blend with the surrounding environment to reduce the visual impact of the facility	Meets Guideline
43.7 LANDSCAPING	
(a) New industrial development adjoining or separated by public road right of way from residential development should utilize a combination of landscaping and planted berms to provide visual and acoustic buffering between uses	Not Applicable
(b) Landscaping features and finishing details should be provided to reduce the negative visual impacts of chain link fencing visible from roads or residences	Not Applicable



MONUMENT POINTS					
POINT	NORTHING	EASTING	ELEV. (GD)	PLANT NORTH	PLANT EAST
1	5501502.508	481707.493	3.094	1074.679	931.126
2	5501754.591	481643.517	29.326	1327.972	990.580
3	5501702.839	481836.696	15.111	1192.942	1138.212
4	5501554.780	481915.267	3.077	1025.268	1139.686
5	5501381.877	481623.786	3.068	1006.189	801.184
6	5501369.173	481457.777	3.172	1071.467	647.949
101	5501162.976	481376.282	3.543	925.994	480.511
102	5501390.753	481496.906	3.148	1072.580	692.638

- NOTE:
1. DELETED
 2. ALL ELEVATIONS AND DIMENSIONS ARE IN METERS
 3. SITE DEVELOPMENT WILL NOT INCLUDE TRAIN 2
 4. ALL ELEVATIONS, DIMENSIONS AND COORDINATES WILL BE DURING EPC
 5. PLANT ELEVATION 100m = 0.0m GD
 6. LARGEST AND SMALLEST LNGC CARRIER REPRESENTED ON PLOT PLAN IS A TYPE 174 (300m LOA) AND TYPE 125 (272m LOA).

NO.	REVISION	DRAWN	CHECKED	APPROVED	DATE
1E	ISSUED FOR DESIGN	RB	HN	RB	24-JUN-2022
2E	ISSUED FOR INFORMATION	RB	HN	RB	16-JUN-2022
1D	ISSUED FOR CLIENT REVIEW	RB	HN	RB	17-NOV-2021
1C	ISSUED FOR INFORMATION	RB	HN	RB	11-NOV-2021
1B	ISSUED FOR INFORMATION	RB	HN	RB	05-NOV-2021
1A					

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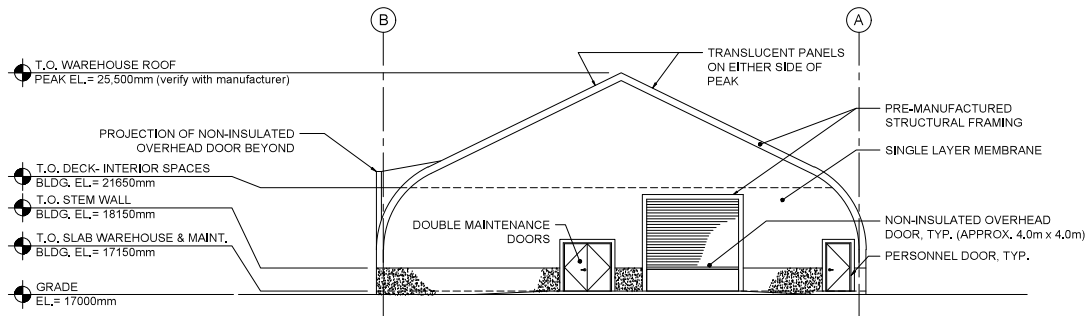
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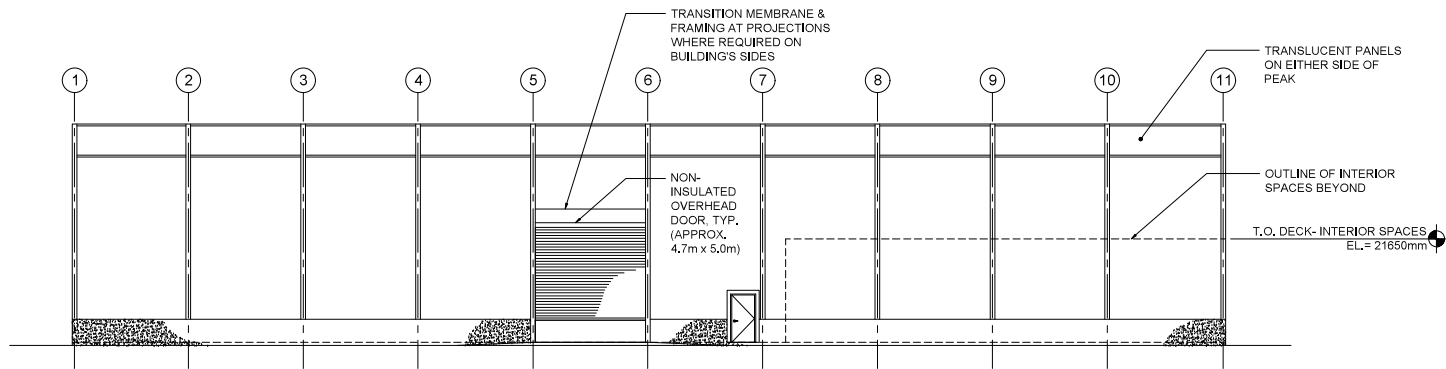
Woodfibre LNG Project

OVERALL PLOT PLAN

FOR:	Woodfibre LNG Limited
PROJ. NO:	350106
DWG. NO:	350106-0000-00-PL-DWG-POA-0002
REV:	2

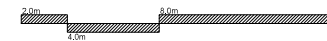


02 WAREHOUSE & MAINTENANCE BUILDING EAST ELEVATIONS



01 WAREHOUSE & MAINTENANCE BUILDING SOUTH ELEVATIONS

GRAPHIC SCALE:



GENERAL NOTES:

- NOT FOR CONSTRUCTION
- DIMENSIONS ARE IN MILLIMETERS
- THE WAREHOUSE WILL NOT BE A CONDITIONED SPACE, BUT WILL BE VENTILATED. THE WAREHOUSE WILL NOT BE INSULATED.
- THE MAINTENANCE SPACE WILL BE HEATED AND VENTILATED. ALL OTHER INTERIOR SPACES ENCLOSED WITH INTERIOR PARTITIONS WILL BE CONDITIONED.
- THE WAREHOUSE-MAINTENANCE BUILDING WILL BE A NEW PRE-ENGINEERED BUILDING WITH A NON-INSULATED MEMBRANE SYSTEM, SUPPORTED BY A PRE-ENGINEERED STRUCTURAL FRAME. STRUCTURAL FRAME TO BE INSTALLED ON A SITE-CONSTRUCTED CAST-IN-PLACE CONCRETE STEM WALL AT THE PERIMETER OF THE BUILDING. STEM WALL, SLAB AND FOUNDATION WILL BE CAST-IN-PLACE.
- THE WAREHOUSE-MAINTENANCE BUILDING WILL BE EQUIPPED WITH AN AUTOMATIC FIRE SPRINKLER SYSTEM THROUGHOUT OVER THE OPEN WAREHOUSE AREA & BENEATH THE DECK OF THE INTERIOR ENCLOSED SPACES.
- ALL INTERIOR SPACES ENCLOSED WITH INTERIOR PARTITIONS WILL HAVE FLAT METAL DECK ROOFS, INSULATED AND SUPPORTED BY STEEL JOISTS.
- ALL INTERIOR SPACES ENCLOSED WITH INTERIOR PARTITIONS WILL BE STIC-BUILT WITH METAL STUD AND SHEET ROCK WALLS.
- SPECIFIC BUILDING CHARACTERISTICS (OVERALL SHAPE, BUILDING MATERIALS, DETAILS, INTERIOR SPACES AND FEATURES OF ARCHITECTURAL ELEMENTS) TO BE SPECIFIED DURING DESIGN AND DETAILED ENGINEERING PHASES.

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Woodfibre LNG Project

CLIENT DWG NO:

MCDERMOTT

ARCHITECTURAL
WAREHOUSE BUILDING ELEVATIONS

FOR: Woodfibre LNG Limited

NO.	REVISION	DRAWN	CHKD	APPD	DATE
C	ISSUED FOR CLIENT REVIEW	TS	MH	DD	24FEB20
B	ISSUED FOR CLIENT REVIEW	TS	MH	DD	06JAN20
A	ISSUED FOR REVIEW	TS	MH	DD	21OCT19

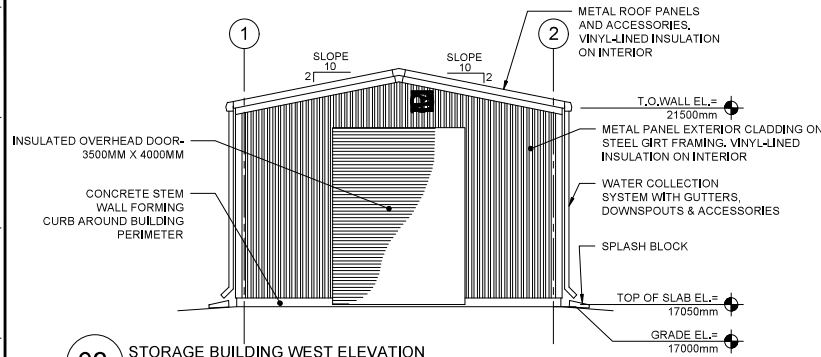
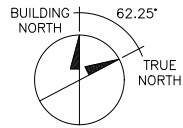
350105-4410-00-AR-DWG-A10-0003 WAREHOUSE BUILDING LAYOUT

REFERENCE DRAWINGS

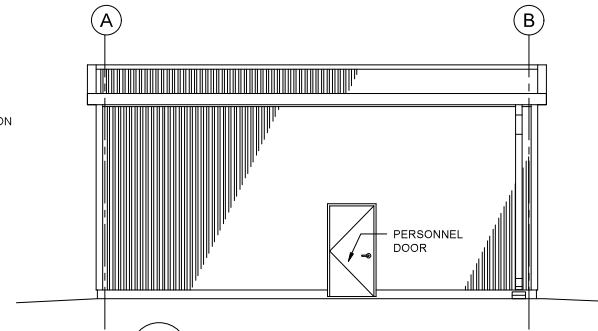
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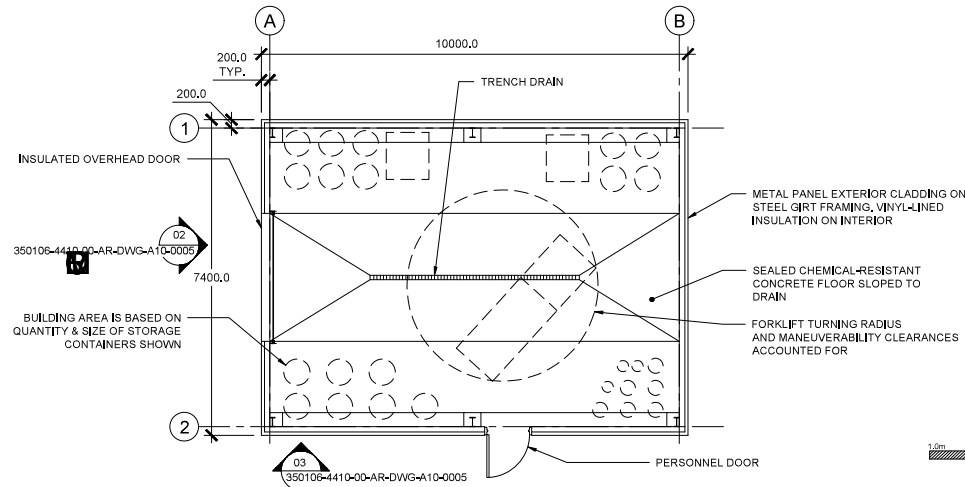
PROJ. NO: 350105, DWG NO: 350105-4410-00-AR-DWG-A10-0004, REV: C



02 STORAGE BUILDING WEST ELEVATION

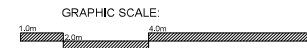


03 STORAGE BUILDING SOUTH ELEVATION



01 STORAGE BUILDING LAYOUT

- GENERAL NOTES
1. NOT FOR CONSTRUCTION.
 2. DIMENSIONS ARE IN MILLIMETERS.
 3. PROCESS ENGINEERING AS WELL AS BUILDING CODE REQUIREMENTS ARE TO PROVIDE BASIS FOR VENTILATION AND HEATING REQUIREMENTS. REQUIREMENTS TO BE DETERMINED DURING DESIGN AND DETAILED ENGINEERING PHASES.
 4. THE STORAGE BUILDING WILL BE A NEW PRE-ENGINEERED BUILDING, INSTALLED ON A SITE CONSTRUCTED FOUNDATION AND SLAB.
 5. THE STORAGE BUILDING FOUNDATION TO BE DESIGNED DURING DESIGN AND DETAILED ENGINEERING PHASES.
 6. THE PRE-ENGINEERED BUILDING IS ASSUMED TO BE STRUCTURAL AND SECONDARY STEEL FRAMED WITH EXTERIOR METAL WALLS PANELS AND INSULATION MEETING ALL APPLICABLE CODE REQUIREMENTS.
 7. ROOF IS ASSUMED TO BE OF METAL ROOF PANELS, FORMING A WATER-TIGHT SYSTEM ACCOMPANIED BY TRIM AND DRAINAGE ACCESSORIES, ROOF PANEL SYSTEM AND SUPPORTING STRUCTURE MUST BE DESIGNED TO SUPPORT APPLICABLE SNOW LOADS, VERTICAL LOADING AND LATERAL LOADING PER APPLICABLE CODES. ROOF INSULATION IS TO BE PROVIDED, MEETING ALL APPLICABLE CODE REQUIREMENTS.
 8. SPECIFIC BUILDING CHARACTERISTICS (OVERALL SHAPE, MATERIALS, DETAILS, INTERIOR SPACES AND FEATURES OF ARCHITECTURAL ELEMENTS) TO BE SPECIFIED DURING DESIGN AND DETAILED ENGINEERING PHASES.
 9. EXTERIOR LIGHTING SHALL CONFIRM TO BUILDING CODES AND STANDARDS. LIGHTING LOCATIONS SHALL BE APPROVED BY COMPANY.
 10. EXTERIOR COLOR SELECTION SHALL BE APPROVED BY COMPANY.



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Woodfibre LNG Project

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ARCHITECTURAL
STORAGE BUILDING LAYOUT & ELEVATIONS

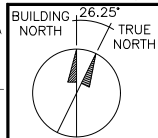
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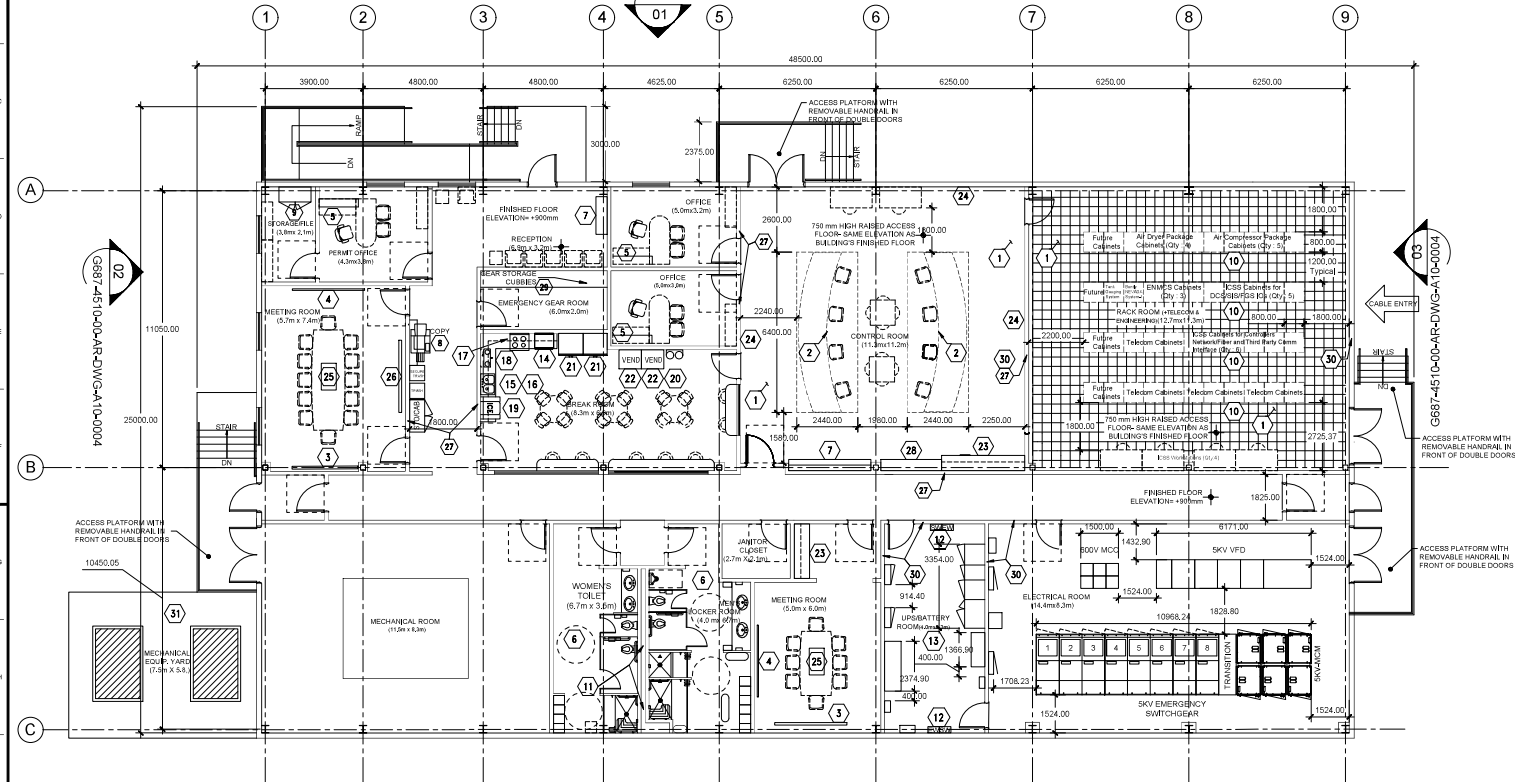
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FOR
Woodfibre LNG Limited

PROJ. NO.	350106	DWG. NO.	350106-4410-00-AR-DWG-A10-0005	REV.	C
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G687-4510-00-AR-DWG-A10-0004



KEY NOTES

- ROOMS SHALL HAVE A RECESSED SLAB AND SHALL RECEIVE RAISED ACCESS FLOORING & BOLTED STRINGER UNDERSTRUCTURE BY BUILDING SUBCONTRACTOR.
- CONSOLES FURNITURE SHALL BE SPECIFIED AND PROVIDED BY OTHERS.
- WALL MOUNTED MONITOR SUPPLIED BY OWNER, BUILDING SUBCONTRACTOR TO PROVIDE BLOCKING IN THIS AREA
- BUILDING SUBCONTRACTOR TO PROVIDE BLOCKING IN THIS AREA TO ACCOMMODATE UPPER FLOOR CABINETS
- RESTROOMS TO HAVE PROPER TOILET ACCESSORIES BY BUILDING SUBCONTRACTOR, I.E., TOILET PAPER DISPENSER, PAPER TOWEL DISPENSER, TRASH RECEPTACLE, SOAP DISPENSER, ETC.
- HAND HAT SHELVE WITH COAT HOOKS BELOW BY BUILDING SUBCONTRACTOR ALSO PROVIDE ADEQUATE BLOCKING
- SUPPLY STORAGE UPPER CABINETS AT COPIER BY BUILDING SUBCONTRACTOR - PROVIDE BLOCKING AS NEEDED.
- FULL HEIGHT CABINETS AT THIS LOCATION BY BUILDING SUBCONTRACTOR.
- BUILDING SUBCONTRACTOR SHALL PROVIDE STEEL SUPPORT BELOW ALL CABINETS AT THIS LOCATION
- PIPE CHASE
- EMERGENCY EYEWASH & SAFETY SHOWERS BY BUILDING SUBCONTRACTOR.
- UPSBAT TERRY ROOM SHALL RECEIVE A UL RATED CEILING ASSEMBLY AND CHEMICAL RESISTANT WALL PAINT AND FLOOR COVERING/GRANT
- COUNTER TOP MICROWAVE BY BUILDING SUBCONTRACTOR - PROVIDE POWER OUTLETS
- DOUBLE SINK AND UNDER-COUNTER DISHWASHER AT THIS LOCATION, BY BUILDING SUBCONTRACTOR
- GARBAGE DISPOSAL AT SINK, BY BUILDING SUBCONTRACTOR
- ELECTRIC RANGE WICOK TOP BY BUILDING SUBCONTRACTOR
- COFFEE MAKER PROVIDED BY BUILDING SUBCONTRACTOR-PROVIDE WATER AND POWER
- COUNTER MOUNTED ICEWATER MACHINE BY BUILDING SUBCONTRACTOR- PROVIDE WATER AND POWER
- 24WATER COOLERS BY BUILDING SUBCONTRACTOR- BUILDING CONTRACTOR SHALL PROVIDE POWER
- TOP BOTTOM COMMERCIAL SIZE REFRIGERATOR WITHOUT ICEWATER DISPENSER BY BUILDING SUBCONTRACTOR, BUILDING SUBCONTRACTOR SHALL PROVIDE WATER AND POWER AT THIS LOCATION.
- VENDING MACHINE PROVIDED BY BUILDING SUBCONTRACTOR - BUILDING CONTRACTOR SHALL PROVIDE POWER
- BUILDING CONTRACTOR SHALL PROVIDE A COMBINATION OF FULL HEIGHT UPPER AND LOWER CABINETS WITH A SOLID SURFACE AT THIS LOCATION FOR STORAGE PURPOSES
- CONTROL ROOM WALLS SHALL RECEIVE ACOUSTICAL WALL PANELS - BUILDING CONTRACTOR SHALL INCLUDE ACOUSTICAL PANELS.
- CEILING MOUNTED PROJECTORS BY OWNER, BUILDING CONTRACTOR TO PROVIDE EQUIPMENT, POWER/DATA OUTLETS AND SUPPORT TO STRUCTURE.
- OVERHEAD PROJECTOR SCREENS BY BUILDING SUBCONTRACTOR
- BUILDING SUBCONTRACTOR SHALL PROVIDE SOUNDPROOFING ALL AROUND OFFICES, RESTROOM, CONFERENCE ROOMS AND CONTROL ROOM WALLS
- BUILDING SUBCONTRACTOR SHALL PROVIDE A COMBINATION OF FULL HEIGHT AND LOWER STORAGE CABINETS WITH A SOLID SURFACE AT THIS LOCATION FOR RECHARGING STATIONS, RADIO BATTERY RECHARGING STATIONS, AND PHONE RECHARGING STATIONS.
- BUILDING SUBCONTRACTOR SHALL PROVIDE AND INSTALL CABINETS TO HOLD EMERGENCY EQUIPMENTS
- BUILDING SUBCONTRACTOR SHALL PROVIDE FIRE RATED ASSEMBLIES AROUND I/O, BATTERY, ELECTRICAL AND CONTROL ROOM.
- MECHANICAL/HVAC EQUIPMENT YARD, DESIGN, SUPPLY AND INSTALLATION INCLUDING CONCRETE SHALL BE BY BUILDING SUBCONTRACTOR.

01

CONTROL & OPERATIONS BUILDING LAYOUT

NO.	REVISION	DRAWN	CHKD	APPRO	DATE
D	ISSUED FOR CLIENT REVIEW	TS	RP	RP	28FEB22
C	ISSUED FOR CLIENT REVIEW	TS	MH	DO	24FEB20
B	ISSUED FOR CLIENT REVIEW	TS	MH	DO	06JAN20
A	ISSUED FOR REVIEW	TS	MH	DO	21OCT19
236348-4510-00-AR-DWG-A10-0004 CONTROL AND OPERATIONS BUILDING ELEVATIONS					
REFERENCE DRAWINGS					

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Woodfire LNG Project

CLIENT DWG NO.

ARCHITECTURAL
CONTROL AND OPERATIONS BUILDING LAYOUT

FOR
Woodfire LNG Limited

PROJ. NO. 236348 DWG NO. 236348-4510-00-AR-DWG-A10-0003 REV. D



1. NOT FOR CONSTRUCTION
2. BUILDING SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CANADIAN ACCESSIBILITY STANDARDS
3. DIMENSIONS ARE IN MILLIMETERS
4. THE ADMINISTRATION BUILDING SHALL BE A MODULAR BUILDING, FABRICATED OFF SITE AND INSTALLED ON A SITE CONSTRUCTED FOUNDATION.
5. FOUNDATION SHALL BE DESIGNED, SUPPLIED AND CONSTRUCTED BY BUILDINGS SUBCONTRACTOR
6. MODULAR BUILDING IS ASSUMED TO BE WOOD FRAMED WITH INSULATED EXTERIOR WALLS AND METAL PANEL CLADDING. INSULATION AND CORRESPONDING WALL THICKNESS TO MEET REQUIRED THERMAL RESISTANCE VALUES SHALL BE SPECIFIED BY THE ARCHITECT.
7. ROOF IS ASSUMED TO BE OF CORRUGATED METAL PANEL, A WATER-TIGHT SYSTEM WITH DRAINAGE ACCESSORIES ROOF PANEL, SYSTEM AND SUPPORTING STRUCTURE MUST BE DESIGNED TO SUPPORT APPLICABLE SNOW LOADS. VERTICAL LOADING AND LATERAL LOADING PER APPLICABLE CODES AND PROJECT SPECIFICATIONS.
8. ROOF SLOPE SHALL BE PER PROJECT SPECIFICATIONS
9. CARPORT STRUCTURE TO BE OF THE SAME ROOFING PRODUCT AND ACCESSORIES, TIED INTO THE ADJACENT ADMIN. BUILDING.
10. ADMIN. BUILDING SHALL BE FULLY HEATED AND CONDITIONED.
11. EXTERIOR LIGHTING SHALL CONFORM TO BUILDING CODES. LIGHTING LOCATION SHALL BE APPROVED BY COMPANY.
12. EXTERIOR & INTERIOR COLOR SELECTION SHALL BE APPROVED BY COMPANY.
13. BUILDING CONTRACTOR SHALL PROVIDE EXTERIOR AND INTERIOR SIGNAGE, BUILDING NAME AND ROOM NAMES ARE TO BE DETERMINED BY COMPANY.
14. ADMIN BUILDING SHALL BE DESIGNED AND CONSTRUCTED PER FENG SHUI GUIDELINES AS SPECIFIED IN THE PROJECT SPECIFICATIONS. THIS INCLUDES BUILDING ORIENTATION, INTERIOR LAYOUT, EXTERIOR DOORS LOCATION AND SIZE AND BUILDING EXTERIOR COLOR SELECTION.
15. ALL RAMPS, STAIRS (IF REQUIRED), HANDRAILS AND SIDEWALKS SHALL BE DESIGNED, SUPPLIED AND INSTALLED BY BUILDING SUBCONTRACTOR.



THIS DOCUMENT SUPERSEDES 239348-4410-00-AR-A10-0002

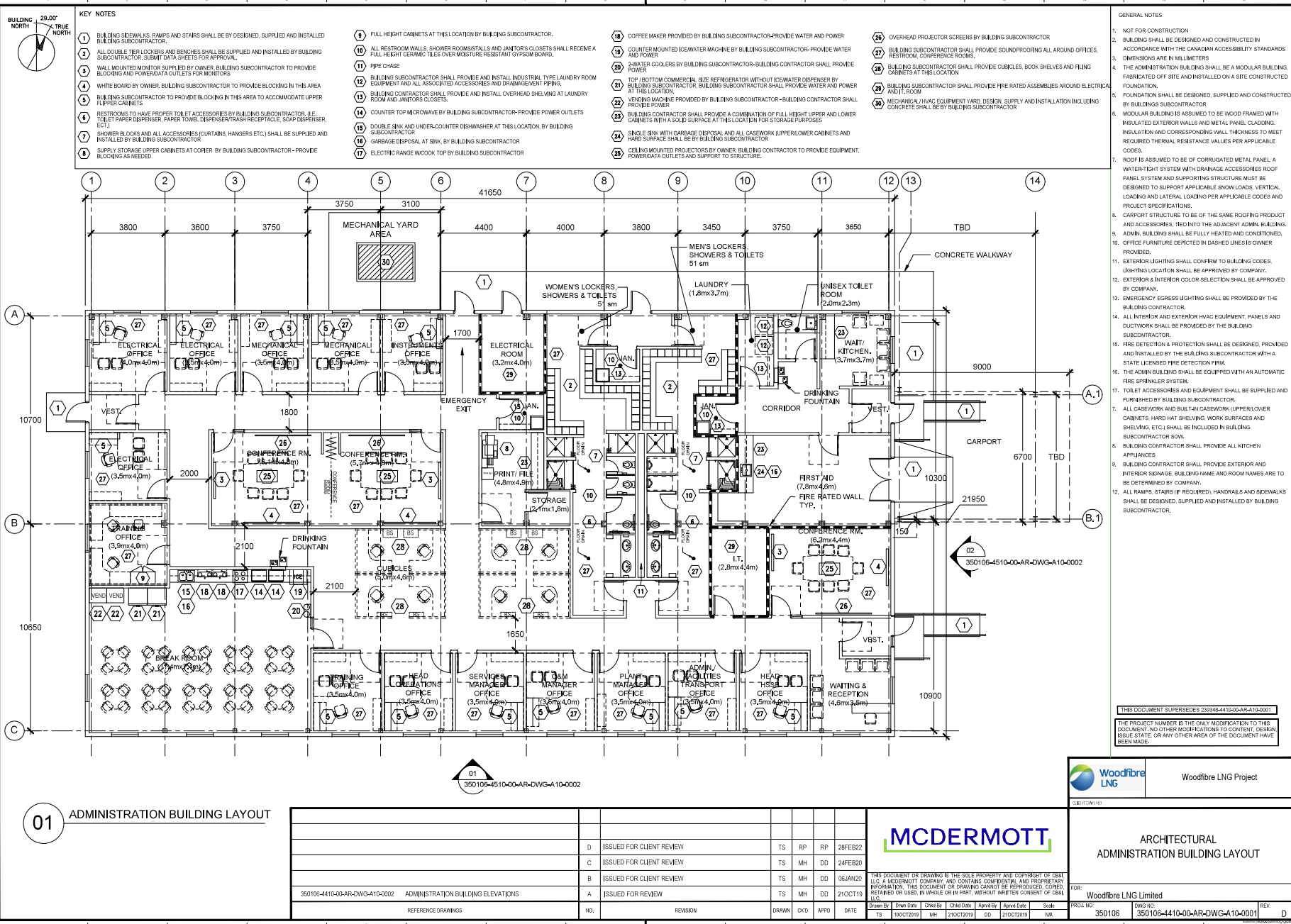
ARCHITECTURAL
ADMINISTRATION BUILDING ELEVATIONS

FOR: Woodfibre LNG Limited

PROJ. NO:	DWG NO:
350106	350106-4410-00-AR-DWG-A10-0002

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Drawn By	Drwn Date	Chkd By	Chkd Date	Aprvd By	Aprvd Date	Scale
TS	10OCT2019	MH	21OCT2019	DD	21OCT2019	N/A




- KEY NOTES**
- 1 BUILDING SIDEWALKS, RAMPS AND STAIRS SHALL BE BY DESIGNED, SUPPLIED AND INSTALLED BY BUILDING SUBCONTRACTOR.
 - 2 ALL DOUBLE TIER LOCKERS AND BENCHES SHALL BE SUPPLIED AND INSTALLED BY BUILDING SUBCONTRACTOR. SUPPLY DATA SHEETS FOR APPROVAL.
 - 3 WALL MOUNTED MONITOR SUPPLIED BY OWNER. BUILDING SUBCONTRACTOR TO PROVIDE BLOCKING AND POWER/DATA OUTLETS FOR MONITORS
 - 4 WHITE BOARD BY OWNER. BUILDING SUBCONTRACTOR TO PROVIDE BLOCKING IN THIS AREA
 - 5 BUILDING SUBCONTRACTOR TO PROVIDE BLOCKING IN THIS AREA TO ACCOMMODATE UPPER FLUPPER CABINETS
 - 6 RESTROOMS TO HAVE PROPER TOILET ACCESSORIES BY BUILDING SUBCONTRACTOR, I.E. TOILET PAPER DISPENSER, PAPER TOWEL DISPENSER/TRASH RECEPTACLE, SOAP DISPENSER, ETC.
 - 7 SHOWER BLOCKS AND ALL ACCESSORIES (COURTAINS, HANGERS ETC.) SHALL BE SUPPLIED AND INSTALLED BY BUILDING SUBCONTRACTOR
 - 8 SUPPLY STORAGE UPPER CABINETS AT CORNER BY BUILDING SUBCONTRACTOR- PROVIDE BLOCKING AS NEEDED
 - 9 FULL HEIGHT CABINETS AT THIS LOCATION BY BUILDING SUBCONTRACTOR.
 - 10 ALL RESTROOM WALLS, SHOWER ROOMS/STALLS AND JANITOR'S CLOSETS SHALL RECEIVE A FULL HEIGHT CERAMIC TILES OVER MOISTURE RESISTANT GYPSUM BOARD.
 - 11 PIPE CHASE
 - 12 BUILDING SUBCONTRACTOR SHALL PROVIDE AND INSTALL INDUSTRIAL TYPE LAUNDRY ROOM EQUIPMENT AND ALL ASSOCIATED ACCESSORIES AND DRAINAGE PIPING.
 - 13 BUILDING CONTRACTOR SHALL PROVIDE AND INSTALL OVERHEAD SHELVING AT LAUNDRY ROOM AND JANITOR'S CLOSETS.
 - 14 COUNTER TOP MICROWAVE BY BUILDING SUBCONTRACTOR- PROVIDE POWER OUTLETS
 - 15 DOUBLE SINK WITH UNDER-COUNTER DISHWASHER AT THIS LOCATION, BY BUILDING SUBCONTRACTOR
 - 16 GARBAGE DISPOSAL AT SINK, BY BUILDING SUBCONTRACTOR
 - 17 ELECTRIC RANGE WOODCOCK TOP BY BUILDING SUBCONTRACTOR
 - 18 COFFEE MAKER PROVIDED BY BUILDING SUBCONTRACTOR- PROVIDE WATER AND POWER
 - 19 COUNTER MOUNTED ICEWATER MACHINE BY BUILDING SUBCONTRACTOR- PROVIDE WATER AND POWER
 - 20 2-WATER COOLERS BY BUILDING SUBCONTRACTOR- BUILDING CONTRACTOR SHALL PROVIDE POWER
 - 21 TOP BOTTOM COMMERCIAL SIZE REFRIGERATOR WITHOUT ICEMATER DISPENSER BY BUILDING SUBCONTRACTOR. BUILDING SUBCONTRACTOR SHALL PROVIDE WATER AND POWER AT THIS LOCATION
 - 22 VENDING MACHINE PROVIDED BY BUILDING SUBCONTRACTOR- BUILDING CONTRACTOR SHALL PROVIDE POWER
 - 23 BUILDING CONTRACTOR SHALL PROVIDE A COMBINATION OF FULL HEIGHT UPPER AND LOWER CABINETS WITH A SOLID SURFACE AT THIS LOCATION FOR STORAGE PURPOSES
 - 24 SINGLE SINK WITH GARBAGE DISPOSAL AND ALL CASEWORK (UPPER/LOWER CABINETS AND HARD SURFACE) SHALL BE BY BUILDING SUBCONTRACTOR
 - 25 CEILING MOUNTED PROJECTORS BY OWNER. BUILDING CONTRACTOR TO PROVIDE EQUIPMENT, POWER/DATA OUTLETS AND SUPPORT TO STRUCTURE.
 - 26 OVERHEAD PROJECTOR SCREENS BY BUILDING SUBCONTRACTOR
 - 27 BUILDING SUBCONTRACTOR SHALL PROVIDE SOUNDPROOFING ALL AROUND OFFICES, RESTROOM, CONFERENCE ROOMS.
 - 28 BUILDING SUBCONTRACTOR SHALL PROVIDE CUBICLES, BOOK SHELVES AND FILING CABINETS AT THIS LOCATION
 - 29 BUILDING SUBCONTRACTOR SHALL PROVIDE FIRE RATED ASSEMBLIES AROUND ELECTRICAL AND T. ROOM
 - 30 MECHANICAL/HVAC EQUIPMENT YARD. DESIGN, SUPPLY AND INSTALLATION INCLUDING CONCRETE SHALL BE BY BUILDING SUBCONTRACTOR

- GENERAL NOTES:**
- 1. NOT FOR CONSTRUCTION
 - 2. ACCORDANCE WITH THE CANADIAN ACCESSIBILITY STANDARDS DIMENSIONS ARE IN MILLIMETERS
 - 3. THE ADMINISTRATION BUILDING SHALL BE A MODULAR BUILDING FABRICATED OFF SITE AND INSTALLED ON A SITE CONSTRUCTED FOUNDATION.
 - 4. FOUNDATION SHALL BE DESIGNED, SUPPLIED AND CONSTRUCTED BY BUILDINGS SUBCONTRACTOR
 - 5. MODULAR BUILDING IS ASSIGNED TO BE WOOD FRAMED WITH INSULATED EXTERIOR WALLS AND METAL PANEL CLADDING. INSULATION AND CORRESPONDING WALL THICKNESS TO MEET REQUIRED THERMAL RESISTANCE VALUES PER APPLICABLE CODES.
 - 6. ROOF IS ASSUMED TO BE OF CORRUGATED METAL PANEL. A WATER-TIGHT SYSTEM WITH DRAINAGE ACCESSORIES ROOF PANEL SYSTEM AND SUPPORTING STRUCTURE MUST BE DESIGNED TO SUPPORT APPLICABLE SNOW LOADS, VERTICAL LOADING AND LATERAL LOADING PER APPLICABLE CODES AND PROJECT SPECIFICATIONS.
 - 7. CARPORT STRUCTURE TO BE OF THE SAME ROOFING PRODUCT AND ACCESSORIES, TIED INTO THE ADJACENT ADMIN. BUILDING. ADMIN. BUILDING SHALL BE FULLY HEATED AND CONDITIONED. OFFICE FURNITURE DEFECTED IN DASHED LINES IS OWNER PROVIDED.
 - 8. EXTERIOR LIGHTING SHALL CONFORM TO BUILDING CODES. LIGHTING LOCATION SHALL BE APPROVED BY COMPANY.
 - 9. EXTERIOR & INTERIOR COLOR SELECTION SHALL BE APPROVED BY COMPANY.
 - 10. EMERGENCY EGRESS LIGHTING SHALL BE PROVIDED BY THE BUILDING CONTRACTOR.
 - 11. ALL INTERIOR AND EXTERIOR HVAC EQUIPMENT, PANELS AND DUCTWORK SHALL BE PROVIDED BY THE BUILDING SUBCONTRACTOR.
 - 12. FIRE DETECTION & PROTECTION SHALL BE DESIGNED, PROVIDED AND INSTALLED BY THE BUILDING SUBCONTRACTOR WITH A STATE LICENSED FIRE DETECTION FIRM.
 - 13. THE ADMIN BUILDING SHALL BE EQUIPPED WITH AN AUTOMATIC FIRE SPRINKLER SYSTEM.
 - 14. TOILET ACCESSORIES AND EQUIPMENT SHALL BE SUPPLIED AND FURNISHED BY BUILDING SUBCONTRACTOR.
 - 15. ALL CASEWORK AND BUILT-IN CASEWORK (UPPER/LOWER CABINETS, HARD HAT SHELVING, WORK SURFACES AND SHELVING, ETC.) SHALL BE INCLUDED IN BUILDING SUBCONTRACTOR BOWL.
 - 16. BUILDING CONTRACTOR SHALL PROVIDE ALL KITCHEN APPLIANCES
 - 17. BUILDING CONTRACTOR SHALL PROVIDE EXTERIOR AND INTERIOR SEWAGE. BUILDING NAME AND ROOM NAMES ARE TO BE DETERMINED BY COMPANY.
 - 18. ALL RAMPS, STAIRS (IF REQUIRED), HANDRAILS AND SIDEWALKS SHALL BE DESIGNED, SUPPLIED AND INSTALLED BY BUILDING SUBCONTRACTOR.

THIS DOCUMENT SUPERSEDES 230406-4410-00-AR-10-0001

THE PROJECT NUMBER IS THE ONLY MODIFICATION TO THIS DOCUMENT. NO OTHER MODIFICATIONS TO CONTENT, DESIGN, ISSUE STATE, OR ANY OTHER AREA OF THE DOCUMENT HAVE BEEN MADE.




Woodfibre LNG Project

01

ADMINISTRATION BUILDING LAYOUT

D	ISSUED FOR CLIENT REVIEW	TS	RP	RP	28FEB22
C	ISSUED FOR CLIENT REVIEW	TS	MH	DD	24FEB20
B	ISSUED FOR CLIENT REVIEW	TS	MH	DD	08JAN20
A	ISSUED FOR REVIEW	TS	MH	DD	21OCT19



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Drawn By	Chk'd Date	Chkd By	Chkd Date	App'd By	App'd Date	Scale
TS	10OCT2019	MH	21OCT2019	DD	21OCT2019	NA

FOR

Woodfibre LNG Limited

PROJ NO: 350106-4410-00-AR-DWG-A10-0001

REV: D



Woodfibre LNG Project



**Woodfibre LNG
(WLNG)**

**McDermott
(MDR)**

Document Title: Project Statistics and Preliminary Buildings List

Document No: 350106-PER-002002.08

MDR Contract No: 350106

iDocs Folder Location: 27.12.1

Issued for Permitting	0	16-Sep-2022	DS	AC	AC
Issued for Client Review	A	24-Aug-2022	DS	MP	AC
Revision Descriptions	Rev	Date	Originator	Checker	Approver

Document Title:	Document No.	Rev:
Project Statistics and Preliminary Buildings List	350106-PER-002002.08	0

1 GENERAL NOTES

- 1.1 This document provides a summary of preliminary project statistics and a preliminary list of buildings proposed to be constructed at the Woodfibre LNG Project in Squamish, British Columbia, Canada. The document is produced by McDermott for Woodfibre LNG in support of a Land Development Permit application to be submitted to the District of Squamish.
- 1.2 All information within this document should be considered preliminary and subject to modification as detailed design of the project progresses. The document represents the best information available to McDermott at the time of its issuance.
- 1.3 Where used and capitalized within this document, the following terms shall carry their meaning as described in the District of Squamish Zoning Bylaw 2200, 2011 UNO:
Floor Area; Floor Area Ratio; Height; Lot; Lot Area; Lot Coverage.

2 ABBREVIATIONS AND ACRONYMS

BOG	Boil Off Gas
DL	District Lot
DoS	District of Squamish
FAR	Floor Area Ratio
FST	Floating Storage Tank
HP	High Pressure
ISBL	Inside Battery Limit
I&C	Instrumentation & Controls
LNG	Liquefied Natural Gas
LP	Low Pressure
MDR	McDermott (Contractor)
MR	Mixed Refrigerant
ND	Not Defined
TBC	To Be Confirmed
UNO	Unless Noted Otherwise
UPS	Uninterruptible Power Supply
VFD	Variable Frequency Drive
WLNG	Woodfibre LNG (Company)

Document Title:	Document No.	Rev:
Project Statistics and Preliminary Buildings List	350106-PER-002002.08	0

PROJECT STATISTICS

Project Area	
Total Area Within Project Boundary (sqm)	1,507,160
Project Area in Land Lots (sqm)	843,160
Project Area in Water Lots (sqm)	664,000

District Lots				
District Lot	Parcel ID	Total Lot Area (sqm)	Area Within Project Boundary (sqm)	Composition
DL 2351	031-016-171	287,330	287,330	Land
DL 2802	031-012-965	129,500	77,000	
DL 5899	015-822-061	204,770	204,770	
DL 6232	015-791-459	161,870	161,870	
DL 6237	015-791-611	61,510	61,510	
DL 8294	090-160-046	6,080	6,080	
DL 8295	090-160-047	44,600	44,600	
DL 8296	090-160-048	664,000	664,000	Water

Refer to Exhibit: Overall Development Plan (350106-PER-002002.04) for locations of District Lots and Project Boundary.

Lot Coverages			
Land Lots:	Coverage Area¹ (sqm)	% Coverage	Zone I-3 Limit
	56,200	6.67%	70% max.
Water Lots:	Coverage Area¹ (sqm)	% Coverage	Zone I-3 Limit
	34,985	5.27%	70% max.

Refer to Exhibit: Overall Development Plan (350106-PER-002002.04) for extents of Lot Coverage Areas.

Floor Areas				
	Building Type		Proposed	Zone I-3 Limit
Land Lots	All Buildings	Floor Area¹ (sqm)	6,056	ND
		Floor Area Ratio¹ (FAR)	0.0072	ND
	Occupied / Manned Only ²	Floor Area¹ (sqm)	3,017	ND
		Floor Area Ratio¹ (FAR)	0.0036	ND
Water Lots	All Buildings	Floor Area¹ (sqm)	264	ND
		Floor Area Ratio¹ (FAR)	0.0004	ND
	Occupied / Manned Only ²	Floor Area¹ (sqm)	-	ND
		Floor Area Ratio¹ (FAR)	-	ND

Refer to Preliminary Buildings List (next section of this document) for building floor areas and classifications.

Notes:

1. Preliminary - design development values to be used for zoning purposes only
2. Classification per Preliminary Building Code and Permit Requirements Report (Stantec, 4 Jul 2022)
3. Parking spaces, loading spaces, and usable outdoor area excluded (remote I-3 site).

Disclaimer: All information represented in these tables is preliminary and is subject to change due to overall project design development

Document Title:	Document No.	Rev:
Project Statistics and Preliminary Buildings List	350106-PER-002002.08	0

PRELIMINARY BUILDINGS LIST

Building #	Building Title	Building General Type	Building General Requirement / Use	Condition	Occupied or Manned	Building Classification ⁴	Location or Module No.	Building Grouping	Position Relative to Finish Grade	Building Story(s)	Length ¹ (m)	Width ¹ (m)	Height ^{1,2,3} (m)	Floor Area ² (sqm)
01-BLG-0001	Control & Operations Building	Building	Control & operations facilities, electrical equipment, and UPS	New	Yes	Primary Occupied	Industrial Area	Stand Alone	On Grade	1	43.8	23.2	4.80	1016.7
01-BLG-0002	Warehouse & Maintenance Building	Building	Warehouse storage and maintenance shop area	New	Yes	Primary Occupied	Industrial Area	Stand Alone	On Grade	1	50.4	21.0	7.53	1057.4
01-BLG-0003	Administration Building	Building	Administrative offices & facilities	New	Yes	Primary Occupied	Industrial Area	Stand Alone	On Grade	1	41.7	22.0	5.15	914.2
01-BLG-0004	Storage Building	Building	Storage of spare materials	New	No	Primary Non-Occupied	Industrial Area	Stand Alone	On Grade	1	10.0	7.4	4.95	74.0
01-BLG-0010	Emergency Response Building	Garage	Emergency response vehicle storage	New	No	Accessory Non-Occupied	Industrial Area	Stand Alone	On Grade	1	12.5	6.4	4.90	80.0
01-BLG-2301	Powerhouse for HV Control (GIS Equipment Building) ⁵	Electrical Equipment Enclosure	Enclosure for HV electrical equipment	New	No	Primary Non-Occupied	Process Area (ISBL)	1	On Grade	1	12.2	14.0	9.30	170.8
01-BLG-2302	Substation 02 Powerhouse - Train 1	Electrical Equipment Enclosure	Electrical equipment, I&C cabinets, UPS	New	No	Primary Non-Occupied	Module M10	1	Elevated - On Module	2	33.7	12.9	9.00	868.2
01-BLG-2303	Substation 03 Powerhouse - FST and Jetty	Electrical Equipment Enclosure	Electrical equipment, I&C cabinets, UPS	New	No	Primary Non-Occupied	Module P01	2	Elevated - On Module	1	14.5	8.3	5.00	119.6
01-BLG-1602-41	Powerhouse - VFD - (LP Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	16.4	4.5	3.80	73.8
01-BLG-1602-51	Powerhouse - Harmonic Filter - (LP Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	22.0	4.8	3.80	105.6
01-BLG-1602-61	Powerhouse - Control & Power - (LP Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	18.4	4.4	3.80	81.0
01-BLG-1602-71	Powerhouse - STATCOM - (LP Compressor) ⁶	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	TBC ⁶				
01-BLG-1612-41	Powerhouse - VFD - (HP MR/C3 Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	16.4	4.5	3.80	73.8
01-BLG-1612-51	Powerhouse - Harmonic Filter - (HP MR/C3 Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	22.0	4.8	3.80	105.6
01-BLG-1612-61	Powerhouse - Control & Power - (HP MR/C3 Compressor)	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	18.4	4.4	3.80	81.0
01-BLG-1612-71	Powerhouse - STATCOM - (HP MR/C3 Compressor) ⁶	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	TBC ⁶				
01-BLG-7105-41	Powerhouse - BOG Compressors	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	4.5	16.4	3.80	73.8
01-BLG-0103-41	Powerhouse - Booster Compressor	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M11	1	Elevated - On Module	1	4.5	16.4	3.80	73.8
01-BLG-2311	Power Distribution Center Module 1	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M01	1	Elevated - On Module	1	6.0	15.5	5.00	93.0
01-BLG-2312	Power Distribution Center Module 1	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M01	1	Elevated - On Module	1	6.0	20.0	4.25	120.0
01-BLG-2321	Power Distribution Center Module 2	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M02	1	Elevated - On Module	1	6.0	15.5	5.00	93.0
01-BLG-2322	Power Distribution Center Module 2	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M02	1	Elevated - On Module	1	6.0	15.5	5.00	93.0
01-BLG-2341	Power Distribution Center Module 4	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M04	1	Elevated - On Module	1	6.0	15.5	5.00	93.0
01-BLG-2391	Power Distribution Center Module 9	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment	New	No	Primary Non-Occupied	Module M09	1	Elevated - On Module	1	6.0	13.3	5.00	79.8
00-BLG-2351	Power Distribution Center FST-1	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment, I&C cabinets	New	No	Primary Non-Occupied	FST-1	2	Elevated - On FST	2	9.5	7.0	9.75	132.1

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Project Statistics and Preliminary Buildings List	350106-PER-002002.08	0

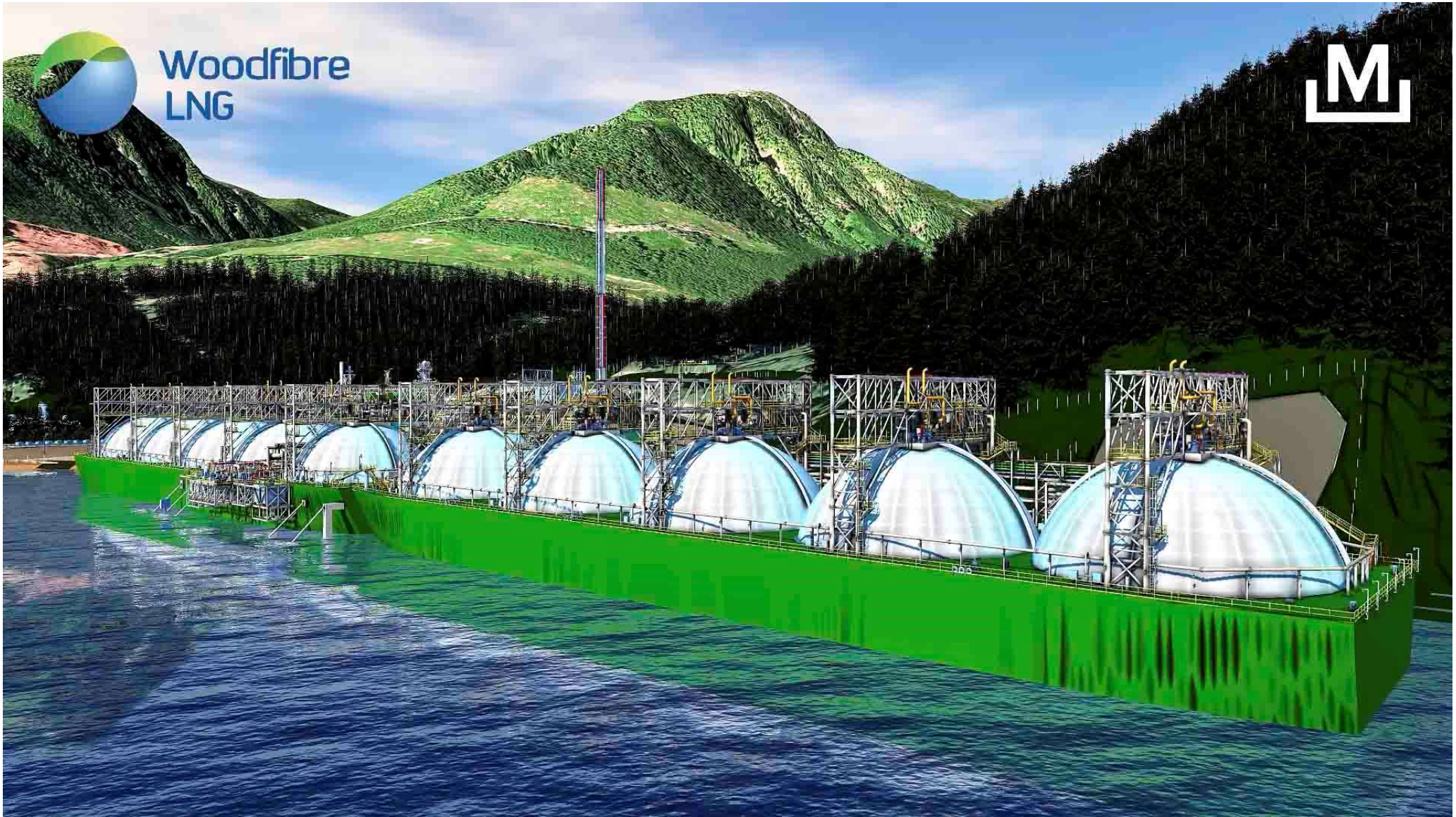
PRELIMINARY BUILDINGS LIST

Building #	Building Title	Building General Type	Building General Requirement / Use	Condition	Occupied or Manned	Building Classification ⁴	Location or Module No.	Building Grouping	Position Relative to Finish Grade	Building Story(s)	Length ¹ (m)	Width ¹ (m)	Height ^{1,2,3} (m)	Floor Area ² (sqm)
00-BLG-2361	Power Distribution Center FST-2	Electrical Equipment Enclosure	Pre-fabricated enclosure for electrical equipment, I&C cabinets	New	No	Primary Non-Occupied	FST-2	2	Elevated - On FST	2	9.5	7.0	9.75	132.1
01-A-6417	Oily Water Treatment Package	Mechanical Equipment Enclosure	Enclosure for oily water treatment system equipment	New	No	Primary Non-Occupied	Piperack Area	1	On Grade	1	13.6	10.1	6.87	137.4
TBC	Firewater Pump House	Mechanical Equipment Enclosure	Enclosure for firewater system pumps & motors	New	No	Primary Non-Occupied	Industrial Area	Stand Alone	On Grade	1	14.7	6.7	3.60	98.5
TBC	Guard House # 1	Shelter	Guard House Shelter	New	Yes	Accessory	TBC	TBC	On Grade	1	4.0	2.4	3.50	9.6
TBC	Guard House # 2	Shelter	Guard House Shelter	New	Yes	Accessory	TBC	TBC	On Grade	1	4.0	2.4	3.50	9.6
TBC	Guard House # 3	Shelter	Guard House Shelter	New	Yes	Accessory	TBC	TBC	On Grade	1	4.0	2.4	3.50	9.6
TBC	Leachate Treatment Package	Mechanical Equipment Enclosure	Enclosure for leachate treatment system equipment	Existing	No	Primary Non-Occupied	Landfill Area	Stand Alone	On Grade	1	20.2	12.4	4.83	250.0

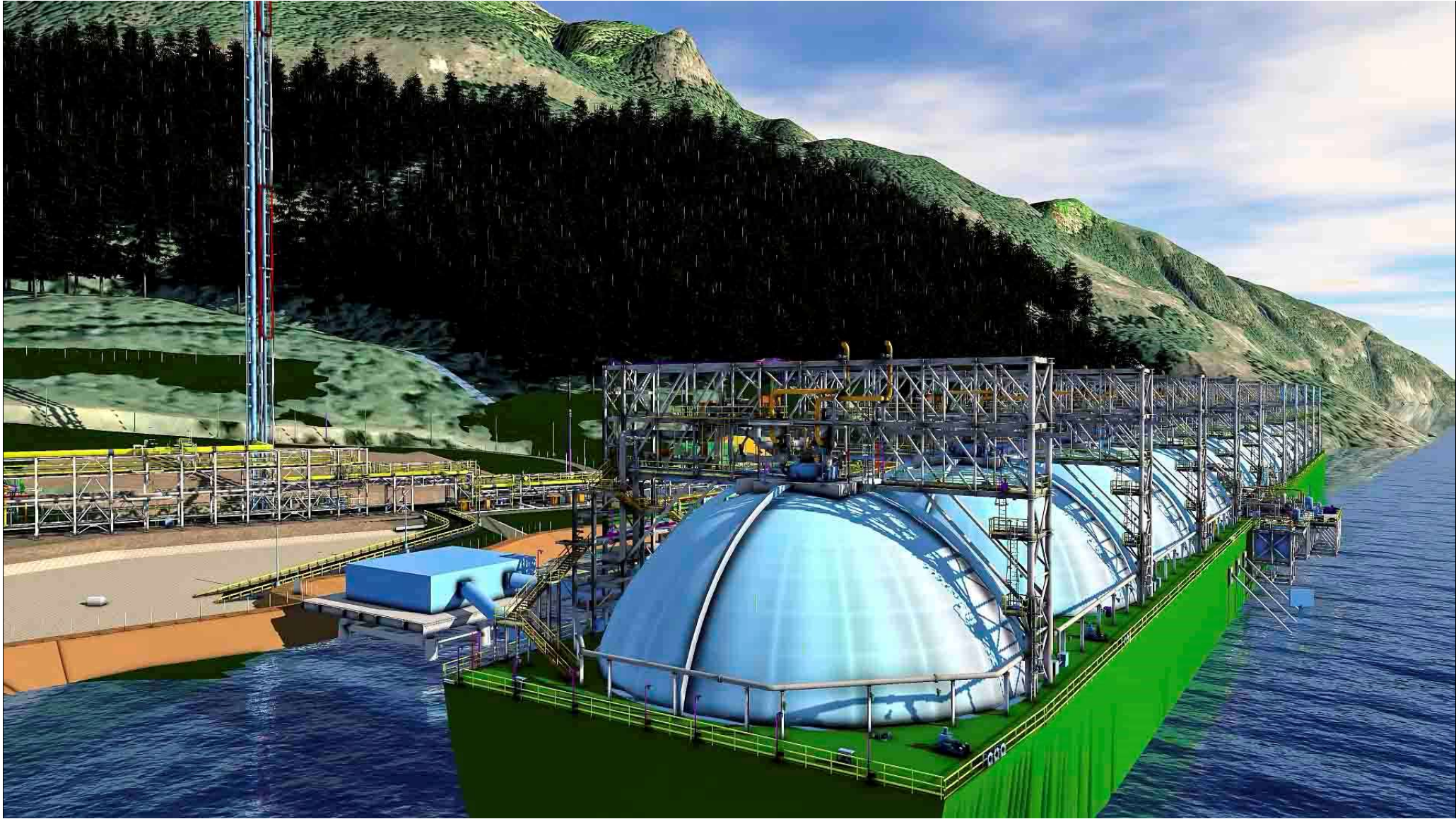
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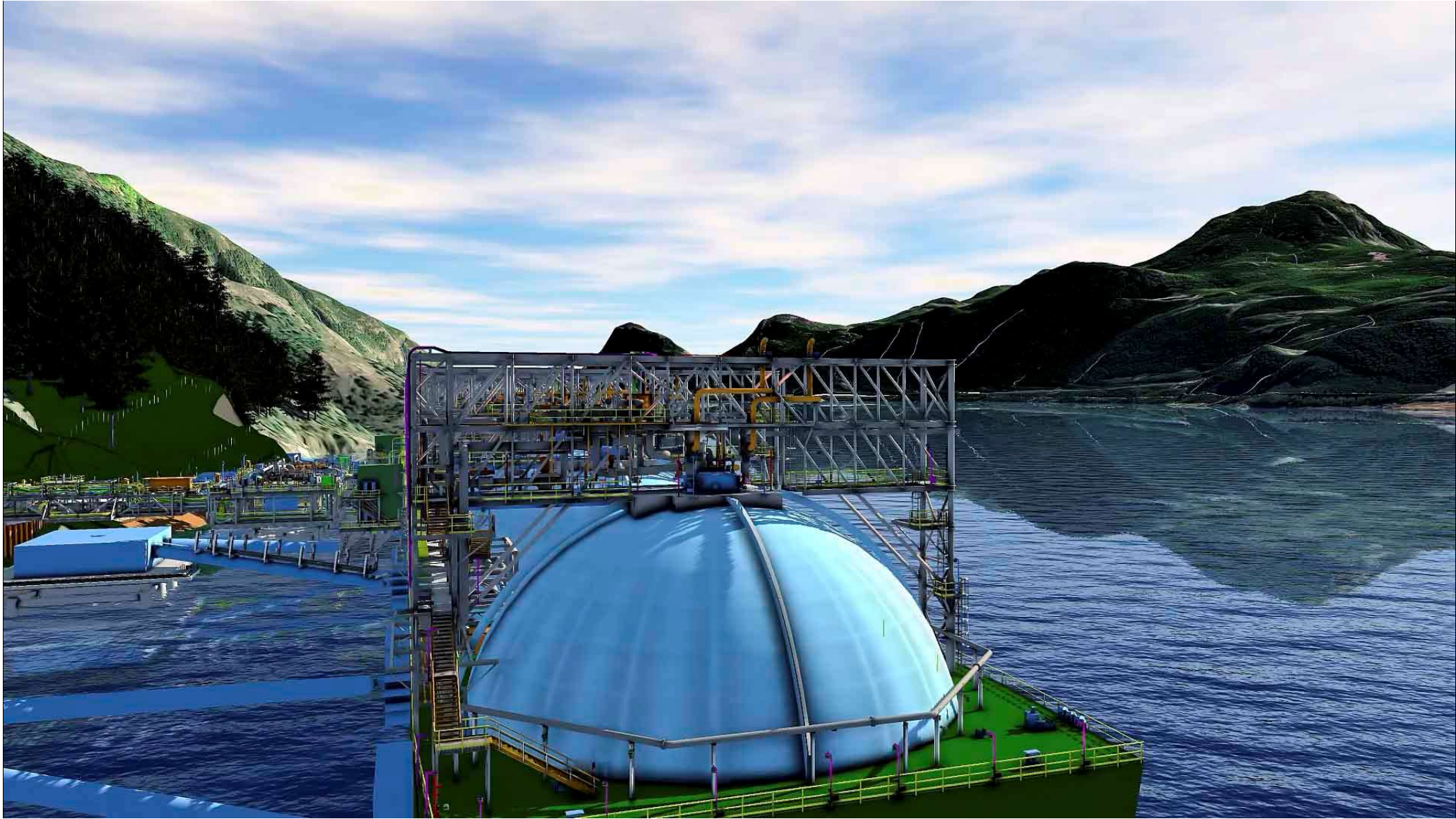
1. Preliminary - design development values to be used for zoning purposes only
2. Calculated per District of Squamish Zoning Bylaw 2200, 2011
3. If building is "Elevated - On Module" or "Elevated - On FST", Height is represented from top of support steel, instead of from grade.
4. Classification from Preliminary Building Code and Permit Requirements Report (Stantec 4 Jul 2022)
5. Building 01-BLG-2301 design under review (potential to change HV switchgear type). Building size and location pending selection of equipment.
6. Proposed buildings (pending) - requirements, details, and sizing TBC in detailed design

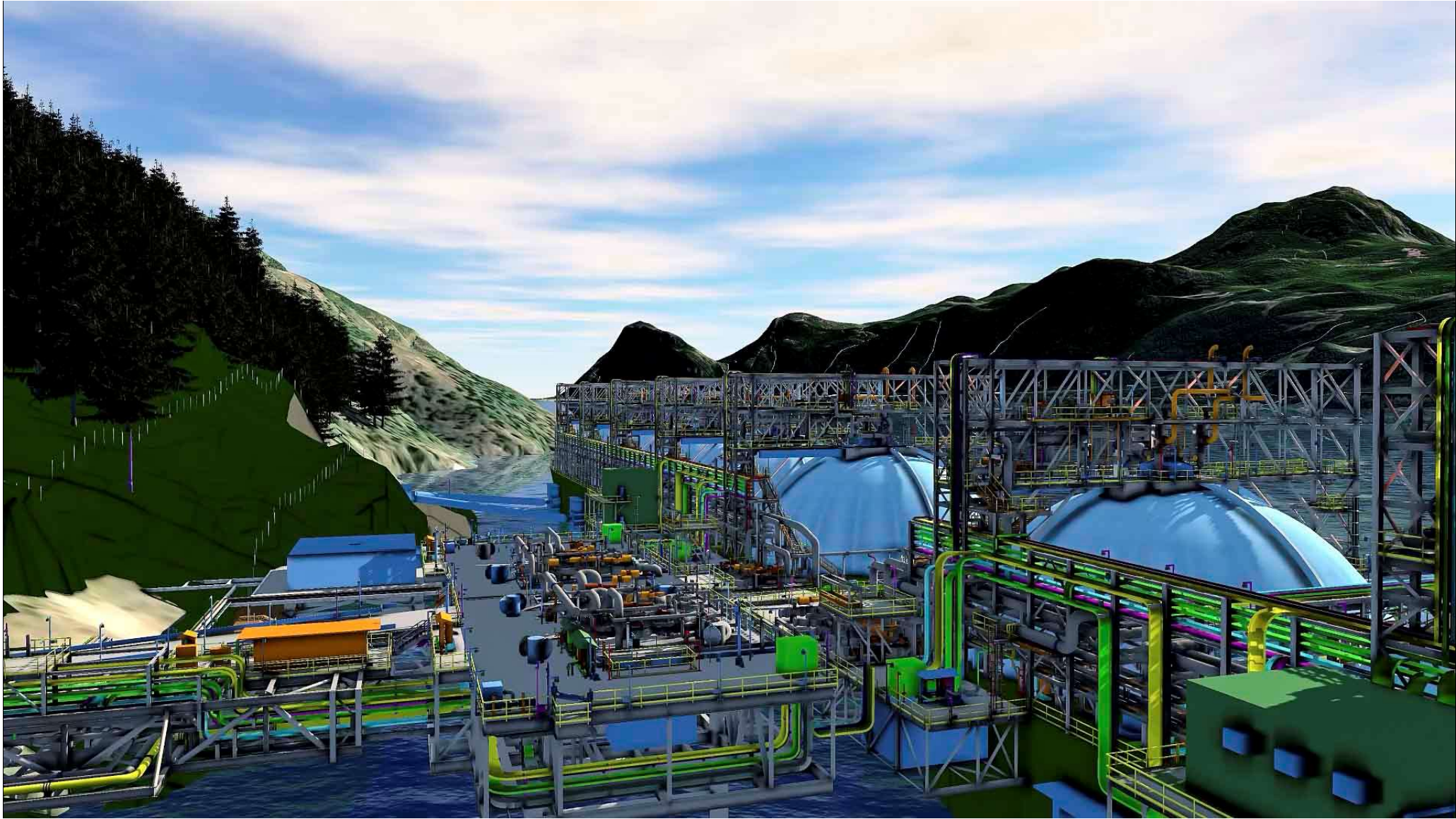
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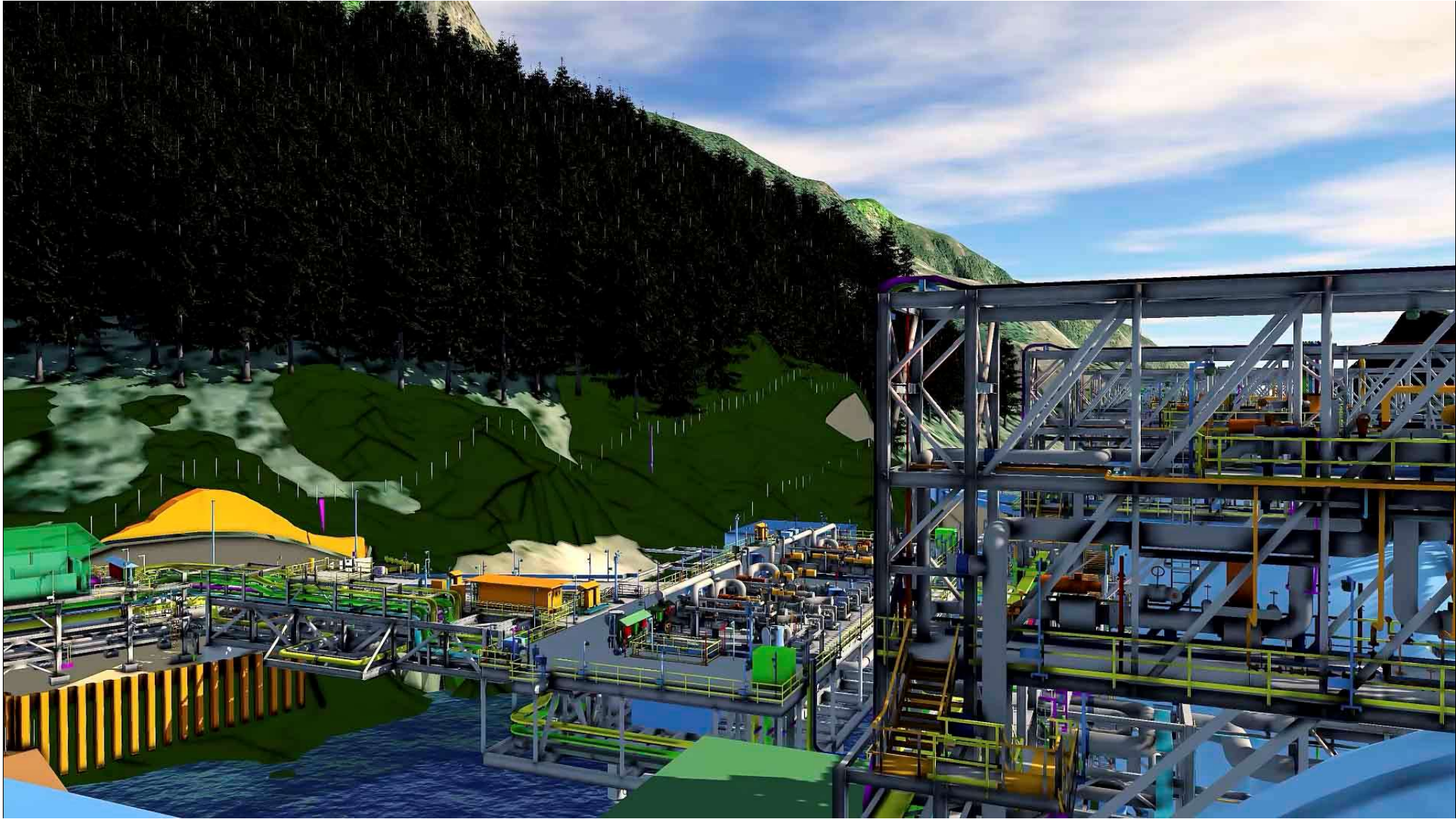








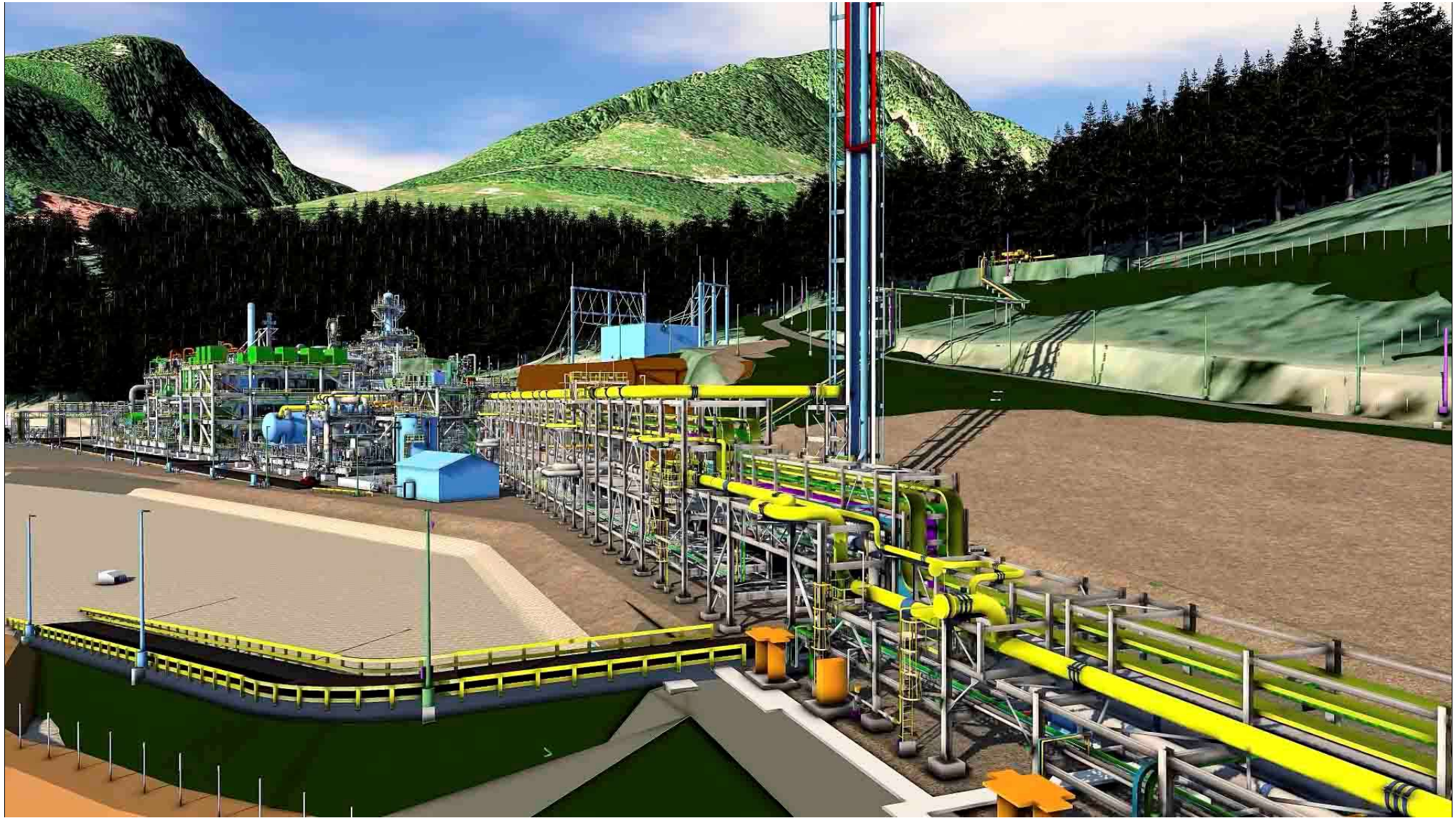


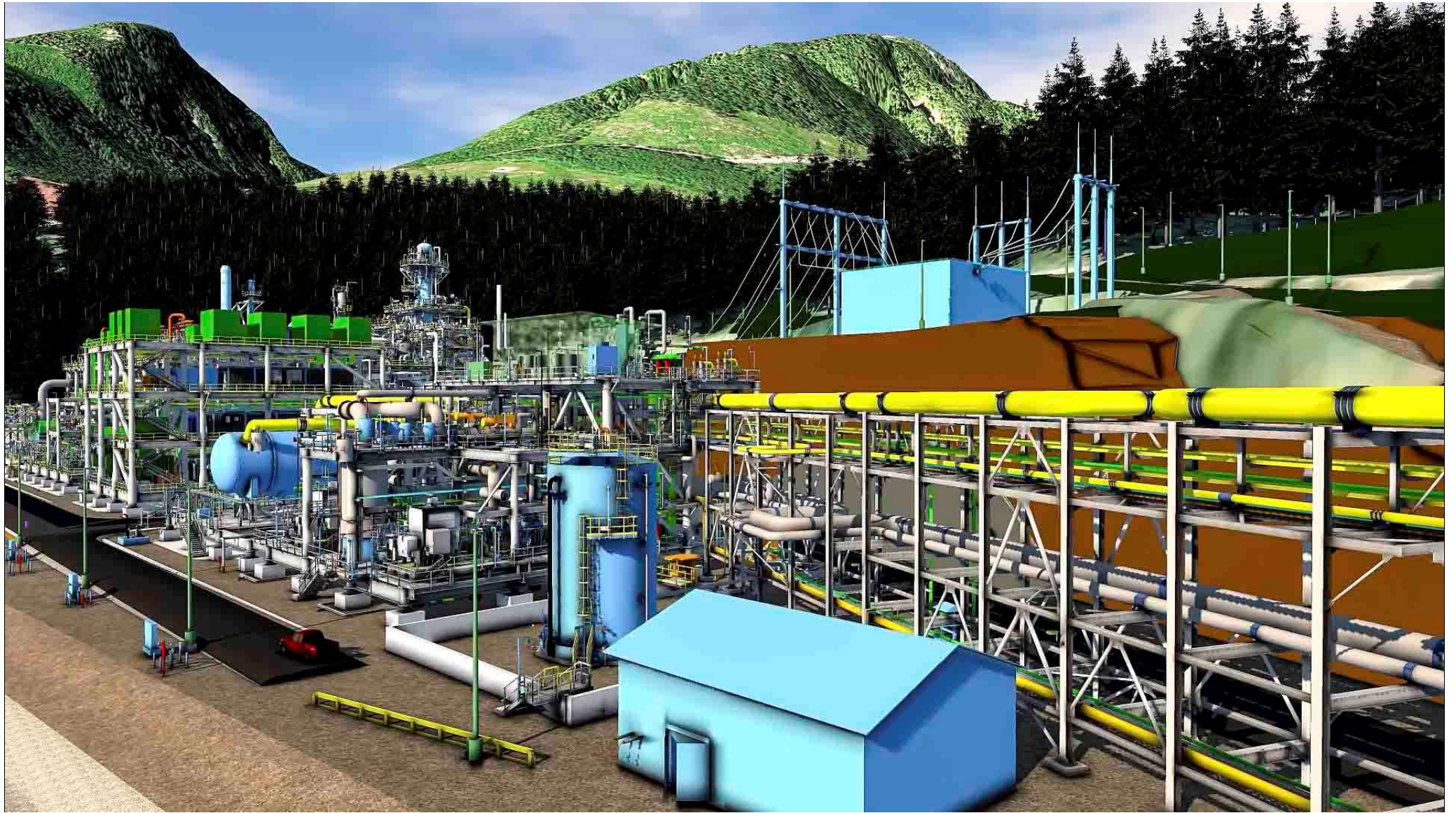


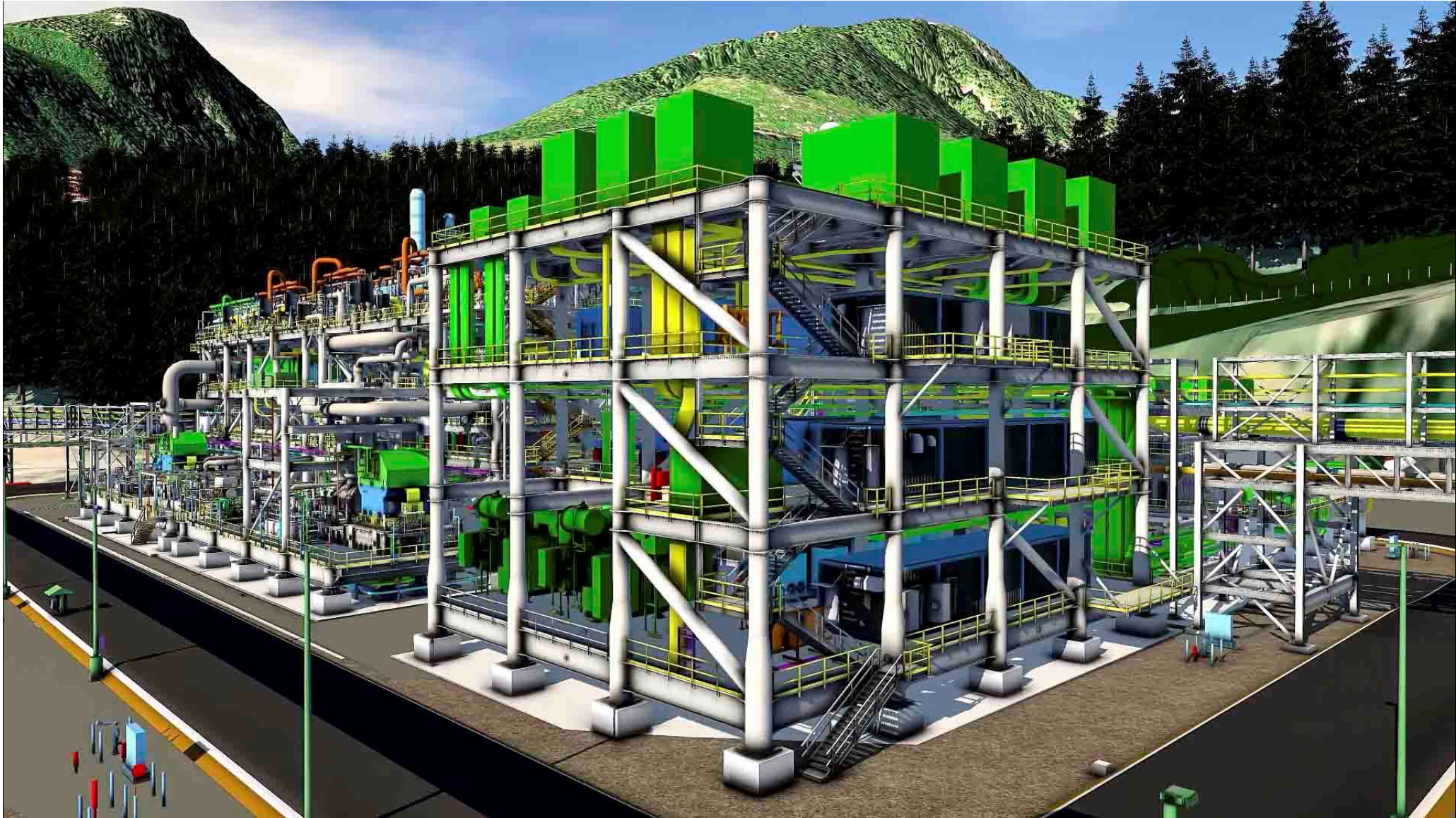


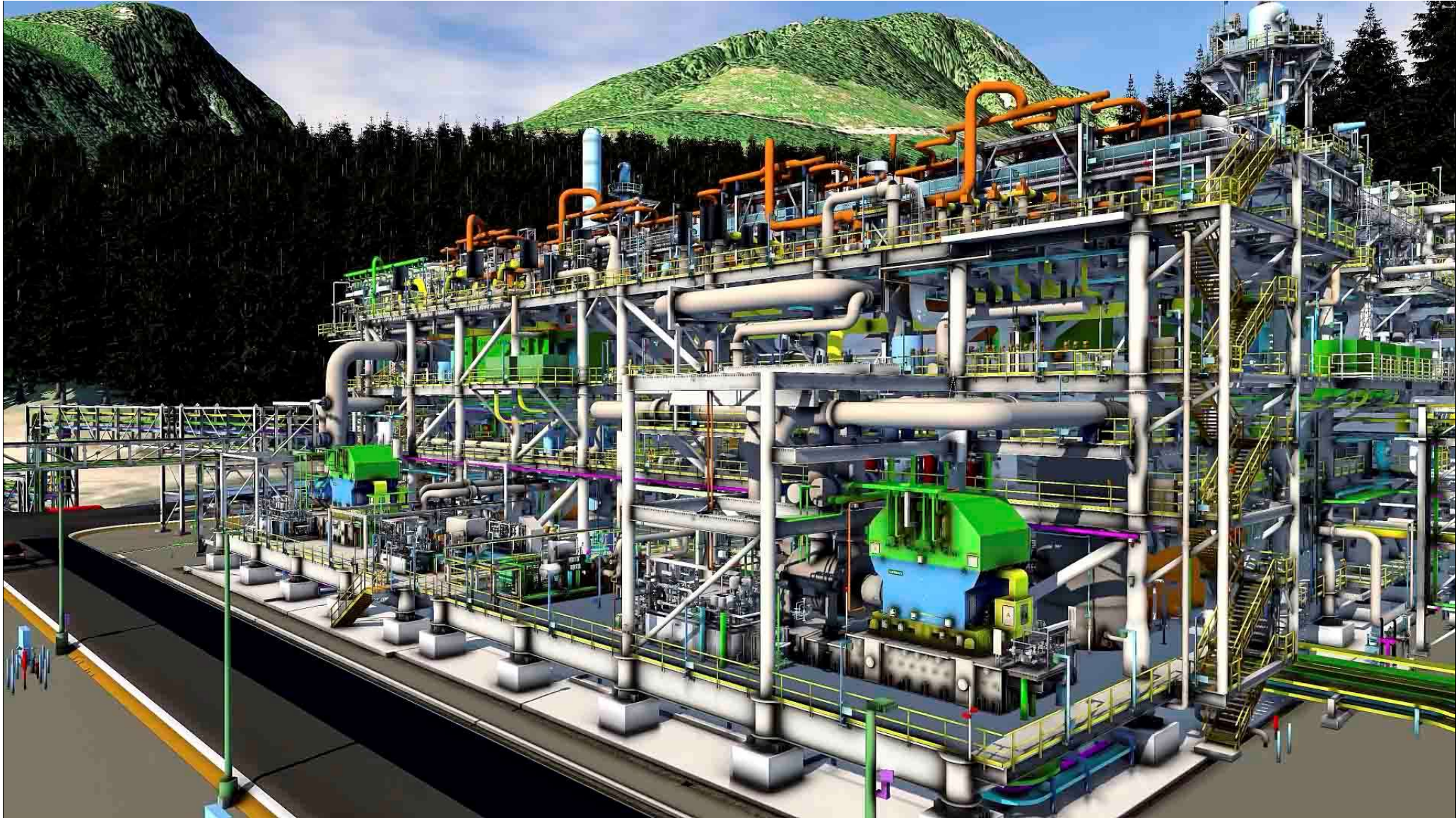


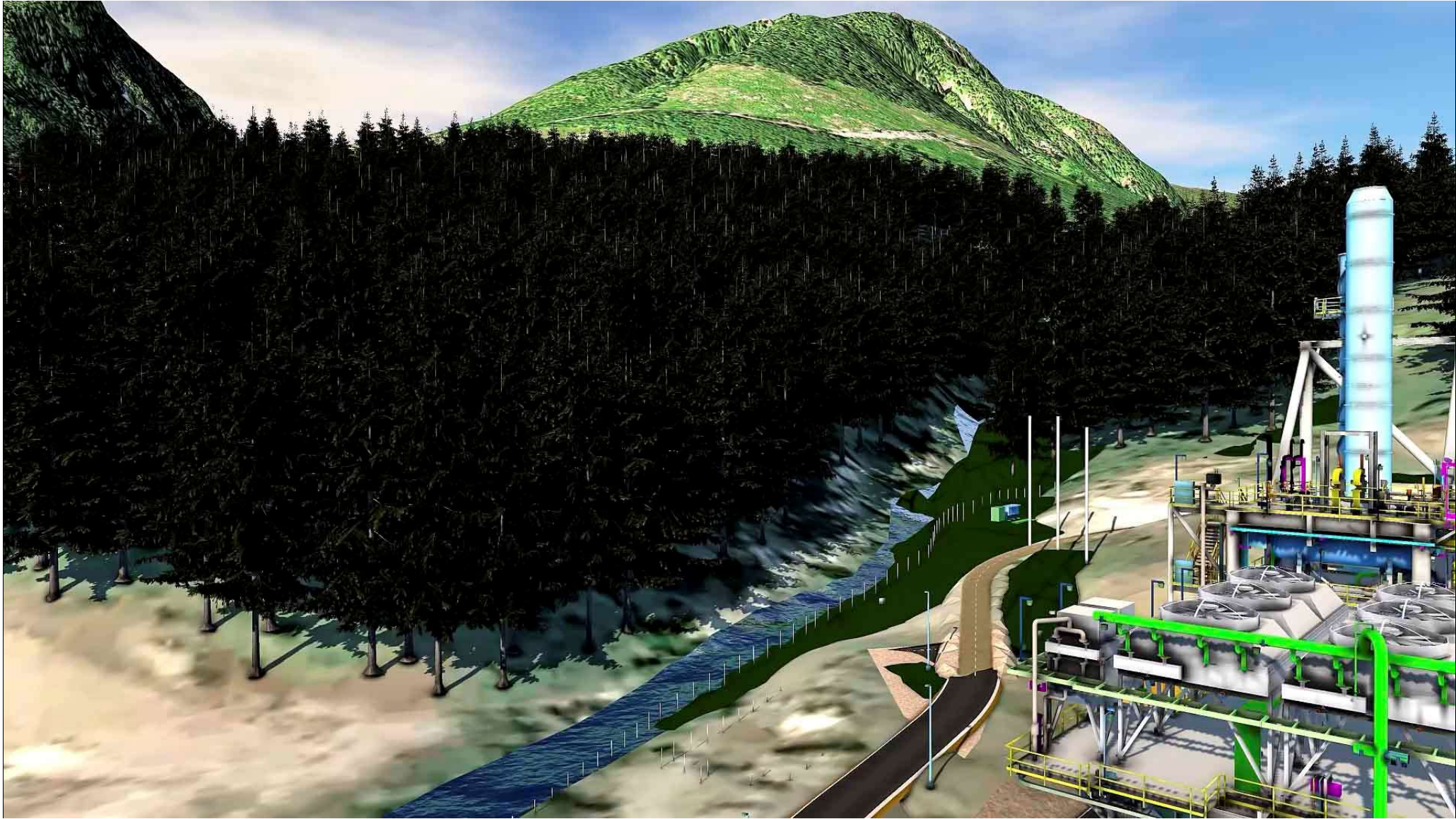






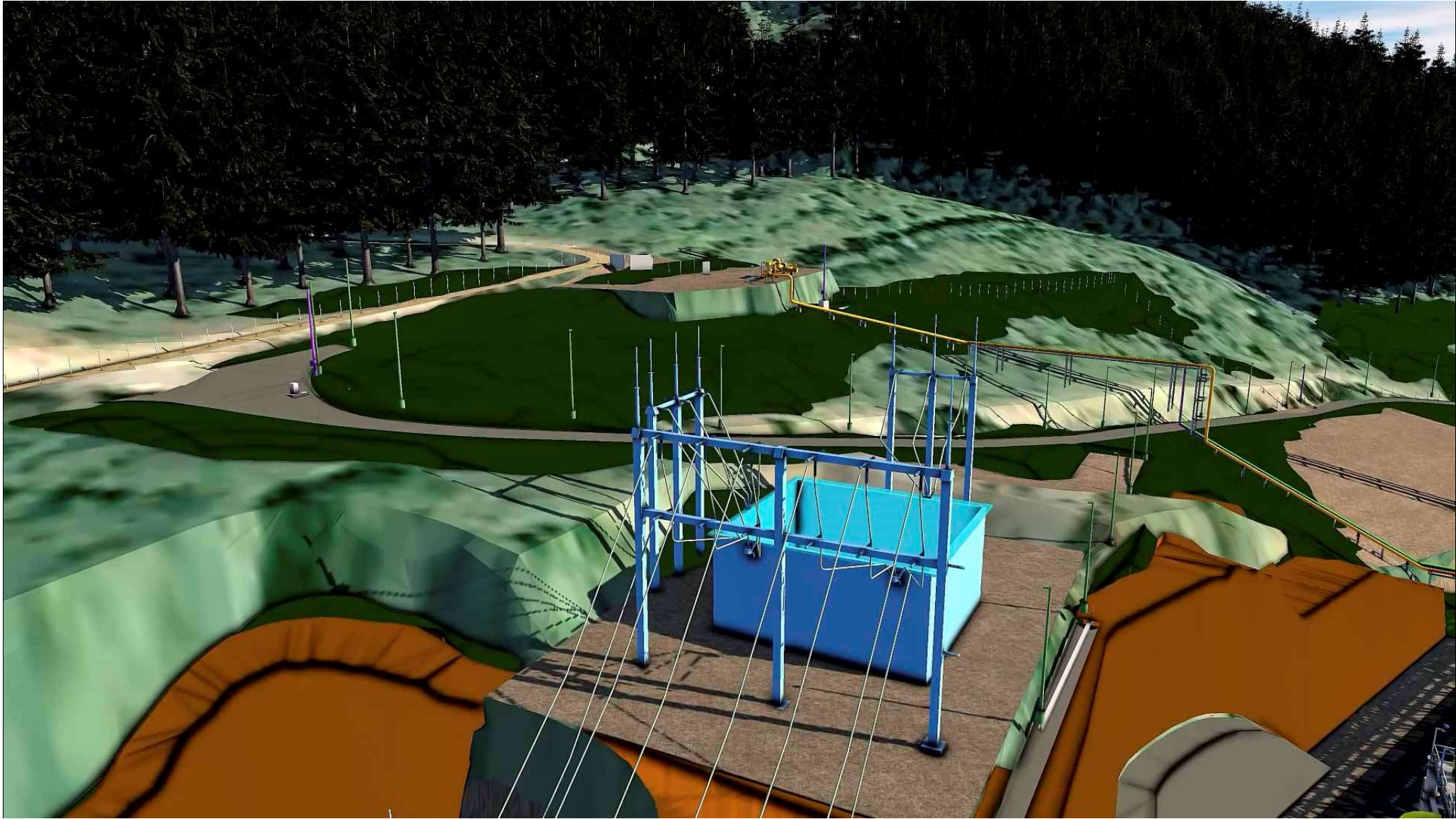


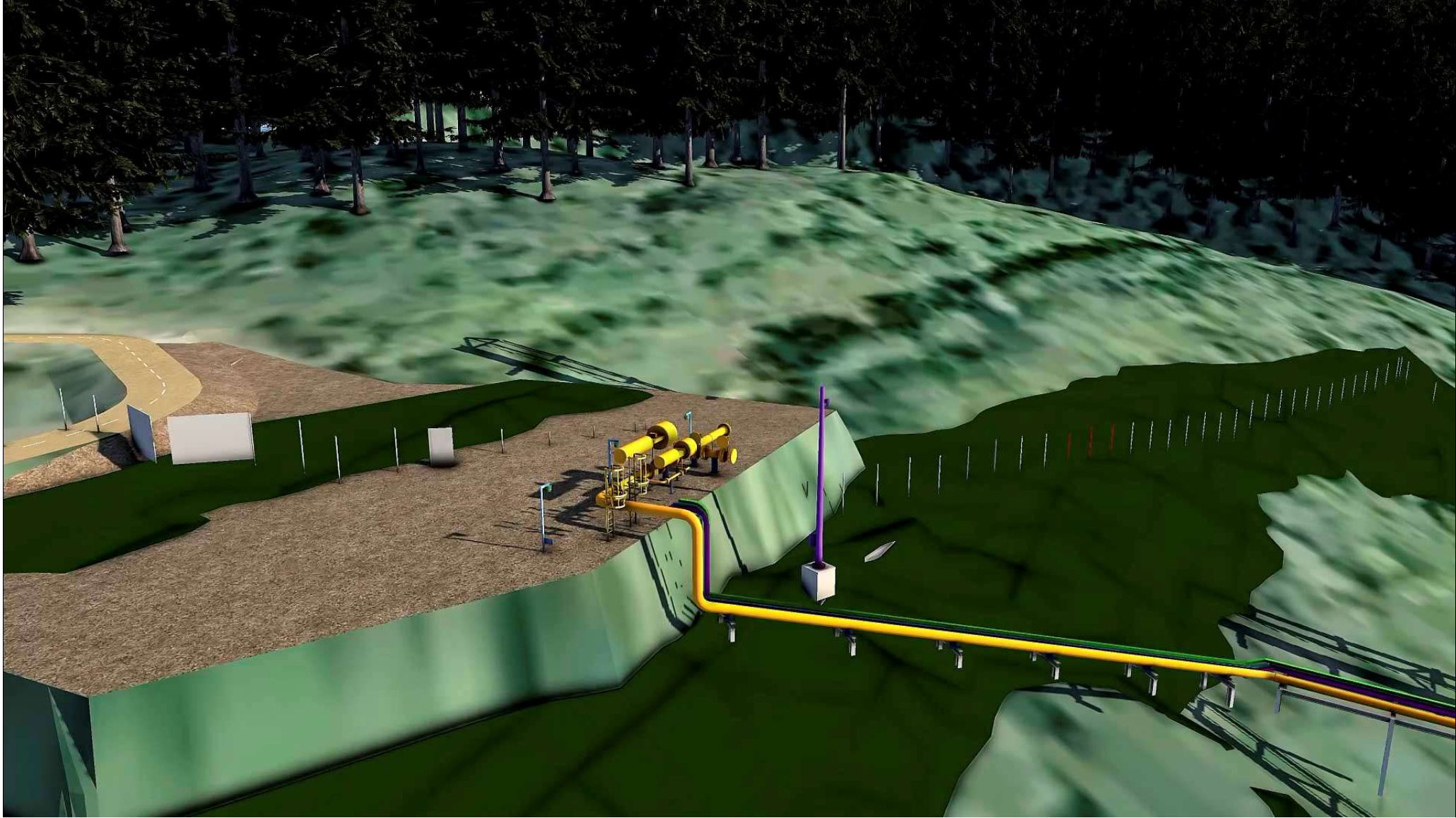




















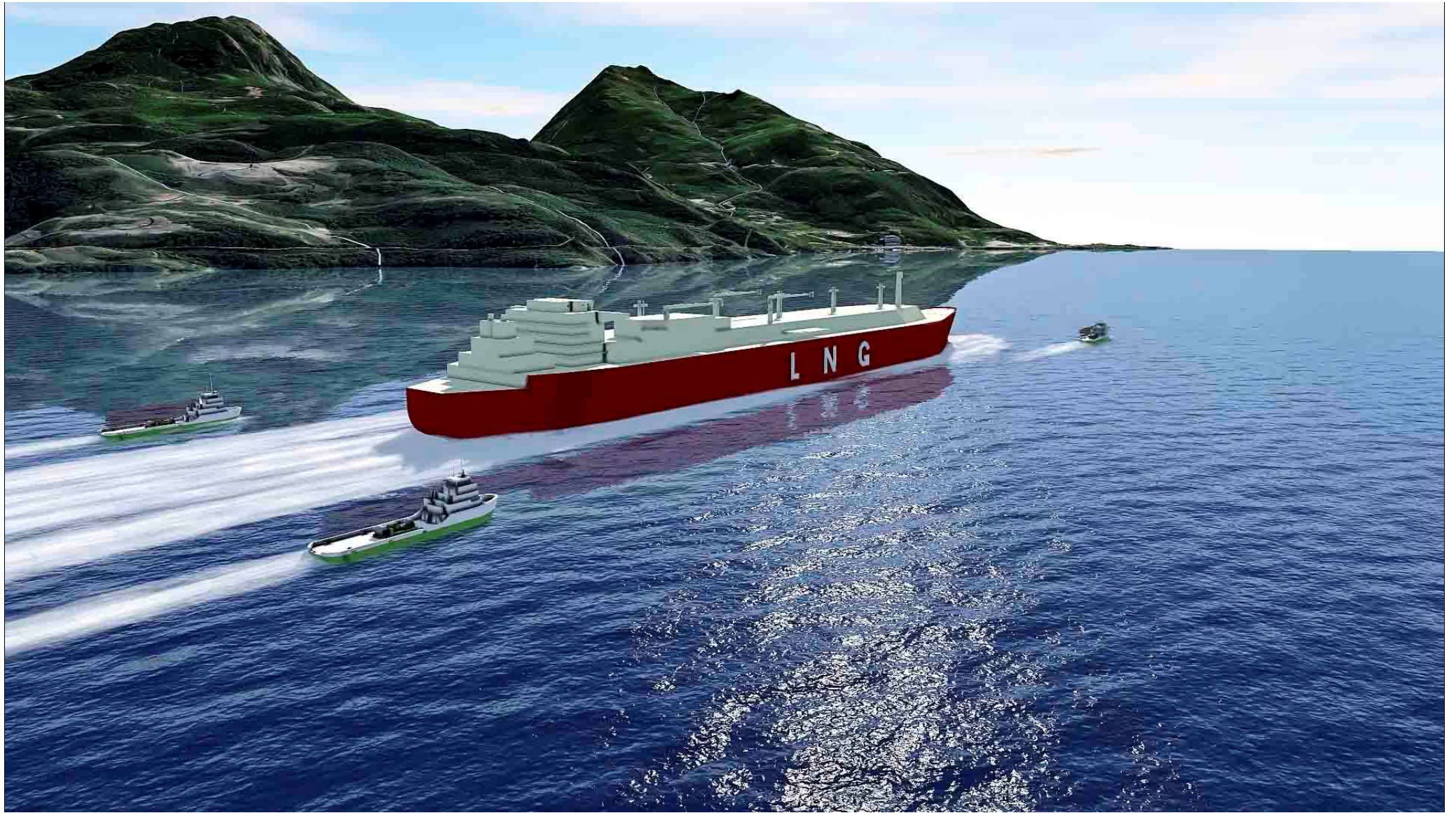


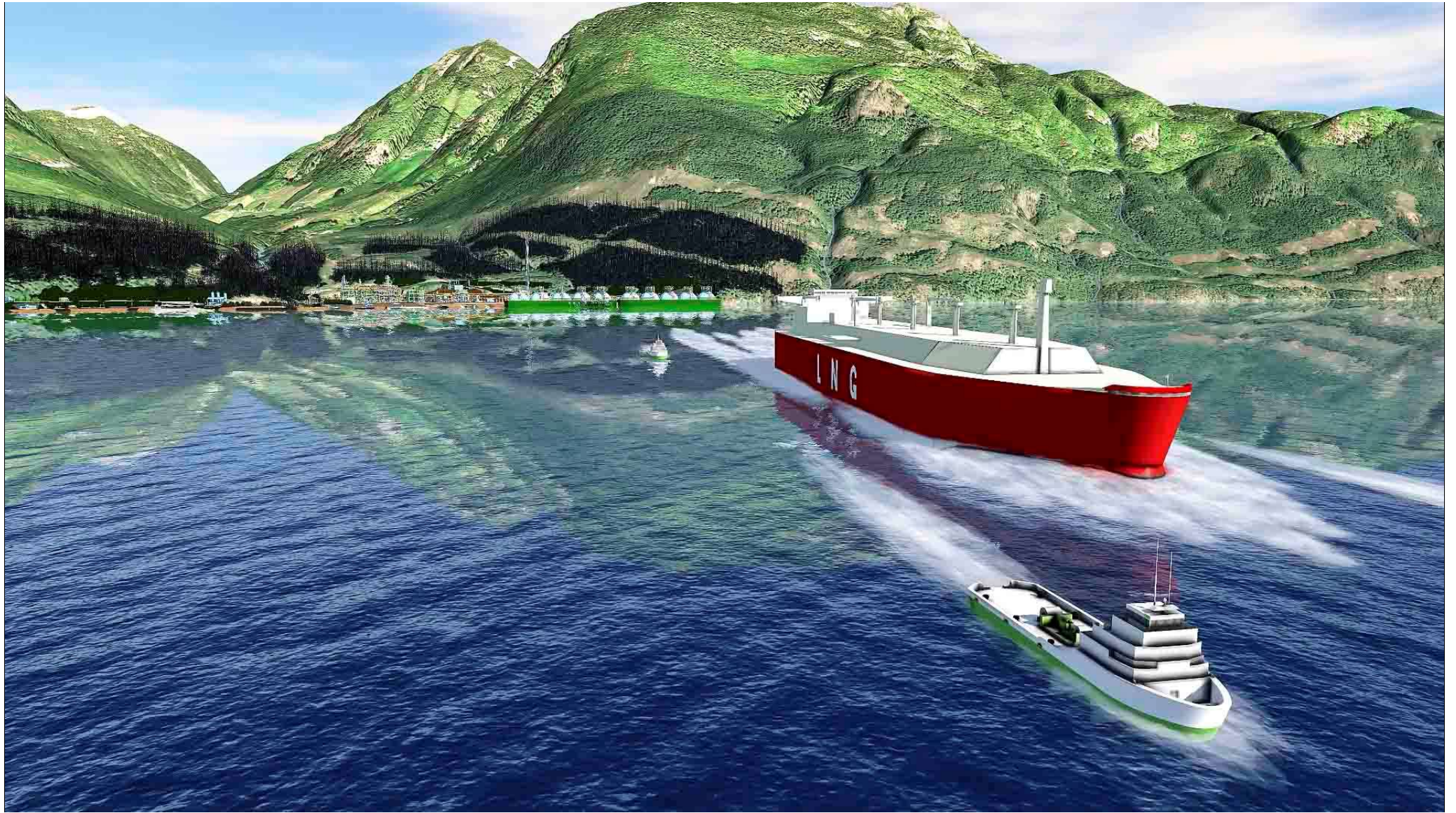














Woodfibre
LNG



Visual Quality Management Plan

Woodfibre LNG Project

August 9, 2023

Prepared By:
Woodfibre LNG General Partner Inc.

Document #123221624EN-RPT0034



Preamble


The Woodfibre Liquefied Natural Gas Project (the Project) is a liquefied natural gas export facility being constructed on the former Woodfibre Pulp and Paper Mill site in Átl'ka7tsem (Howe Sound), approximately seven kilometres south of Skwxwú7mesh (Squamish). The Project is on the historical location of a Skwxwú7mesh Úxwumixw (Squamish Nation) village known as Swiýát. Swiýát and Átl'ka7tsem (Howe Sound) are tied to the cultural well-being of Skwxwú7mesh Úxwumixw (Squamish Nation) members, their ancestors, and their descendants, and to other Indigenous groups as defined in the Project's Environmental Assessment Certificates. The Project is also operating within the traditional, ancestral, and unceded territory of the səliłwətał (Tsleil-Waututh) Nation. Woodfibre LNG General Partner Inc. recognizes the importance of these areas to the Skwxwú7mesh stélmexw (Squamish People), and other Indigenous groups. Woodfibre LNG General Partner Inc. seeks to construct and operate the Project in a manner that is respectful of Indigenous values. This Visual Quality Management Plan is primarily written in English with important place names, species, phrases, and passages provided in the Squamish language.

Temíxwiýikw chet wa naantem chet ti temíxw Swiýát
Chet wa sménhemswit kwis ns7éyxnitás chet ti temíxw
We7ú chet kwis t'íchimwit iy íwas chet ek' I tti.

Our ancient ancestors named this place Swiýát
We, as their descendants safeguard these lands
We will continue to swim and fish in these clear waters.

Limitations and Signoff

This document entitled Visual Quality Management Plan was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Woodfibre LNG General Partner Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Table of Contents

PREAMBLE	I
LIMITATIONS AND SIGNOFF	II
SQUAMISH-ENGLISH TRANSLATIONS	V
ABBREVIATIONS	VI
1.0 INTRODUCTION.....	1
1.1 PROJECT APPROVAL AND CONDITIONS.....	5
2.0 VISUAL QUALITY INDICATORS.....	7
3.0 MITIGATION MEASURES.....	11
3.1 LIGHT MITIGATION.....	11
3.2 LANDSCAPING	11
3.3 BUILDING EXPRESSION.....	13
3.4 MONITORING.....	14
3.4.1 ADAPTIVE MANAGEMENT PROCESS	14
4.0 CLOSURE.....	15
5.0 LITERATURE CITED.....	16
 LIST OF TABLES	
Table 1: EAC Conditions Relevant to the Visual Quality Management Plan	5
Table 2: FDS Conditions Relevant to the Visual Quality Management Plan	6
Table 3: Visual Quality Management Mitigation Measures from Table 22-1 of the Application	6
 LIST OF FIGURES	
Figure 1: Location Overview	3
Figure 2: Certified Project Area.....	4
Figure 3: Visual Quality Assessment Receptor Points	10
Figure 4: Colour Palette Selected	13
 LIST OF RECEPTOR SITES	
Receptor Site 1: Xweḡw'ále7em (Porteau Cove).....	7
Receptor Site 2: Hwy 99/Minaty Bay	7
Receptor Site 3: Furry Creek	8
Receptor Site 4: Stá7mes (Stawamus) Chief Parking Lot	8
Receptor Site 5: Átl'ka7tsem (Howe Sound) (Sts'íts'a7kin [Watts Point])	8
Receptor Site 6: Stá7mes (Stawamus) Chief (First Peak).....	9
Receptor Site 7: Sea-to-Sky Gondola.....	9

**WOODFIBRE LNG PROJECT:
VISUAL QUALITY MANAGEMENT PLAN**

LIST OF APPENDICES

APPENDIX A	VISUAL QUALITY LIGHTING ASSESSMENT REPORT.....	A.1
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Squamish-English Translations

Squamish	English
Átl'ka7tsem	Howe Sound
Skw̓wú7mesh	Squamish
Skw̓wú7mesh sníchim	Squamish language
Skw̓wú7mesh stélmexw	Squamish people
Skw̓wú7mesh Úxwumixw	Squamish Nation
Stá7mes	Stawamus
Sts'íts'a7kín	Watts Point
Swiyát	Historic Skw̓wú7mesh Úxwumixw (Squamish Nation) village located at Woodfibre LNG site
Xwekw'ále7em	Porteau Cove

Abbreviations

Application	Application for an Environmental Assessment Certificate
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
CPA	Certified Project Area
EAC	Environmental Assessment Certificate
FDS	Federal Decision Statement
km	Kilometres
LNG	Liquefied Natural Gas
m ³	cubic metres
the Project	Woodfibre Liquefied Natural Gas Project
Woodfibre LNG	Woodfibre LNG Limited

1.0 INTRODUCTION

Woodfibre LNG General Partner Inc. (Woodfibre LNG) will construct and operate the Woodfibre Liquefied Natural Gas Project (the Project), which is located on the former Woodfibre Pulp Mill site approximately seven kilometres (km) southwest of Sk̓wx̓wú7mesh (Squamish), British Columbia (BC) (Figure 1). The Project will have capacity to liquefy up to 2.1 million tonnes per year of natural gas, have a storage capacity of 250,000 cubic metres (m³), and will export the liquefied natural gas (LNG) via tankers.

The Project underwent a comprehensive environmental assessment process from 2013 to 2015 and Woodfibre LNG received:

- an environmental assessment certificate (EAC) for the Certified Project Area (CPA) under the British Columbia *Environmental Assessment Act* (EAC #E15-02) in 2015
- an environmental assessment approval from Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) through the Squamish Nation Environmental Assessment Agreement in 2015, and;
- a positive Federal Decision Statement (FDS) under the *Canadian Environmental Assessment Act, 2012* in 2016

Two EAC amendments were granted by the British Columbia Environmental Assessment Office (BC EAO) in 2017 and 2019, and the FDS was reissued in 2018 in response to changes to the Designated Project. Woodfibre LNG also received an extension on EAC #15-02 in October 2020. The provincial, Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation), and federal environmental assessment processes have each yielded conditions of approval that Woodfibre LNG must address.

Most of the Project is on fee simple, industrially zoned, brownfield lands with more than 100 years of industrial use. There is no road access and all personnel, equipment, and supplies for the Project will be brought in by vessel via Átl'ka7tsem (Howe Sound). The Project will use electrical power sourced from BC Hydro and gas will be supplied to the facility for export by FortisBC.

The CPA and key project components are illustrated in Figure 2. Key project components are:

- land-based natural gas processing and liquefaction facilities
- a floating storage and offloading unit
- construction worker accommodation
- supporting infrastructure

The supporting infrastructure includes buildings (e.g., administration, control rooms, maintenance, dry storage and chemical, fire house, first aid, safety and guardhouse), fencing (temporary and permanent), material storage and laydown areas, utility and loading lines, and boil off gas vapour lines.

**WOODFIBRE LNG PROJECT:
VISUAL QUALITY MANAGEMENT PLAN**

August 9, 2023

The works and activities that will occur as part of construction include, but are not limited to:

- marine early works (e.g., shoreline improvements and armoring, dock replacement or repairs), including improvements to the existing in-service (east and south) barge landing
- clearing vegetation and grubbing
- stripping and grading
- drilling and blasting, including excavation, crushing, screening, and hauling
- grouting and rock stabilization
- road, culvert, and bridge works
- construction of land-based natural gas processing and liquefaction facility
- construction support structures, services, and equipment
- construction of the floating storage and offloading unit
- marine facility construction of mooring dolphin supports and connecting trestles and gangways
- dredging if required

Figure 1 - Location Overview

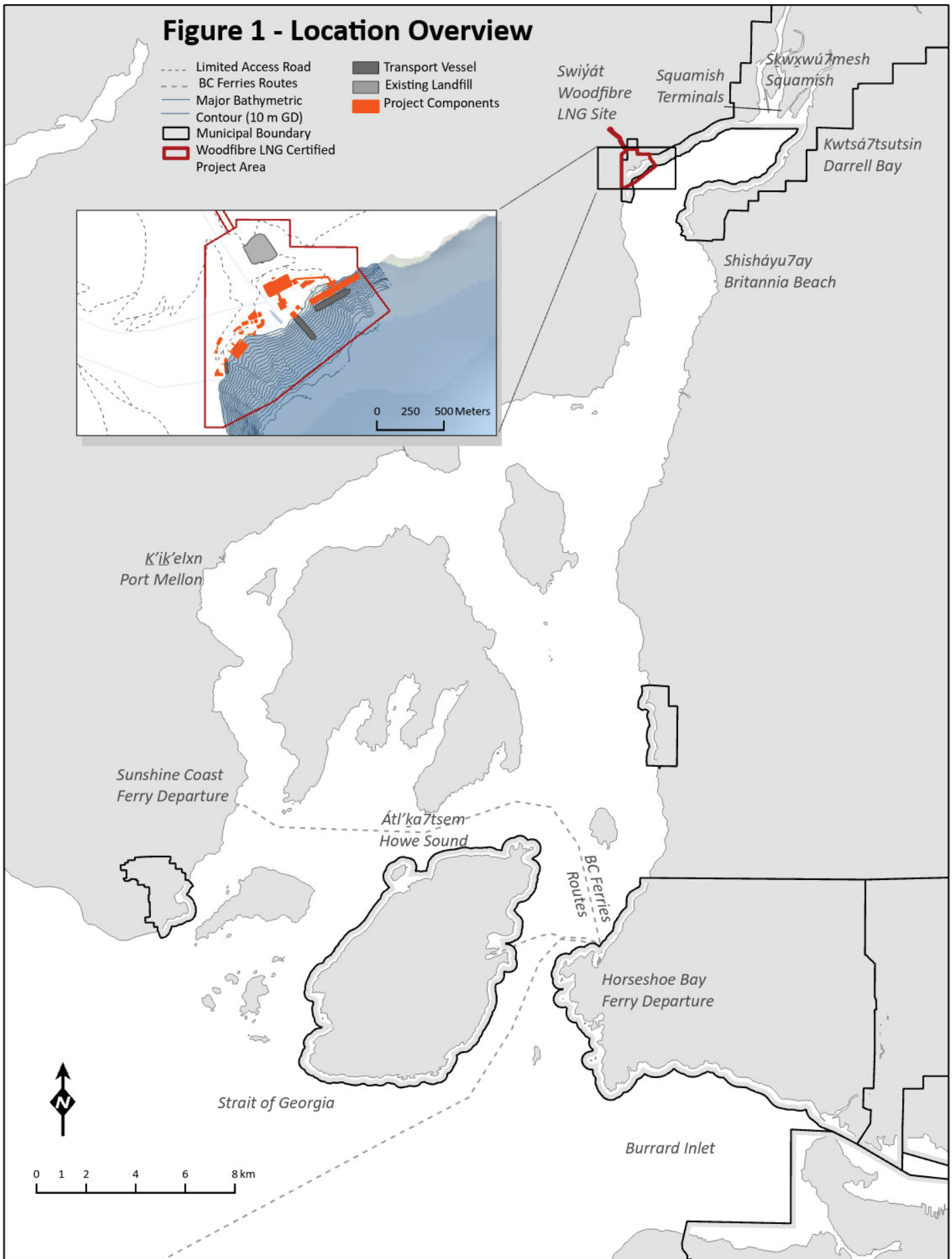
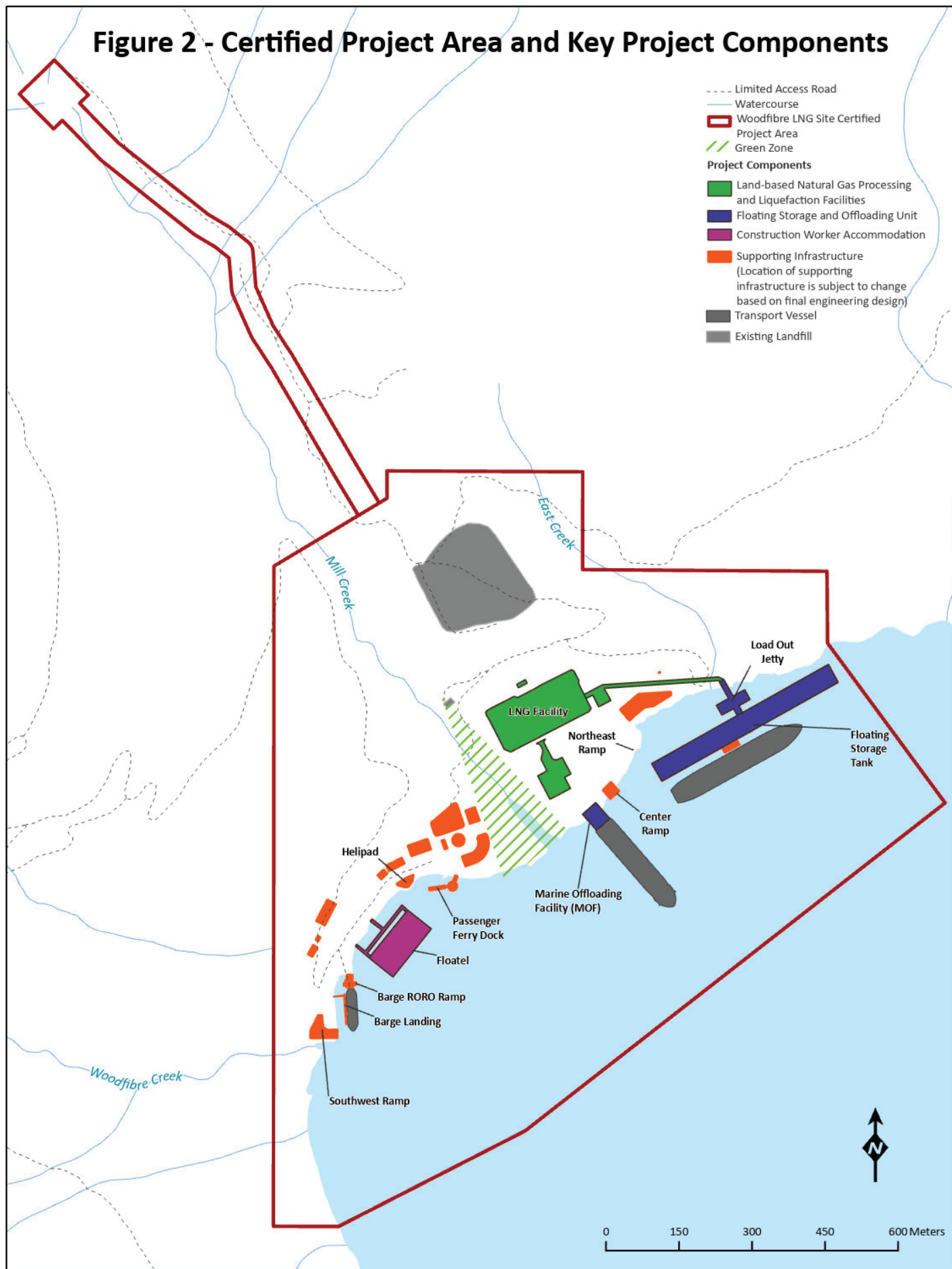


Figure 2 - Certified Project Area and Key Project Components



1.1 PROJECT APPROVAL AND CONDITIONS

This Visual Quality Management Plan (this Plan) has been prepared to address EAC Condition 20 (Table 1) and FDS Condition 4.2 and 6.3 (Table 2). This plan also identifies mitigation measures that will be incorporated into the design of the Project to reduce adverse aesthetic effects, including relevant measures identified in Table 22-1 of the Application (Table 3).

For this Plan, visual quality refers to the aesthetics of natural and cultural features that provide context to a specific environment and place and contribute to its landscape characteristics. Within the municipal boundaries of Sk̓wx̓wú7mesh (Squamish), the visual aesthetics of the landscape provide value to both residents and visitors, providing the context for recreation activities and tourism. Visual aesthetics and the maintenance of visual quality have been consistently rated as a resource management priority by the British Columbia public as per the Government of BC Visual Resource Management, and has been defined as a value to be considered in provincial sustainable resource planning and environmental and social effects assessment (BC EAO, 2022).

Table 1: EAC Conditions Relevant to the Visual Quality Management Plan

Condition Number	Condition	VQMP Reference
EAC Condition 20	The Holder must develop and implement a visual quality management plan in consultation with FLNR, OGC, Aboriginal Groups ¹ , Tourism Squamish and the Sea to Sky Gondola that must at a minimum:	The Plan
	Specify mitigation measures to reduce the level of contrast, and provide for additional screening of land-based infrastructure to blend infrastructure with the existing landforms in the context of surrounding landscape features;	Section 3.3
	Specify mitigation measures to promote screening, including but not limited to, the establishment of new native vegetation;	Section 3.3
	Specify the selection of natural colours and flat or low glare external finishes on buildings and structures;	Section 3.3
	Include measures to monitor and maintain natural screening and external finishes, whereby the reduced the level of contrast is maintained for minimal visibility of infrastructure; and	Section 3.3
	Specify approach to engaging with Aboriginal Groups, Tourism Squamish, and the Sea to Sky Gondola Limited Partnership.	TBD
	The Holder must consult with BC Hydro and FortisBC on the final designs of the Woodfibre sub-station and Eagle Mountain-Woodfibre Pipeline projects, and determine whether additional mitigation measures are required to ensure that cumulative effects to visual quality are no greater than identified in the Application.	TBD

Note:

The regulator names (i.e., FLNR and OGC) in the conditions reflect the names that were in place when the conditions were written. FLNR is now split into Ministry of Forests and Ministry of Water, Land and Resource Stewardship and OGC is now BC Energy Regulator.

¹ "Aboriginal Groups" is used within the published EAC and FDS Conditions and has been retained in this VQMP where stating the Conditions. Elsewhere within this VQMP, "Indigenous groups" has been used to reflect the current preferred naming convention.

**WOODFIBRE LNG PROJECT:
VISUAL QUALITY MANAGEMENT PLAN**

August 9, 2023

Table 2: FDS Conditions Relevant to the Visual Quality Management Plan

Condition Number	Condition	VQMP Reference
FDS Condition 4.2	4.2.1 restrict flaring to the minimum required during operation, maintenance activities or emergencies to prevent the accumulation of natural gas and protect from overpressure;	Section 3.1
	4.2.2 minimize flaring required for operation and maintenance activities during night time and during periods of migratory bird vulnerability; and	Section 3.1
	4.2.3 control operational lighting to avoid attracting migratory birds.	Section 3.1
FDS Condition 6.3	The Proponent shall install and manage exterior lighting from all components of the Designated Project and during all phases of the Designated Project to prevent excessive emanation of light, by following the International Commission on Illumination's CIE 150:2003 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, while meeting marine transportation and aviation safety requirements.	Section 3.1

Table 3: Visual Quality Management Mitigation Measures from Table 22-1 of the Application

Mitigation Number	Mitigation Name and Proposed Mitigation	Concordance with the VQMP
M5. 12-5	Subject to safety and operational requirements, Woodfibre LNG Limited ¹ will use blue or green lighting rather than red or white lighting in order to reduce attractiveness to birds.	Section 3.2
M5. 13-2	Woodfibre LNG Limited will, where possible, use lighting technology that minimizes the amount of ultraviolet light generated, thereby minimizing its attractiveness to insects.	Section 3.2
M7. 05-1	External Surface Finishing: Woodfibre LNG Limited will reduce the level of contrast by finishing new buildings' external surfaces or refinishing existing buildings' external surfaces and structures as appropriate for required functional utility. The finish will have low glare and natural colours to reduce contrast with the qualities of the surrounding landscape features.	Section 3.3
M7 05-4	Monitor and maintain natural screening: Woodfibre LNG Limited will monitor and maintain natural screening to ensure minimal visibility of infrastructure and activity in operational areas by establishing vegetation and avoiding surface and root disturbance.	Section 3.2

Note:

¹ At the time the Application, including Table 22-1, was submitted the company name was Woodfibre LNG Limited but it is now Woodfibre LNG General Partner Inc. The commitments as written in Table 22-1 and presented in Table 3 of this Construction WMMP remain unchanged from the Application.

Comments received during consultation on the development of this Plan and Woodfibre's responses are provided in a consultation record, as required by EAC Condition 2.

2.0 VISUAL QUALITY INDICATORS

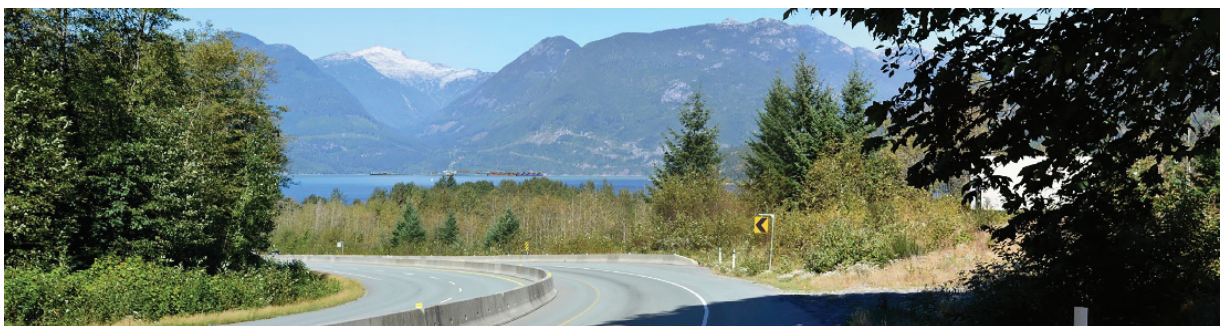
The management of visual quality for the Project is based on seven receptor sites identified in Table 7.5-6 of the Application. These receptor sites are along or near the Sea-to-Sky Highway (Highway 99) and were established as key locations based on public feedback and important viewpoints that contribute to Skwxwú7mesh (Squamish) tourist and recreational use. The Project area is highly visible from all seven sites.

The receptor sites, with an image of the rendered LNG facility from the perspective of each viewpoint, are provided below and shown in Figure 3.

Receptor Site 1: Xwekw'ále7em (Porteau Cove)



Receptor Site 2: Hwy 99/Minaty Bay



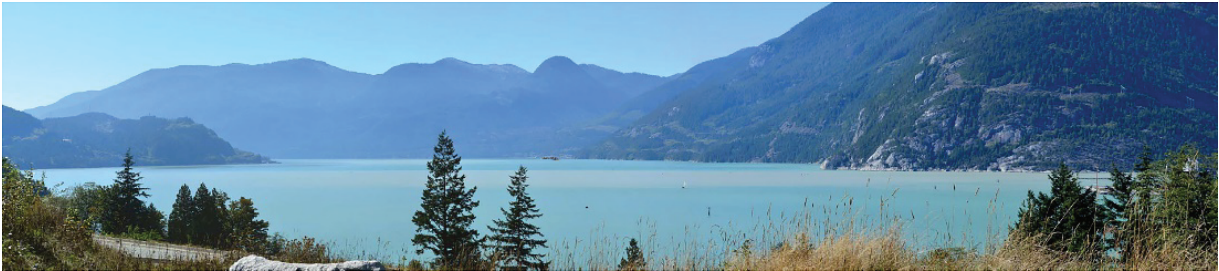
**WOODFIBRE LNG PROJECT:
VISUAL QUALITY MANAGEMENT PLAN**

August 9, 2023

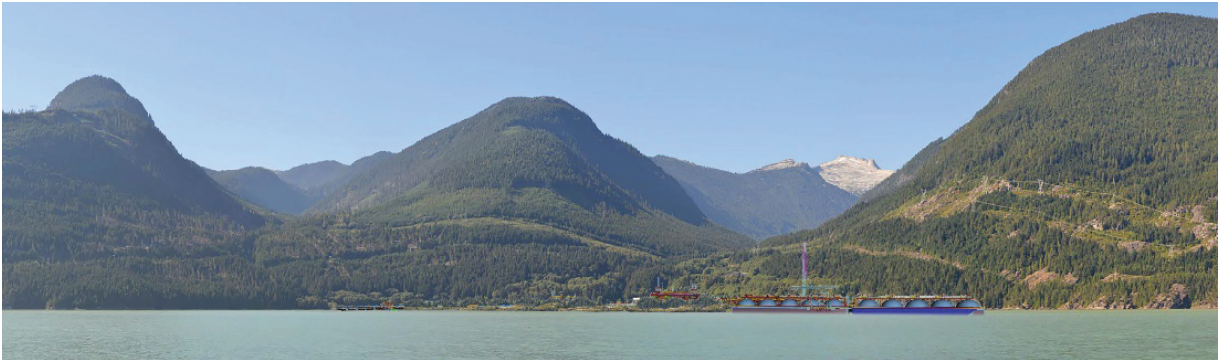
Receptor Site 3: Furry Creek



Receptor Site 4: Stá7mes (Stawamus) Chief Parking Lot



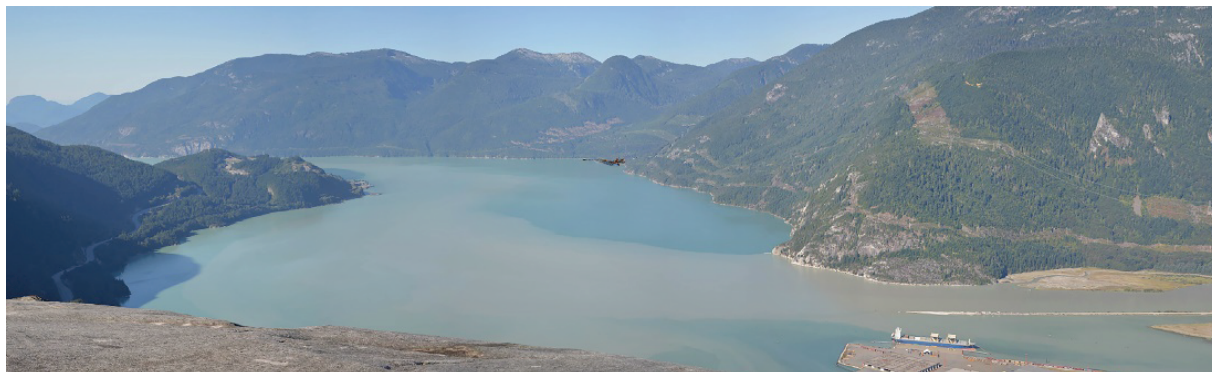
Receptor Site 5: Átl'ka7tsem (Howe Sound) (Sts'íts'a7kin [Watts Point])



**WOODFIBRE LNG PROJECT:
VISUAL QUALITY MANAGEMENT PLAN**

August 9, 2023

Receptor Site 6: Stá7mes (Stawamus) Chief (First Peak)



Receptor Site 7: Sea-to-Sky Gondola

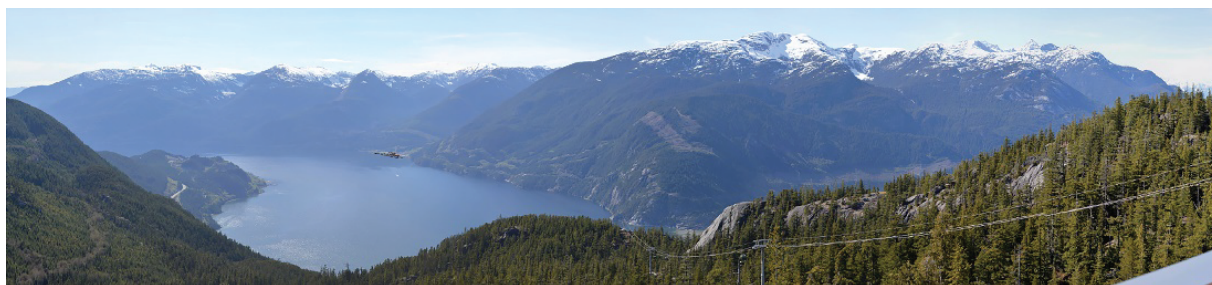
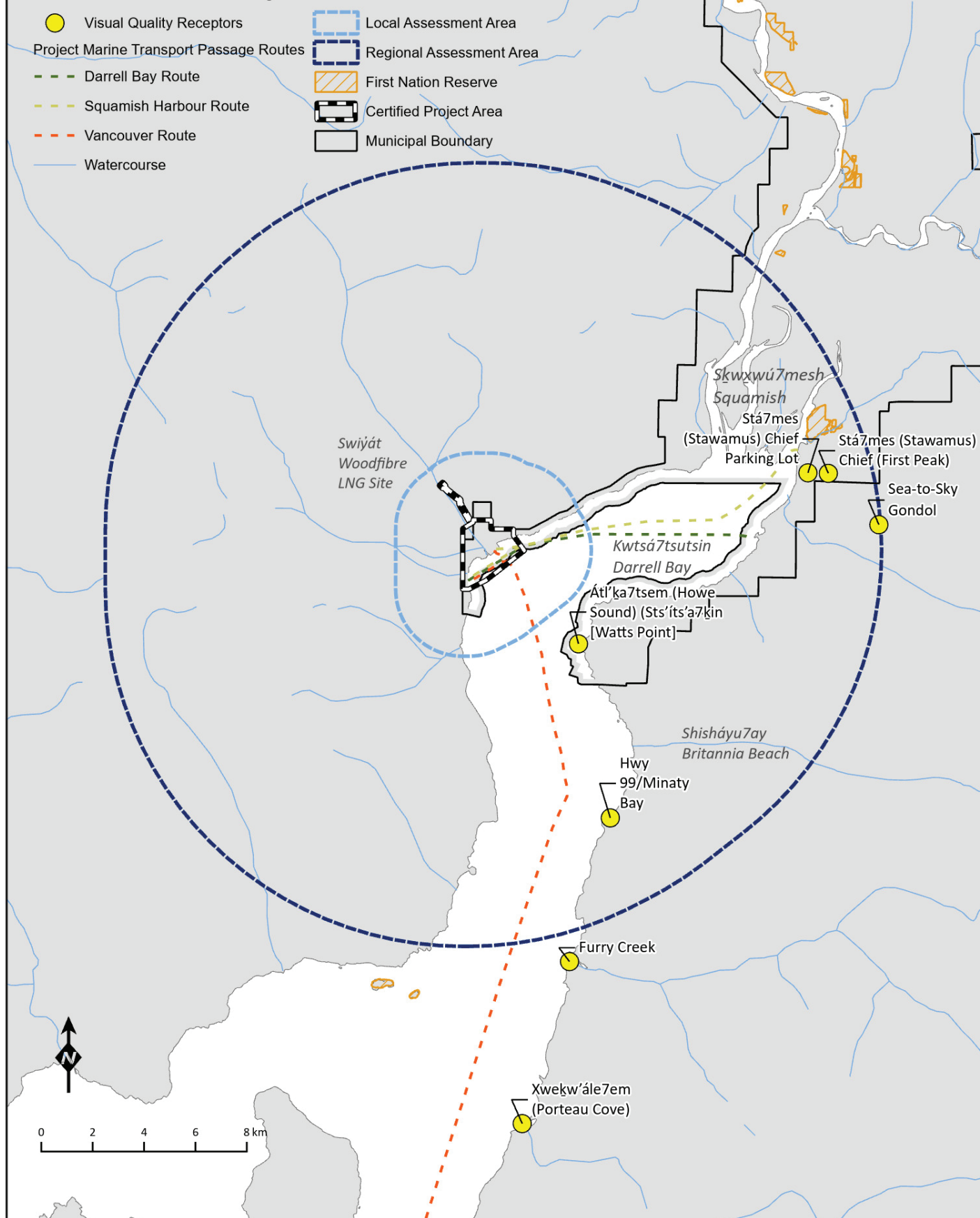


Figure 3 Visual Quality Assessment Receptor Points



3.0 MITIGATION MEASURES

Mitigation measures are based on the commitments set out in Table 22-1 of the Application that are applicable to visual quality management.

3.1 LIGHT MITIGATION

Light mitigation includes lighting design considerations that reduce light emissions. Subject to operational safety requirements and management plans for operations (e.g. wildlife) the lighting system will use both green/blue and white colour lighting fixtures.

- **Green/blue lighting:** These lights will be left on during operational down time. From lighting modeling analyses undertaken by CB&I LLC, a subsidiary of McDermott International, Ltd. (McDermott Engineering, 2021), this strategy limits environmental exposure to white light and significantly reduces power usage. The green/blue lighting is expected to be implemented for the LNG train and other major infrastructure that have large lighting requirements due to safety.
- **White lighting:** Due to its brightness, these lights will be switched off during the night and when operations personnel are not present in specific operational modules/areas. These lights can be manually turned on should operations resume, or when personnel are on site. For safety reasons, white light is required to allow workers to see the full spectrum of colours when working in an area. Automated features in lighting mechanisms will be used to prevent continuous lighting disruptions to surrounding areas.

Based on the nighttime survey and predictive modelling carried out in the Woodfibre LNG Visual Quality Light Assessment (Appendix A), project light emissions are not expected to exceed the lighting criteria levels at the identified receptor sites. Woodfibre will develop a detailed Visual Light Management Plan, as the Project develops, that will provide details on expected flaring events and their frequency, along with a final schedule of luminaires. The Visual Light Management Plan will confirm light effects from the facility, promote continuous improvement and adherence to best management practices for lighting, and provide a mechanism for tracking and addressing lighting concerns throughout the lifetime of the facility.

3.2 LANDSCAPING

Site-specific landscaping will be used to mitigate visual quality from the seven receptor sites. Mitigation measures are in reference to the Squamish Nation Environmental Assessment Agreement 4.2 Green Zone condition, and include:

- Enhanced tree canopies within areas of excavation within the site.
- Naturalization elements showcasing succession between understory and the canopy in a shoreline of the Woodfibre LNG site.
- Preserve and protect trees with applicable tree protection zone, per Squamish's Tree Management Bylaw #26 40, 2019. Native trees are to be retained where possible, and each tree removed (with a minimum 20 cm diameter) will be replaced on-site with a native tree.
- Introduce native plants along the shoreline to soften the edges of the shoreline infrastructure.

WOODFIBRE LNG PROJECT: VISUAL QUALITY MANAGEMENT PLAN

August 9, 2023

- Preserve and protect trees with applicable tree protection zone, per Squamish's Tree Management Bylaw #26 40, 2019. Native trees are to be retained where possible, and each tree removed (with a minimum 20 cm diameter) will be replaced on-site with a native tree.
- Introduce native plants along the shoreline to soften the edges of the shoreline infrastructure.

Landscaping areas will be applied in the Green Zone, as well as at non-operational areas of the facility such as in the entry way of the facility, areas along the shoreline that do not have safety or use restrictions, and areas of the facility allocated to employee amenities that have the space for landscaping elements.

Native tree and shrub species that are suitable for landscaping in the coastal area near Squamish are listed below. The species to be planted will be finalized in collaboration with Skwxwú7mesh Úxwumixw (Squamish Nation) during development of the green zone restoration plan.

- **Trees:**

- Douglas-fir (*Pseudotsuga menziesii*)
- Pacific crabapple (*Pyrus fusca*)
- Paper birch (*Betula papyrifera*)
- Shore pine (*Pinus contorta contorta*)
- Western hemlock (*Tsuga heterophylla*)
- Western redcedar (*Thuja plicata*)

- **Shrubs**

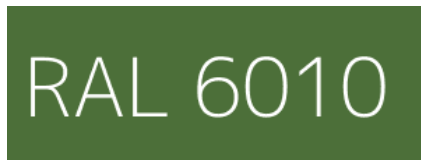
- Indian plum (*Osmaronia cerasiformis*)
- Nootka rose (*Rosa nutkana*)
- Oceanspray (*Holodiscus discolor*)
- Pacific ninebark (*Physocarpus capitatus*)
- Pacific willow (*Salix lucida*)
- Red elderberry (*Sambucus racemose*)
- Red-osier dogwood (*Cornus stolonifera*)
- Salmonberry (*Rubus spectabilis*)
- Scouler's willow (*Salix scouleriana*)
- Sitka willow (*Salix sitchensis*)
- Snowberry (*Symphoricarpos albus*)
- Thimbleberry (*Rubus parviflorus*)
- Vine maple (*Acer circinatum*)

3.3 BUILDING EXPRESSION

Exterior building design considerations are being incorporated into the design for fully enclosed buildings to integrate the Project, as best possible, into the landscape of Squamish and be visually aesthetic through the receptor sites described in Section 2.0. Colour selection, as described in detail below, is a key mitigation strategy, and is based on Feng Shui guidelines.

The green palette RAL6010 Grass Green (Figure 4) will be applied to the exterior concrete walls of the Control and Operations Building, Warehouse & Maintenance Building, Administration Building, Storage Building, and Emergency Response Building. Other areas that are exposed and provide support to these buildings such as roofs, posts, columns, and external engineering systems will also have the RAL6010 Grass Green palette applied.

Figure 4: Colour Palette Selected



The decision on colour was based on the following rationale (McDermott Engineering, 2022):

- **Feng Shui Guidelines:** Feng Shui was a commitment made to guide the design and development of the LNG building as part of the environmental assessment process. Per the Feng Shui guidelines issued in July 2021 and pertinent to the Project, it states that “the colour for painting the outside wall of the buildings shall be green”.
- **District of Squamish Official Community Plan, Bylaw 2500:** The palette selection is intended to blend with the surrounding environment such that it complies with District of Squamish Official Community Plan (District of Squamish, 2018).

Other colours that may be applied as trim or accents to the main building will be complementary to RAL6010 Grass Green.

3.4 MONITORING

Per condition M7 05-4 Woodfibre LNG will undertake monitoring in the following manner:

- Once annually a Woodfibre LNG representative will take photographic evidence of the project from receptor sites 1 thru 7 as shown in section 2.0 of this management plan. Monitoring and photos will generally be taken in the summer/autumn.
- The photographs will be compared year-to-year to identify if vegetation screening is significantly changed.
- Woodfibre LNG will then perform modifications to the vegetation, trees immediately adjacent to the project within the certified project boundary (shown in Figure 2), to maintain a reasonable level of natural vegetation screening and visual quality of the project.

3.4.1 ADAPTIVE MANAGEMENT PROCESS

The adaptive management process below illustrates how Woodfibre LNG will address any changes to the plan based on feedback from stakeholders:

- Identify concerns related to the effectiveness of visual quality management measures from ongoing engagement and/or grievance/feedback process.
- For concerns that are likely to be addressed with existing mitigation measures, provide feedback explaining this (for example, it may take time for vegetation screening to be fully effective because plants will need to grow before they can fully screen project components).
- For concerns that are not being addressed with existing mitigation measures, consider technically and economically feasible methods of modifying the mitigation/management plan. In some cases additional mitigation measures are not technically feasible (e.g. it is not possible to screen infrastructure being built right at the water line).
- Modify the visual quality management plan to incorporate changes that are technically and economically feasible.
- Include the revised mitigation plan in the monitoring program.
- Include changes to the visual management plan as part of ongoing project reporting.

4.0 CLOSURE

This Plan has been developed to document the visual quality mitigation measures that will be applied to the Project. The specific application of each mitigation measure will be determined through the detailed design of the Project. As applicable, Woodfibre LNG will work with BC Hydro and FortisBC on application of these measures to the final designs of the Woodfibre sub-station and Eagle Mountain-Woodfibre Pipeline. Through application of the mitigation measures indicated in this Plan, Woodfibre will reduce adverse visual effects of the facility, in accordance with its commitments within the environmental assessment process.

5.0 LITERATURE CITED

BC EAO (Environmental Assessment Office). (2015). Woodfibre LNG Project Assessment Report With Respect to the Application by Woodfibre LNG Limited for an Environmental Assessment Certificate pursuant to the Environmental Assessment Act, S.B.C. 2002, c.43 and the Canadian Environmental Assessment Act, 2012, S.C. 2012 c. 19, as a substituted environmental assessment.

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McDermott Engineering. (2022). Technical Query Form – 350106-000-00-MDR-OTQ-WLNG-00136.



Woodfibre LNG Visual Quality Lighting Assessment

July 17, 2023

Prepared for:
Woodfibre LNG General Partners Inc.

Prepared by:
Stantec Consulting Ltd.

Project Number:
123221624EN-RPT0037

Limitations and Sign-off


This document entitled Woodfibre LNG Visual Quality Lighting Assessment was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Woodfibre LNG General Partners Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Karen Tso PMP, EP, B.Sc.

Printed Name



Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Woodfibre LNG General Partner Inc. (Woodfibre LNG) to undertake a visual quality lighting assessment for the Woodfibre Liquefied Natural Gas Project (the Project), which is located on the former Woodfibre Pulp and Paper Mill site in Átl'ka7tsem (Howe Sound), approximately seven kilometres (km) southwest of Skw̓wú7mesh (Squamish). One of the conditions of the environmental assessment approval for the Project is to complete a lighting assessment.

A lighting assessment was completed for the Project in 2014 as part Woodfibre LNG's Application for an Environmental Assessment Certificate. Since then, the facility's lighting design has changed, and new guidance and criteria have become available. The British Columbia Oil and Gas Commission (OGC) issued Light Control Best Practices Guidelines in 2021 (BC OGC 2021), which recommends the use of obtrusive lighting criteria developed by the Commission International de l'Eclairage (CIE) for lighting assessments of oil and gas projects (CIE 2017).

In this assessment, Stantec predicted ambient light levels during operation of the Project using the updated lighting design, and compared those levels to the most up to date lighting criteria developed by CIE. The assessment included a baseline ambient light field survey and a predictive modelling assessment of light effects at human receptors within the regional assessment area of the Project.

Sky quality measurements taken at human receptor locations indicated that the current Environmental Zone is considered E3, described by CIE as 'a well-inhabited rural or urban settlement with medium distinct brightness'. Measured illuminance in combination with predictive modelling results are expected to be below CIE guidance levels for Environmental Zone E3. Further, the model predicted that luminous intensity (or glare) values resulting from Project lighting are also expected to be below CIE guidance levels for Environmental Zone E3.

Based on the nighttime survey and predictive modelling carried out in the light assessment for Woodfibre LNG, Project lighting is not expected to exceed lighting criteria levels at the assessed receptor locations.



Table of Contents

Limitations and Sign-off	i
Executive Summary	ii
Acronyms / Abbreviations	v
Glossary	vi
1 Introduction	1
1.1 Project Approval and Conditions	4
1.2 Project Overview	4
1.3 Study Objectives	5
2 Methods	6
2.1 Desktop Review and Data Sources	6
2.1.1 Assessment Methods	6
2.1.2 Data Resources	6
2.1.3 Issues Identification	7
2.2 Light Assessment Criteria	7
2.2.1 Environmental Zone	8
2.2.2 Sky Quality	8
2.2.3 Illuminance and Luminous Intensity	9
2.3 Locations	10
2.4 Light Metering Equipment	12
2.4.1 Interpretation of Measured Light Levels	12
2.4.2 Measurement Procedures	12
2.5 Sample Date and Sky Conditions	13
2.6 Modelling	13
2.6.1 Receptors and Locations	14
2.6.2 Illuminance	14
2.6.3 Luminous Intensity	14
3 Results and Discussion	15
3.1 Light Measurements	15
3.1.1 Sky Quality	15
3.1.2 Assessment of Environmental Zone	15
3.1.3 Illuminance	15
3.2 Light Modelling	16
3.2.1 Illuminance	16
3.2.2 Luminous Intensity	16
3.3 Impact from Project Lighting	17
3.3.1 Illuminance	17
3.3.2 Luminous Intensity	17
4 Conclusions	18
5 References	19



List of Tables

Table 1	Environmental Zone	8
Table 2	Reference Levels of Sky Quality	8
Table 3	Recommended Maximum Values of Illuminance per Environmental Zones.....	9
Table 4	Recommended Maximum Values for Luminous Intensity (Glare) in Designated Directions.....	9
Table 5	Light Metering Locations	10
Table 6	Modelling Receptor Locations	14
Table 7	Measured Sky Quality Levels	15
Table 8	Measured Illuminance (Incident Light)	15
Table 9	Modelled Illuminance.....	16
Table 10	Predicted Luminous Intensity	16

List of Figures

Figure 1	Location Overview	2
Figure 2	Certified Project Area and Key Project Components	3
Figure 3	Baseline Monitoring Locations and Light Modelling Receptor Locations.....	11



Acronyms / Abbreviations

Cd	Candela
CIE	Commission Internationale de L'Éclairage
CPA	Certified Project Area
EAC	Environmental Assessment Certificate
km	kilometre
LAA	Local Assessment Area
LNG	Liquefied natural gas
m ³	cubic metres
mag/arcsec ²	magnitudes per square arcsecond
OGC	Oil and Gas Commission
Project	Woodfibre Liquefied Natural Gas Project
RAA	Regional Assessment Area
SQM	Sky Quality Meter



Glossary

Term	Definition
candela	The unit of measure for luminous intensity
glare	Is a potential environmental effect where intense, harsh, or contrasting lighting conditions reduce the ability for humans, birds, and other organisms to see.
light trespass	Also known as light spill, refers to the transmission of light from fixtures within a facility to the environment and receptors outside the facility.
Lux	The unit of measure for light incidence. A lux is equal to 1 lumen per square metre (lumen/m ²).
sky glow (or sky quality)	Refers to the illumination of the sky and/or clouds by light sources on the surface of the earth such as street lighting, and haze in the atmosphere that replaces the natural nighttime sky with a translucent to opaque lighted dome.



1 Introduction

Woodfibre LNG General Partners Inc. (Woodfibre LNG) will construct and operate the Woodfibre Liquefied Natural Gas Project (the Project), which is located on the former Woodfibre Pulp Mill site approximately seven kilometres (km) southwest of Sk̓wx̓wú7mesh (Squamish), British Columbia (BC; Figure 1). The Project will have capacity to liquefy up to 2.1 million tonnes per year of natural gas, have a storage capacity of 250,000 cubic metres (m³), and will export the liquefied natural gas (LNG) via tankers.

The Project underwent a comprehensive environmental assessment process from 2013 to 2015 and Woodfibre LNG received:

- an environmental assessment certificate (EAC) for the Certified Project Area (CPA) under the British Columbia *Environmental Assessment Act* (EAC #E15-02) in 2015
- an environmental assessment approval from Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation) through the Squamish Nation Environmental Assessment Agreement in 2015
- a positive Federal Decision Statement (FDS) under the *Canadian Environmental Assessment Act, 2012* in 2016

Two EAC amendments were granted by the British Columbia Environmental Assessment Office (BC EAO) in 2017 and 2019, and the FDS was reissued in 2018 in response to changes to the Designated Project. Woodfibre LNG also received an extension on EAC #15-02 in October 2020.



Figure 1 - Location Overview

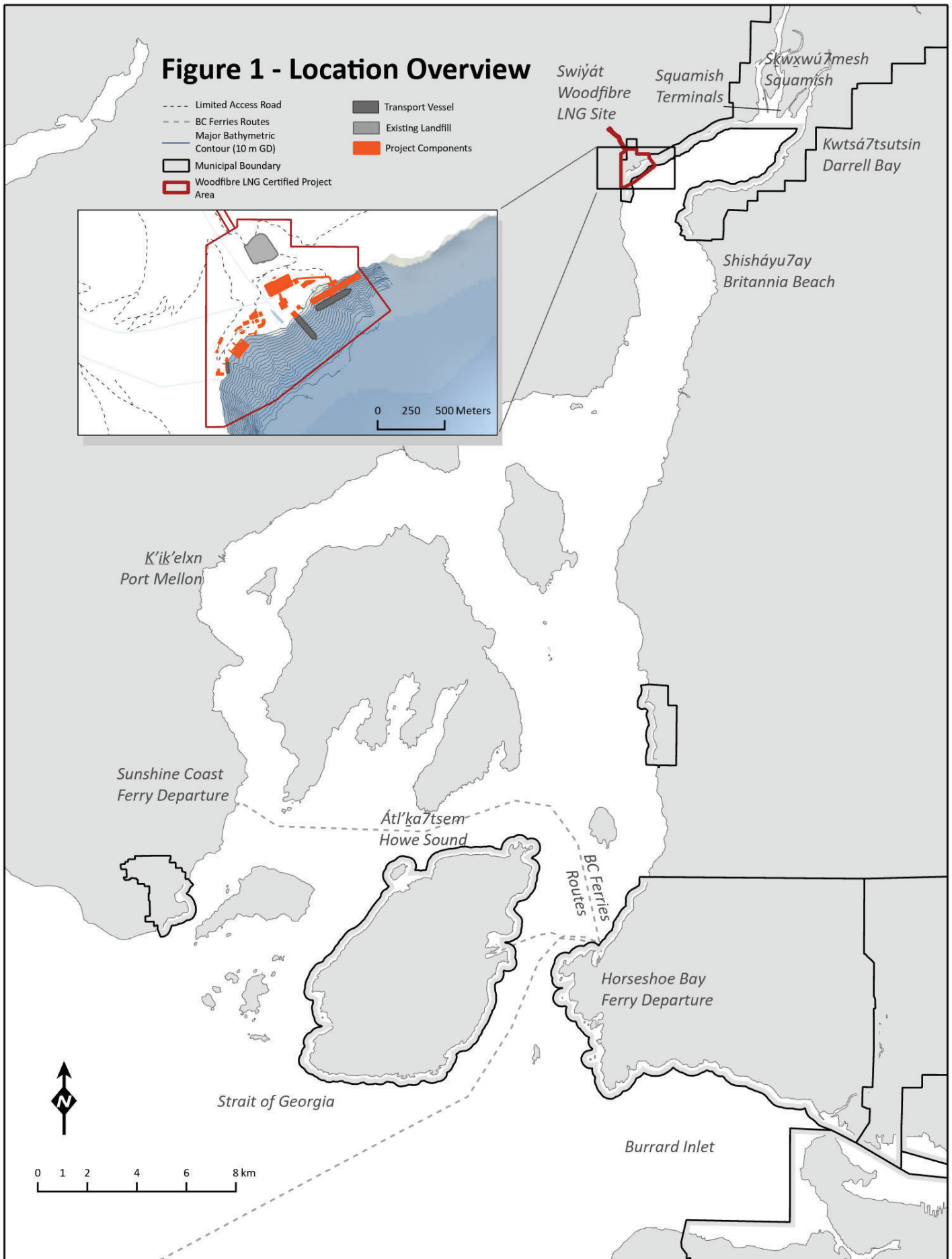
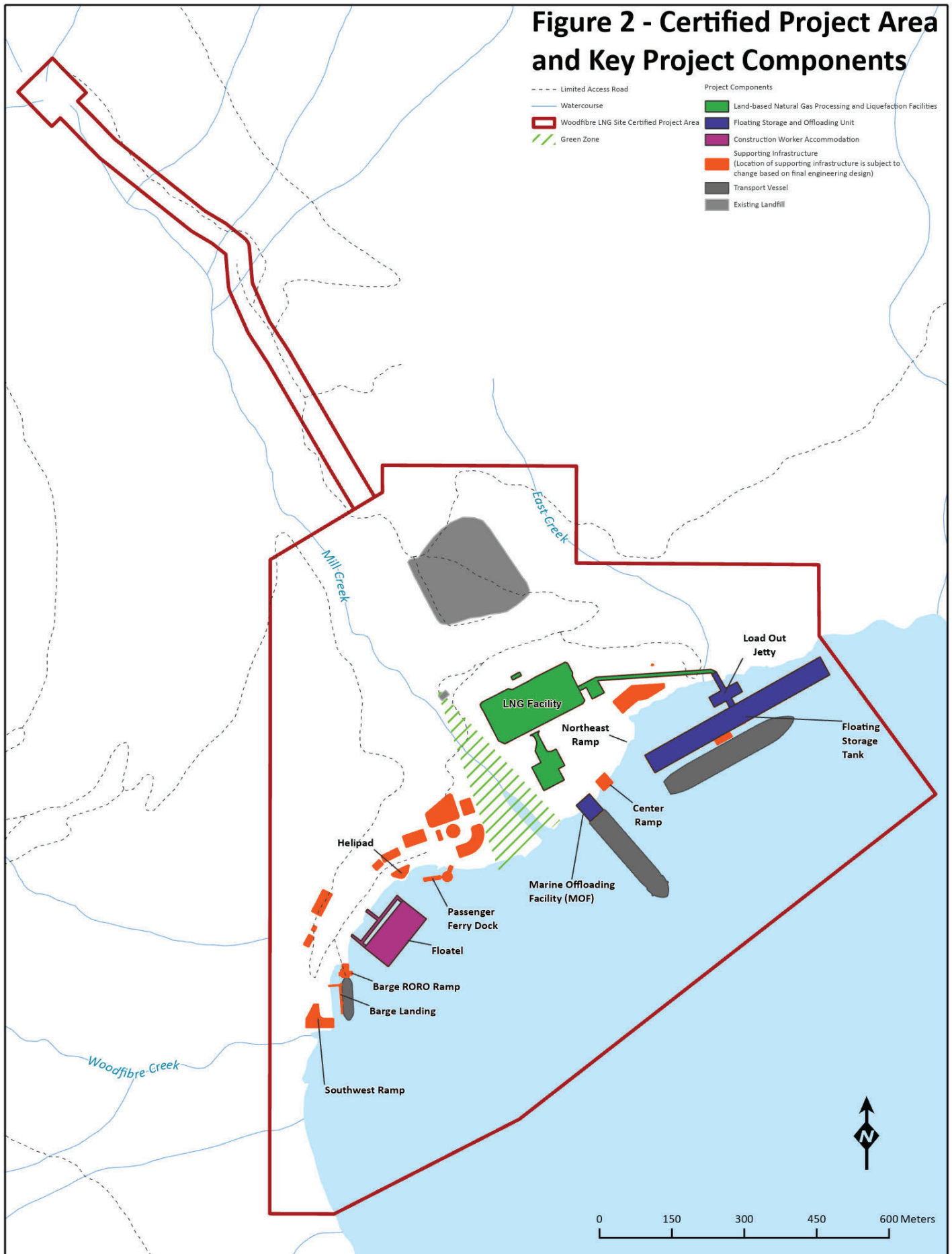


Figure 2 - Certified Project Area and Key Project Components



1.1 Project Approval

The purpose of this lighting assessment is to compare light emissions from the exterior lighting design for the Project during the operations phase to the applicable nighttime ambient outdoor lighting criteria outlined in the CIE 150:2017 at nearby residential receptors. The results of the lighting assessment are then used to inform appropriate mitigation, if needed, to manage adverse effects of project lighting on human residential and receptor points.

An initial lighting assessment was completed for the Project in 2014 as part of the Application for an Environmental Assessment Certificate. That assessment concluded that Project related light emissions were not likely to result in a change in the existing lighting environment that would cause an exceedance of applicable outdoor lighting criteria at that time. New guidance and criteria have been released since the completion of the 2014 lighting assessment. The OGC issued Light Control Best Practices Guidelines in 2021 that recommend the use of obtrusive lighting criteria developed by the Commission International de l'Éclairage (CIE) for lighting assessments of oil and gas projects (CIE 2017). The Light Control Best Practices Guideline (BC OGC 2021) also lists mitigation measures that should be incorporated into Project design criteria for both construction and operation (BC OGC 2021).

Since the completion of the original lighting assessment for the Project, the facility's lighting design has changed. As part of the lighting assessment, Stantec quantified ambient light levels during operation of the Project using the updated lighting design, and compared those levels to lighting criteria developed by CIE (2017).

1.2 Project Overview

The Project is located in Átl'ka7tsem (Howe Sound), approximately 7 km south of Skwxwú7mesh (Squamish), British Columbia (Figure 1). The Project overlaps the historical Squamish Nation village known as Swiyát. The Project Local Assessment Area (LAA) is defined by a 1.5 km buffer of the CPA, and the Regional Assessment Area (RAA) is defined by an 8 km buffer the CPA. The LAA and RAA definitions are consistent with those used in the Application for an Environmental Assessment Certificate (Woodfibre LNG 2016).

Most of the Project is on fee simple, industrially zoned, brownfield lands with more than 100 years of industrial use. There is no road access and all personnel, equipment, and supplies for the Project will be brought in by vessel via Átl'ka7tsem (Howe Sound). The Project will use electrical power sourced from BC Hydro and gas will be supplied to the facility for export by FortisBC.

The CPA and key project components are illustrated in Figure 2. Key project components are:

- land-based natural gas processing and liquefaction facilities
- a floating storage and offloading unit



- worker accommodation
- supporting infrastructure, buildings (e.g., administration, control rooms, maintenance, dry storage and chemical, fire house, first aid, safety and guardhouse), fencing (temporary and permanent), material storage and laydown areas, utility and loading lines, and boil off gas vapour lines.

The works and activities that will occur as part of construction include, but are not limited to:

- marine early works (e.g., shoreline improvements and armoring, dock replacement or repairs), including improvements to the existing in-service (east and south) barge landing
- clearing vegetation and grubbing
- stripping and grading
- drilling and blasting, including excavation, crushing, screening, and hauling grouting and rock stabilization
- road, culvert, and bridge works
- construction of land-based natural gas processing and liquefaction facility
- construction support structures, services, and equipment
- construction of the floating storage and offloading unit
- marine facility construction of mooring dolphin supports and connecting trestles and gangways
- dredging if required

1.3 Study Objectives

Light emissions associated with project operations have the potential to alter the nighttime light environment. The lighting assessment includes baseline light measurements and predictive modelling of project-related light emissions. Baseline light measurements were collected at two locations to establish the current baseline light environment at human receptor areas within the RAA of the Project. The locations for predictive modelling were selected to represent nearby points of reception along the LAA perimeter and select human receptors that may be sensitive to the light effects from the Project.



2 Methods

2.1 Desktop Review and Data Sources

2.1.1 Assessment Methods

The following methods were used in assessing lighting from the Project.

- Identify spatial boundaries of the Project to define the assessment area.
- Undertake a daytime field survey to identify suitable locations for a nighttime ambient light assessment
- Measure nighttime ambient light levels at receptor locations within the RAA of the Project
- Determine the assessment criteria for Project light levels based on the baseline nighttime light levels and CIE (2017) guidance
- Undertake predictive modelling of light emissions on receptors identified within the RAA of the Project
- Compare predictive modelling results of light emissions to recommended CIE (2017) lighting thresholds by Environmental Zone

2.1.2 Data Resources

Lighting levels in the nighttime are affected by weather, environmental, and ground conditions. Prior to undertaking the nighttime field survey, sky condition forecasts were reviewed so that measurements were scheduled and taken on a clear, moonless night. The following websites were reviewed to determine when appropriate sky conditions may be occurring:

- The Norwegian Meteorological Institute¹
- Clear Sky Chart²
- The Weather Network³

¹ <https://www.yr.no/en/forecast/daily-table/2-6154636/Canada/British%20Columbia/Squamish-Lillooet%20Regional%20District/Squamish>

² <https://www.cleardarksky.com/c/SqmshBCkey.html?1>

³ <https://www.theweathernetwork.com/ca/weather/british-columbia/squamish>



2.1.3 Issues Identification

Lighting fixtures, or luminaires, used by the Project may lead to obtrusive light effects on nearby receptors. Badly designed lighting or excessive lighting can result in three types of obtrusive lighting, which are generally referred to as light trespass, glare, and sky glow. Each of these are described below:

- **Light Trespass** – also known as light spill, refers to the transmission of light from fixtures within a facility to the environment and receptors outside the facility. Light trespass can be assessed by measuring the illuminance, where the unit of measure for light incidence either in or outside the facility is a lux. A lux is equal to 1 lumen per square metre (lumen/m^2). The incident light reaches problematic levels, for example, when lights located on the outside of an industrial facility shine in through the windows of nearby residential homes at levels that could disrupt sleep or distract from normal activities.
- **Glare** – is a potential environmental effect where intense, harsh, or contrasting lighting conditions reduce humans, birds, and other organisms' ability to see. The most common example of glare is oncoming high-beam headlights on a motor vehicle that provide ample light but paradoxically result in poor visibility, potentially reaching hazardous conditions. Excessively bright and improperly aimed floodlighting can have similar adverse effects on the perimeter of a project. Glare can be assessed by measuring the luminous intensity of a luminaire. A common unit of luminous intensity is the candela (cd).
- **Sky Glow** – refers to the illumination of the sky and/or clouds by light sources on the surface of the Earth such as street lighting, and haze in the atmosphere that replaces the natural nighttime sky with a translucent to opaque lighted dome. The sky appears to be washed out or brownish-purple and may be devoid of visible stars in the extreme. Sky glow is the cumulative effect of all lights at the surface either emitting upward or being reflected upward by the surface plus the emission from photochemical activity in the atmosphere. The unit of measure for the brightness of the sky, including sky glow, is magnitudes per square arcsecond (mag/arcsec^2). Values for sky glow range from approximately 22 mag/arcsec^2 in a rural environment where stars are abundant, to approximately 18 mag/arcsec^2 in an urban environment where stars are barely visible.

2.2 Light Assessment Criteria

The lighting criteria used in this assessment is from CIE 150:2017 which outlines recommended lighting levels based on Environmental Zones ranging from intrinsically dark to bright urban areas. The current baseline Environmental Zone for the area of receptors near and around the Project was determined by field measurement. The effect of added light from the Project was assessed against the established Environmental Zone. A summary of the Environmental Zones and associated maximum recommended values by CIE (2017) are provided in the following sections.



2.2.1 Environmental Zone

CIE (2017) has established five Environmental Zones as a basis for outdoor lighting guidance (Table 1).

Table 1 Environmental Zone

Zone	Lighting Environment	Examples
E0	Intrinsically dark	UNESCO Starlight Reserves, IDA Dark Sky Parks, Major optical observatories
E1	Dark	Relatively uninhabited rural areas
E2	Low distinct brightness	Sparsely inhabited rural areas
E3	Medium distinct brightness	Well inhabited rural and urban settlements
E4	High distinct brightness	Town and city centres and other commercial areas
SOURCE: (CIE 2017)		

2.2.2 Sky Quality

Sky quality is a useful surrogate to assess change in local sky brightness (or sky glow) and to determine the Environmental Zone of the Project. Reference light levels corresponding to sky quality measurements have been developed by Berry (1976) and are presented in Table 2. The higher the number, the more the sky is dominated by the natural background; the lower the number, the greater the brightness or reduction of dark night sky quality caused by the reflection of night lighting in the atmosphere.

Table 2 Reference Levels of Sky Quality

Sky Quality (mag/arcsec ²)	Corresponding Appearance of the Sky
21.7 (Rural)	The sky is crowded with stars that appear large and close. In the absence of haze, the Milky Way can be seen to the horizon. The clouds appear as black silhouettes against the sky.
21.6	The above with a glow in the direction of one or more cities is seen on the horizon. Clouds are bright near the city glow.
21.1	The Milky Way is brilliant overhead but cannot be seen near the horizon. Clouds have a greyish glow at the zenith and appear bright in the direction of one or more prominent city glows.
20.4	The contrast to the Milky Way is reduced and detail is lost. Clouds are bright against the zenith sky. Stars no longer appear large and near.
19.5	Milky Way is marginally visible, only near the zenith. Sky is bright and discoloured near the horizon in the direction of cities. The sky looks dull grey.
(18.5 Urban)	Stars are weak and washed out and reduced to a few hundred. The sky is bright and discoloured everywhere.
SOURCE: (Berry 1976)	



2.2.3 Illuminance and Luminous Intensity

The maximum values recommended by CIE for illuminance (light trespass) on properties by environmental zone and time of day are presented in Table 3.

Table 3 Recommended Maximum Values of Illuminance per Environmental Zones

Time of Day	Environmental Zones				
	E0	E1	E2	E3	E4
19:00 – 23:00	n/a	2 lux	5 lux	10 lux	25 lux
23:00 – 6:00	n/a	< 0, 1 lux*	1 lux	2 lux	5 lux
NOTE: If for public (road) lighting value may be up to 1 lux					
SOURCE: (CIE 2017)					

The maximum values recommended by CIE for luminous intensity (glare) in designated directions by Environmental Zone and time of day are presented in Table 4. The recommended values for glare depend not only on the brightness of the object, but also the distance from the observer to the luminaire (d in Table 4) and the size of the luminaire (A_p in Table 4).

Table 4 Recommended Maximum Values for Luminous Intensity (Glare) in Designated Directions

Light Technical Parameter	Application Conditions	Luminaire Group (projected area A_p in m^2)				
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 A_p \leq 0.50$
Maximum luminous intensity emitted by luminaire (I in cd)	Environmental Zone E0					
	Pre-curfew:	0	0	0	0	0
	Post-curfew:	0	0	0	0	0
	Environmental Zone E1					
	Pre-curfew:	$0.29*d$	$0.63*d$	$1.3*d$	$2.5*d$	$5.1*d$
	Post-curfew:	0	0	0	0	0
	Environmental Zone E2					
	Pre-curfew:	$0.57*d$	$1.3*d$	$2.5*d$	$5.0*d$	$10*d$
	Post-curfew:	$0.29*d$	$0.63*d$	$1.3*d$	$2.5*d$	$5.1*d$
	Environmental Zone E3					
	Pre-curfew:	$0.86*d$	$1.9*d$	$3.8*d$	$7.5*d$	$15*d$
	Post-curfew:	$0.29*d$	$0.63*d$	$1.3*d$	$2.5*d$	$5.1*d$
	Environmental Zone E4					
	Pre-curfew:	$1.4*d$	$3.1*d$	$6.3*d$	$13*d$	$26*d$
	Post-curfew:	$0.29*d$	$0.63*d$	$1.3*d$	$2.5*d$	$5.1*d$



Light Technical Parameter	Application Conditions	Luminaire Group (projected area A_p in m^2)				
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 A_p \leq 0.50$
NOTES: d is the distance between the observer and the glare source in meters A_p is the projected area or apparent size of the glare source seen from the observer position in m^2 A luminous intensity of 0 cd can only be realized by a luminaire with a complete cut-off in the designated directions						
SOURCE: (CIE 2017)						

2.3 Locations

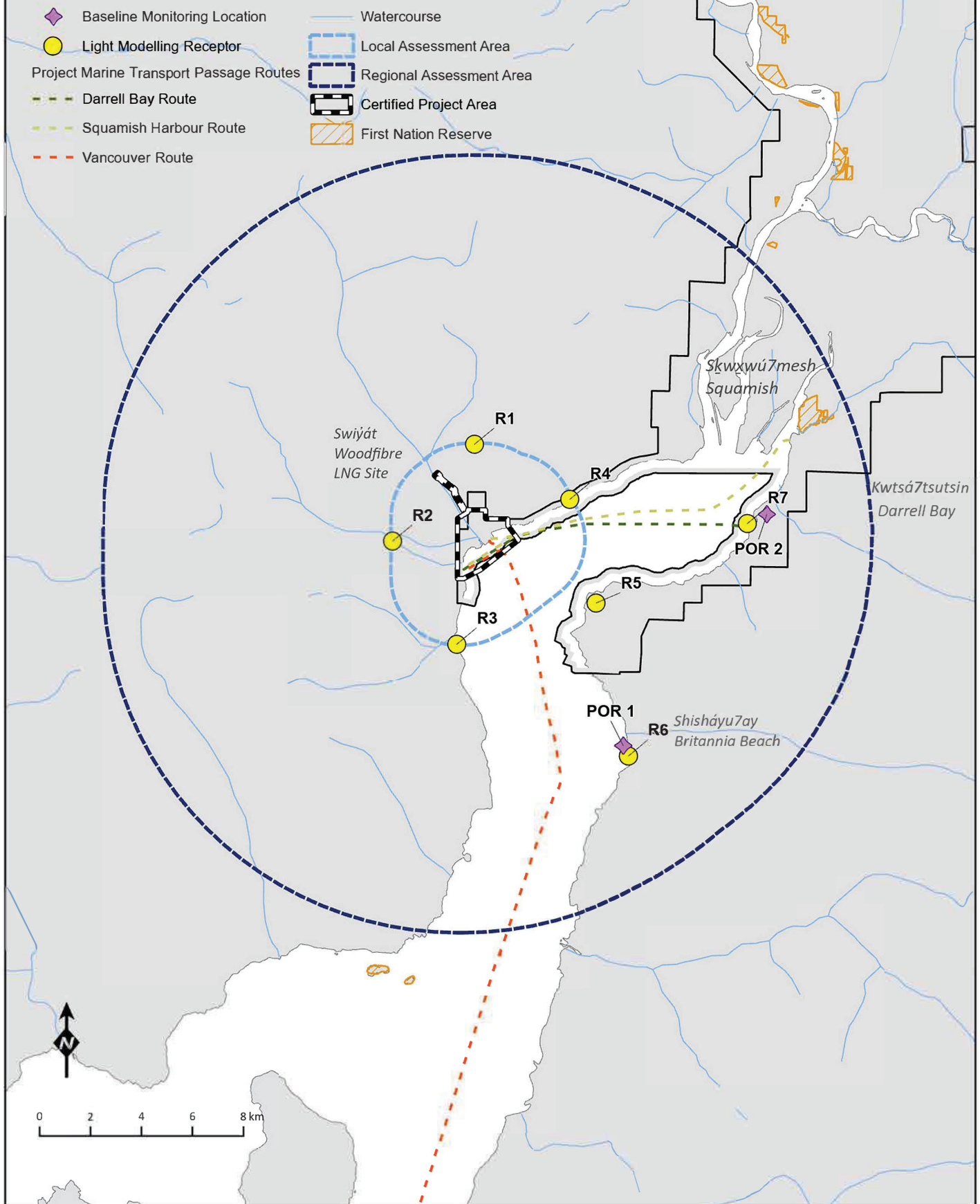
The baseline light measurement locations are listed in Table 5 and shown in Figure 3. The sites were chosen to represent two of the nearest human receptor locations. The two sites are near or at the same location as a prior light assessment that was completed by Golder (2014). Darrell Bay pier was inaccessible and so light measurements were taken at an accessible location nearby.

Table 5 Light Metering Locations

Site ID	Location	Site Location (UTM Zone 10U)		Site Location Description	Distance from Project Location
		Easting (m)	Northing (m)		
POR 1	Britannia Beach	484957	5496859	Along edge of riprap at point. With direct view towards Project site.	5.5 km
POR 2	Darrell Bay	488199	5502095	Parking lot near entrance to Klahanie Campground. Direct view to Project site is blocked by trees.	6.3 km



Figure 3 Baseline Monitoring Locations and Light Modelling Receptor Locations



2.4 Light Metering Equipment

Light measurements were taken using the following light metering equipment:

- A Unihedron Sky Quality Meter (SQM) to measure sky quality. This meter was developed for astronomical applications to document the level of sky brightness. The SQM provides sky quality measurements in units of mag/arcsec² and has a resolution of ± 0.10 mag/arcsec².
- An Extech EA33 light meter to measure incident light, the sensor measures light to a resolution of 0.01 Lux.

2.4.1 Interpretation of Measured Light Levels

2.4.1.1 Sky Quality

Sky quality measurements obtained from the SQM were used to classify the Environmental Zone of the area at the time of the baseline assessment. Classification was based on measurements taken that were compared to the range of sky quality conditions from Berry (1976) listed in Table 2 as well as observations of human activity and development within the RAA.

2.4.1.2 Illuminance

Illuminance was evaluated and quantified based on the incident light level measurements obtained from the Extech EA33 in units of lux. The model predicted illuminance (described in Section 2.6) was added to the measured baseline illuminance levels and the total compared to the maximum recommended levels outlined in Table 3.

2.4.2 Measurement Procedures

Illuminance and luminous intensity have two sets of maximum recommended levels based on time of day (Table 3). Therefore, measurements were taken between 11:00 pm and 6:00 am and corresponding with the period with more stringent maximum recommended light levels. The procedures followed for measuring light are described here for each piece of equipment.

2.4.2.1 Unihedron Sky Quality Meter

At each site the SQM was held with the sensor pointed at the zenith (the point in the sky directly overhead) and at least five readings were recorded on field sheets. An average of the recorded sky quality measurements was used to characterize the Environmental Zone.

2.4.2.2 Extech EA33

At each site the Extech EA33 was held with the sensor pointed towards the Project location. The unit was turned on with the protective cap shielding the sensor, the monitor was checked to confirm a value of zero was displayed with the sensor shield cap in place, and once confirmed the shielded cap was removed. The displayed incident light, in units of lux, was recorded onto the field sheets.



2.5 Sample Date and Sky Conditions

Light measurements at the locations listed in Table 5 were collected on the night of September 20, 2022. The night of the assessment had clear, cloudless sky conditions. The moon was not present in the sky and the ambient temperature was approximately 15°C.

2.6 Modelling

Modelling of Project lighting was completed using AGi32 model software.⁴ AGi32 is a calculation tool for the prediction of photometric light routinely used to compute illuminance in interior and exterior applications. Features of AGi32 include:

- Creating 3D models of Project site layouts to scale that incorporate distribution optics, mounting height, tilt, rotation, and electrical power;
- Utilizing international standard photometry data for luminaires;
- Providing realistic textures and colours for objects and buildings created in the 3D model; and
- Inserting calculation areas and points, via 3D objects, into the model to represent receptor locations.

The lighting design was based on a 3D facility plan provided to Stantec by Woodfibre LNG. Where luminaires were unavailable, lighting design was based on best practices for lighting for oil and gas facilities as recommended by the American Petroleum Institute and the Illumination Engineering Society.. Light emissions from flaring were not included in the lighting assessment because flaring is not expected to occur on a continuous basis, but rather occur only for brief periods during commissioning, maintenance, or upset conditions.

⁴ <https://lightinganalysts.com/software-products/agi32/overview/>



2.6.1 Receptors and Locations

Modelled receptor site locations and ID numbers are provided in Table 6 and depicted in Figure 3.

Table 6 Modelling Receptor Locations

Receptor ID	Site Location (UTM Zone 10U)		Distance from Project Location ^c (km)
	Easting (m)	Northing (m)	
R1	481598	5503674	2.1
R2	479750	5501483	1.9
R3	481197	5499162	2.4
R4	483749	5502431	2.2
R5	484343	5500092	3.0
R6 ^A	485072	5496627	5.9
R7 ^B	487760	5501886	6.0
NOTES: ^A Corresponds to light measurement location POR 1 ^B Corresponds to light measurement location POR 2 ^C Distance estimated from Project Centre			

2.6.2 Illuminance

Illuminance in units of lux was predicted at each receptor location. The model was setup so that the receptor face (vertical surface) was facing the Project location.

2.6.3 Luminous Intensity

The luminous intensity was modeled and estimates at each receptor location were based on luminaire type and fixture alignment and orientation. These predicted values were then compared to CIE (2017) maximum allowable values for the corresponding Environmental Zone of the region.



3 Results and Discussion

3.1 Light Measurements

3.1.1 Sky Quality

Sky quality values as measured at the two receptor locations are provided in Table 7, along with the sky quality measurements from the 2014 assessment (Golder (2014)).

Table 7 Measured Sky Quality Levels

Receptor ID/Monitor Location	Sky Quality Reading from September 20, 2022 (mag/arcsec ²)	Sky Quality Reading from 2014 (mag/arcsec ²)
POR 1	20.77	20.7
POR 2 ^A	20.44	19.1
NOTE: ^A – As noted in Section 2.3 location POR 2 is nearby the location of Golder (2014) but is not the same.		

3.1.2 Assessment of Environmental Zone

The sky quality measurements presented in Table 7 of 20.77 and 20.44 for POR 1 and POR 2 respectively are representative of a well-inhabited rural or urban settlement. Therefore, the Environmental Zone for the receptors based on this assessment is E3. This classification also corresponds to observed use and development surrounding the receptor locations.

3.1.3 Illuminance

Illuminance values measured at the receptor locations are provided in Table 8, along with corresponding incident light measurements from 2014 (Golder 2014).

Table 8 Measured Illuminance (Incident Light)

Receptor ID	Incident Light reading from September 20, 2022 (Lux)	Incident Light reading from 2014 (Lux) ^B
POR 1	0.00	0.001
POR 2 ^A	0.00	0.210
NOTES: ^A – As noted in Section 2.3 location POR 2 is nearby the location of Golder (2014) but is not the same. ^B – Equipment used for measurement of illuminance, in lux, was to greater resolution of three decimal places.		



3.2 Light Modelling

The model predicted illuminance and luminous intensity values from the AGi32 model are provided here.

3.2.1 Illuminance

The maximum predicted illuminance at each receptor is shown in Table 9.

Table 9 Modelled Illuminance

Receptor ID	Maximum Predicted Illuminance (lux)
R1	0.03
R2	0.03
R3	0.03
R4	0.01
R5	0.02
R6	0.01
R7	0.00

3.2.2 Luminous Intensity

Luminous intensity, calculated in Cd, was predicted for each receptor, and evaluated against CIE (2017) for Environmental Zones E0 as it has the lowest allowable luminous intensity (Table 10).

Table 10 Predicted Luminous Intensity

Receptor ID	Maximum Allowable Value of Luminous Intensity (Cd) for Environmental Zone E0-Intrinsically Dark (Cd)	Model Predicted Luminous Intensity (Cd)
R1	0	0
R2	0	0
R3	0	0
R4	0	0
R5	0	0
R6	0	0
R7	0	0



The upward waste light ratio was also evaluated under CIE (2017) requirements which has a maximum allowable value of 0.0% for Environmental Zone E0 – Intrinsically Dark. The calculated upward waste light ratio in AGi32 was 0.0% and therefore was within an acceptable level for the Environmental Zones of the project.

3.3 Impact from Project Lighting

3.3.1 Illuminance

The results of the AGi32 model run for illuminance (light trespass) are provided in Table 9. All predicted maximum values for each receptor are less than the E3 post-curfew level of 2 Lux presented in Table 3. The predicted illuminance at the modelled receptor points are all below the E2 post-curfew level of 1 Lux also. Therefore, the modelled project lighting values based on current design and assumptions are not predicted to exceed CIE (2017) guidance for illuminance.

When the modelled illuminance values from Project lighting are added to illuminance measurements at the human receptor locations (POR 1 and POR 2), the result is the same. Measured illuminance at both receptors in the direction of the Project location was 0.00 lux. Therefore, when combined with the AGi32 modelled illuminance at receptors R6 and R7 (Table 9), illuminance values at these receptor locations are predicted to be 0.01 and 0.00 lux respectively, which are below the E3 post-curfew level of 2 lux.

3.3.2 Luminous Intensity

The AGi32 predicted luminous intensity (glare) provided in Table 10 was a pass for Environmental Zone E0 with a value of 0. The result is also a pass for the assessed Environmental Zone for the area that is E3. Therefore, the modelled project lighting values based on current design and assumptions are not predicted to exceed CIE (2017) guidance for luminous intensity.



4 Conclusions

Outdoor lighting is essential at industrial developments for safe work conditions during nighttime hours and to provide security for the workers and the facility. Light itself not a pollutant; however, inappropriately designed lighting or excessive lighting can cause effects that can range from being a minor nuisance to being a disruptive and adverse.

This lighting assessment has been completed to assess the potential effects of Project exterior lighting on nearby receptors, taking into consideration the updated Project lighting design and lighting criteria guidelines.

Sky quality measurements taken at human receptors near the Project indicate that the current Environmental Zone is considered E3, described in CIE (2017) as a well-inhabited rural or urban settlement with medium distinct brightness. Measured illuminance values in combination with predictive modelling results are expected to be below CIE (2017) guidance levels for Environmental Zone E3; likewise, the model predicted luminous intensity (or glare) values resulting from Project lighting are also expected to be below CIE (2017) guidance levels for Environmental Zone E3.

Based on the nighttime survey and predictive modelling carried out in this light assessment, the Project lighting from Woodfibre LNG is not expected to exceed lighting criteria levels at the assessed receptor locations.

The lighting assessment is based on a preliminary lighting plan and did not include a prediction of light emissions from potential flaring events associated with the Project. It is recommended that a visual light management plan be developed for the Project once more detail on the Woodfibre LNG facility is known, including details on expected flaring events and frequency, and a final schedule of luminaires. The visual light management plan would help confirm light impacts from the facility, would promote continuous improvement and adherence to best management practices for lighting, and provide a mechanism for tracking and addressing lighting concerns throughout the lifetime of the facility.



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DISTRICT OF SQUAMISH

DEVELOPMENT PERMIT NO. DP000599

1. This Development Permit No. DP000599 is issued to WOODFIBRE LNG LTD as the owner (the "Permittee") and shall apply to ALL AND SINGULAR that certain parcel or tract of land and premises situate, lying and being in the District of Squamish, in the Province of British Columbia, and more particularly known and described as:

PID 015822061, 015791459 015-791-611, 031-813-992, 031-814-026

LOT 1 DISTRICT LOTS 2802 AND 8294 PLAN EPP86842, DISTRICT LOT 5899, EXCEPT PART IN REFERENCE PLAN 5238, LOT A DISTRICT LOTS 2351 AND 8295 PLAN EPP86843 has been assigned (hereinafter referred to as the "Lands").

1. This Development Permit No. DP000599 is issued pursuant to the authority of the District of Squamish Official Community Plan No. 2500, 2017 as amended, and in conformity with the procedure prescribed by the District of Squamish Land Development Procedures Bylaw No. 2632, 2018 and the provisions, requirements, terms and conditions of the District of Squamish Zoning Bylaw No. 2200, 2011 and the District of Squamish Subdivision and Development Control Bylaw No. 2649, 2018, as the same relate to and regulate the use of the Lands, and shall not be in any way varied.
2. The following terms and conditions shall apply to the Lands.

(a) Dimensions & Siting of Buildings & Structures

All buildings and structures to be constructed on the Lands shall generally conform in every respect to the following plans:

- (i) Architectural Plans marked Schedule "A";
3. The following maps and plans are attached hereto and are made part of this Development Permit and notwithstanding any other provision, no works shall be performed upon the Lands, nor shall any building or structure be erected, constructed, repaired, renovated or sited, nor any use permitted on the Lands that is not in accordance therewith and with all terms and conditions of

this Development Permit.

Plans:

- (i) Architectural Plans marked Schedule "A";

all as approved by the District of Squamish on November 7th, 2023; PROVIDED HOWEVER that nothing herein contained shall be construed to authorize the owner of the Lands to develop them other than in accordance with the provisions of the District of Squamish Zoning Bylaw, except to the extent that they are expressly varied by this Development Permit.

4. An application for a Tree Permit and a Soil Permit is required to be made to Community Services and written authorization received prior to any site alterations being undertaken.
5. The renewal of any Letter of Credit shall be in such amount as the District of Squamish shall specify, having regard to any change in the estimated cost of undertaking the works, construction or other activities secured by the Letter of Credit that may have occurred since the Letter of Credit was originally issued.
6. All landscaping to be prepared in conjunction with development should use as a guideline The British Columbia Landscape Standard, as per the British Columbia Society of Landscape Architects. A maintenance bond for landscaping for a period of one (1) year in conjunction with developments is required, and will be in the amount of 10% of the original bond amount (Landscape Security Policy D08C-01).
7. All landscaping is to be installed on the subject property and contained by curbing. Landscaping within the abutting road right-of-way is to consist of grass sod or small shrubs.
8. The Permittee shall complete all landscaping to the satisfaction of the Municipality within twenty-four (24) months from the date the Municipal Council authorized issuance of this Permit.
9. Any and all playgrounds for the development must be constructed in accordance with CSA guidelines.
10. If the Permittee does not commence the development permitted by the Permit within **TWO YEARS** from the date of the issuance of the Permit, this Permit shall lapse.
11. This Permit is not a building permit or a development variance permit. While development on the Lands is subject to the conditions and requirements set out in this Permit, the Permit does not authorize development or any construction. Council reserves the right at any time prior to

issuance of a building permit to alter the permitted use, density or conditions of use that affect the Lands.

IN WITNESS WHEREOF this permit has been executed under seal of the District of Squamish on the 7th day of November 2023.

The Corporate Seal of the District of Squamish was hereunto affixed in the presence of:

Mayor

General Manager Corporate Services